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XIX FeSBE REGIONAL

De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

II Simpósio de Saúde e Desempenho Humano em Ambientes Extremos
I Circuito de Divulgação Científica – Antártica nas Escolas

24 a 27 de setembro de 2025

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Reunião Regional da FeSBE

A XIX Reunião Regional da FeSBE foi realizada de 24 a 27 de setembro de 2025 no SENAI CIMATEC, reunindo pesquisadores, estudantes e profissionais em um espaço dedicado ao diálogo científico e à integração entre diferentes áreas do conhecimento. Com o tema "De Josué de Castro à IA: Você tem fome de quê? Ciência, Saúde e Equilíbrio Ambiental", a edição promoveu uma reflexão contemporânea e instigante sobre os desafios que conectam sociedade, tecnologia e meio ambiente. O encontro fortaleceu a troca entre diferentes gerações de cientistas e reafirmou o compromisso da FeSBE com a construção coletiva de conhecimento e o desenvolvimento da ciência no Brasil.

The XIX FeSBE Regional Meeting was held from 24 to 27 September 2025 at SENAI CIMATEC, bringing together researchers, students and professionals in a space dedicated to scientific dialogue and integration between different areas of knowledge. With the theme 'From Josué de Castro to AI: What are you hungry for? Science, Health and Environmental Balance,' the edition promoted a contemporary and thought-provoking reflection on the challenges that connect society, technology and the environment. The meeting strengthened the exchange between different generations of scientists and reaffirmed FeSBE's commitment to the collective construction of knowledge and the development of science in Brazil.

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XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: AdipoRon Modulates EMT Markers and invasive potential in Prostate Cancer Spheroids

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Thematic axis: Cellular and Molecular Biology

Keywords: Adiponectin. Epithelial-to-mesenchymal transition. Matrix metalloproteinases. Prostate cancer. Three-dimensional culture.

Abstract:
Prostate cancer (PCa) progression is associated with epithelial-to-mesenchymal transition (EMT), characterized by loss of epithelial and gain of mesenchymal markers, which promotes tumor invasion and therapy resistance. PCa patients show reduced serum adiponectin (APN) levels, which are associated with aggressive disease. APN receptors, AdipoR1/R2, can be activated by agonists such as AdipoRon (ADR). Previous studies have shown that ADR has potent antitumor effects in several types of cancer; however, its effect on PCa has not been explored. Therefore, this study aimed to investigate the effect of AR in PCa cells grown in 3D spheroids. DU145 and PC3 cells (5×10^4) were seeded in an agarose-coated plate, treated with 0 (CT) or 150μM ADR for 48h. Gene expression of AdipoR1/R2 and EMT markers was analyzed by RT-qPCR, and MMP-2/-9 activity by zymography. E-cadherin expression was low in PC3 compared to DU145 ($p<0.05$) and increased by 110% in DU145 cells after ADR treatment. N-cadherin showed higher expression in PC3 than DU145 in CT ($p<0.05$) and ADR ($p<0.01$) treatments. Vimentin levels were unaffected by ADR. Snail was lower in PC3 than DU145 after ADR treatment ($p<0.05$). Twist was upregulated in PC3 cells compared to DU145 ($p<0.01$) and decreased by 57,56% in PC3 after ADR treatment. Zeb1 was similarly expressed in both conditions. In PC3, APN receptors were not modulated after ADR. DU145 cells showed increased expression of AdipoR1 (378%) and AdipoR2 (316%) after ADR compared with CT. MMP-9 was upregulated by ADR in PC3 (6,3% vs CT) and DU145 (22,4% vs CT). MMP-2/TIMP- 2 ratio was decreased by 36% in ADR-treated compared to CT in DU145 and 41% in PC3, and MMP-9/TIMP-1 decreased 73% in DU145 ADR.
These results confirm the epithelial-like DU145 and mesenchymal-like PC3 phenotypes, show ADR-mediated modulation of gene expression for EMT markers, and suggest ADR may reduce the invasive potential of PCa cells. Protein level analyses are necessary to confirm these findings.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **INFLUÊNCIA DO JATO DE PLASMA SOBRE A DENSIDADE VASCULAR E MASTÓCITOS NO REPARO – ESTUDO EXPERIMENTAL *IN-VIVO***

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Thematic axis: Biologia Celular e Molecular

Keywords: Jato de plasma. reparo tecidual. Mastócitos. Cicatrização. Angiogênese.

Abstract:
Introdução: O uso de terapias biomoduladoras como o jato de plasma tem aumentado na área da saúde, em especial, devido à sua capacidade de estimular o reparo tecidual. O objetivo do presente estudo foi avaliar a influência da terapia com jato de plasma por condução na fase proliferativa do reparo tecidual de ferimentos cutâneos induzidos experimentalmente, com destaque para as variáveis densidade vascular e quantitativo de mastócitos. **Metodologia**: O projeto foi submetido ao CEUA da Faculdade Adventista da Bahia e obteve registro de numeração 67/2019 de acordo com as normas do Concelho Nacional de Controle de Experimentação Animal. Foram utilizados 20 ratos machos Wistar, alocados aleatoriamente em grupo controle (GC) e grupo jato de plasma (GJP). Um ferimento cutâneo padronizado foi induzido experimentalmente a dorso dos ratos e estes foram eutanasiados no 5º dia e 10º dia após a realização da lesão. As secções de pele correspondentes à área do ferimento foram coradas com hematoxilina-eosina para análise da densidade vascular, e azul de toluidina para estudo da população de mastócitos totais. Foi realizada análise histomorfométrica das duas variáveis do estudo e tratamento estatístico dos dados. **Resultados**: Constatou-se maior densidade vascular no grupo GJP quando comparado ao GC em ambos os períodos do estudo (p=0,0008 e p=0,0001, respectivamente). Acerca da contagem das mastócitos totais, observou-se um quantitativo maior que no grupo tratado em relação ao controle, ainda que não significante (p=0,154). Houve correlação fortemente positiva entre as variáveis no GJP (+0,937). **Conclusão**: A terapia com jato de plasma por condução aplicada sobre ferimentos cutâneos induzidos experimentalmente em ratos modulou positivamente a densidade vascular e o quantitativo de mastócitos totais, na fase proliferativa do reparo, com evidente correlação entre essas variáveis.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: INFLUÊNCIA DA OZONIOTERAPIA SOBRE CÉLULAS MONOMORFONUCLEAR E MASTÓCITOS NO REPARO - ESTUDO EXPERIMENTAL *IN-VIVO*

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Thematic axis: Biologia Celular e Molecular

Keywords: Reparo tecidual, ozonioterapia, infiltrado inflamatório e mastócito.

Abstract:
Objetivo: investigar mudanças histológicas das variáveis infiltrado inflamatório monomorfonuclear e mastócitos influenciadas pela ozonioterapia durante a cicatrização cutânea em ratos. **Método:** O projeto foi submetido ao CEUA e obteve registro de numeração 67/2019. Trinta ratos Wistar foram submetidos ao procedimento cirúrgico para obtenção de uma ferida cutânea padronizada, divididos em três grupos experimentais, um grupo controle e dois tratados, um com insuflação do gás ozônio nos bordos da ferida e o outro com aplicação tópica do óleo ozonizado de girassol. A morte animal ocorreu nos 5º e 10º dias, análises quantitativas e semi quantitativas foram realizadas em secções histológicas coradas com HE e azul de toluidina. Foi realizada a análise descritiva da amostra e análise estatística através da ANOVA, e posteriormente aplicado o teste T de student com $p<0,05$.
Resultados: quanto ao infiltrado inflamatório monomorfonuclear não foi detectada diferença estatística entre os grupos tratados, nos dois períodos de análise ($p>0,05$). Para a variável mastócito foi encontrado um aumento no número dessas células, em especial para mastócitos desgranulados em relação ao controle, no 5º dia (GGO $p=0,01$; GOO $p=0,02$). **Conclusão:** embora não tenha sido detectada uma modulação do infiltrado inflamatório monomorfonuclear, o ozônio foi capaz de modular o quantitativo de mastócitos envolvidos no reparo tecidual, principalmente no 5º dia da cicatrização, independentemente da via de administração.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Treatment in puberty but not in adulthood prevents long-term metabolic dysfunctions.**

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Thematic axis: Biologia Celular e Molecular

Keywords: DOHaD, Metformin, Programming, Small Litter e Adolescence

Abstract:
Obesity has been reported as one of the major public health problems, leading to conditions such as obesity, hypertension, and diabetes. The earlier obesity manifests in childhood or adolescence, the more severe the long-term health consequences. The DOHaD concept investigates how early overfeeding or undernutrition can affect health throughout life. Our objective was to evaluate whether short-term treatment with metformin during adolescence could attenuate metabolic dysfunctions programmed by neonatal overfeeding. Additionally, we investigated whether the same intervention in adulthood would have a similar effect on metabolic programming. The experimental protocols followed (CEUA: 3220080620 and 6943140224). Wistar rats were used, with standardized litters of 9 pups per dam in the control group (NL–normal litter) and 3 pups per dam in the overfeeding group (SL–small litter). The control groups received an intraperitoneal injection of saline (NL-C and SL-C), while the treated groups received metformin (100 mg/kg) (NL-M and SL-M) from days 35 to 42 (puberty) and from days 70 to 81 (adulthood). Two months after the intervention, in both adulthood and adolescence, SL-C animals showed metabolic dysfunctions, being significantly heavier than NL-C animals, with greater fat accumulation and disrupted glucose homeostasis ($p<0.0001$). SL animals treated with metformin during puberty showed a significant improvement in hepatic steatosis and a significant reduction in white adipose tissue ($p<0.05$). On the other hand, metformin treatment in adulthood did not significantly reduce any of the assessed parameters. Our findings indicate, for the first time, that short-term metformin treatment during puberty can attenuate metabolic dysfunctions programmed by neonatal overnutrition. However, this intervention in adulthood could not reverse early metabolic programming resulting from overfeeding during lactation, highlighting the relevance of the DOHaD concept.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Development and High-Yield Production of a Novel Chimeric Polymerase for Isothermal Molecular Assays.**

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Thematic axis: Cellular and molecular biology

Keywords: Diagnostics. Loop-mediated isothermal amplification. Point-of-care testing. Recombinant protein.

Abstract:
Infectious diseases pose a threat to global public health and their control depends on rapid and accurate diagnostics. Although well-established, Polymerase Chain Reaction (PCR) does not work as a point-of-care test (PoCT), requiring sophisticated equipment, trained people, and sample processing. As an alternative, Loop-Mediated Isothermal Amplification (LAMP) has proven to be simpler, faster, and more cost-effective while maintaining accuracy. However, high production costs and intellectual property barriers related to its polymerase Bst-LF limit its large-scale application, in addition to technical challenges such as low solubility. Therefore, this work aimed to develop a low-cost, thermostable chimeric polymerase with improved solubility and high yield for LAMP assay applications. We searched through BLAST for homologous sequences of Bst-LF polymerase from *Geobacillus stearothermophilus* and Fh8 solubility tag from *Fasciola hepatica*. The resulting sequences were fused via a flexible linker and the product was optimized *in silico* using TIsigner tool. The synthetic sequence resulted in a chimeric polymerase named TtBca. The enzyme is composed of 664 amino acids and 75 kDa, being 93.6% similar to Bst-LF. The sequence was cloned in commercial plasmid pET28a(+), which was then transformed into *Escherichia coli* BL21(DE3) strains for heterologous expression induction. Samples were taken in 2, 4, 16 and 20 hours to be analyzed in SDS-Page gel electrophoresis. Tests were conducted to evaluate protein solubility. Protein was purified via MagneHis™ kit to obtain expression yield. The recombinant production led to 68mg/L yield of a highly soluble protein in 2 hours of induction with IPTG (0,5 mM), reducing production costs. Levels achieved in the present study were at least 36% higher than other studies involving recombinant polymerase expression, including Bst-LF. The resulting polymerase represents a promising advancement towards accessible molecular diagnostics.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Nanoplastics Impair Carboplatin Efficacy in Ovarian Cancer Through Pro-Survival Metabolic Adaptation and Inflammatory Signaling**

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Thematic axis: Cellular and Molecular Biology

Keywords: Nanoplastics. Ovarian cancer. Chemoresistance. Tumor microenvironment.

Abstract:
Nanoplastics (NPs), which result from the breakdown of plastics, pose environmental and health risks because they can cross biological membranes and accumulate in tissues. In epithelial ovarian cancer (EOC), resistance to chemotherapeutic agents like carboplatin (CB) is a significant challenge. This study examined the role of NPs in affecting chemoresistance in ovarian cancer cells (SKOV-3), testing both NPs alone (40 µg/mL) and combined with CB (100 µM) for 24 hours. Cell viability, migration, Live/Dead staining, and gene expression related to tumor progression were analyzed. Results showed a notable chemoprotective effect of NPs in cells exposed to chemotherapy. In the NPs-only group, there was a significant increase in metabolic activity (25%) and cell migration, along with upregulation of pro-survival markers (mTOR: 2.08-fold; BCL2: 2.3-fold) and a pro-tumor inflammatory profile (increased IL-6 and decreased IL-10). However, Live/Dead staining indicated sublethal structural damage (85.5% viability compared to control), suggesting NPs sustain metabolic activity while damaging cellular integrity. In the NPs+CB co-treatment group, a paradoxical effect was observed: metabolic hyper-viability (182.3%) contrasted with reduced structural integrity (79.8% Live/Dead viability). This group maintained BCL2 (1.7-fold) and mTOR (1.3-fold) expression, along with EMT induction (vimentin: 4.65-fold), but migration was reduced (80.7%), likely due to CB-induced cytoskeletal damage. Both groups showed resistance to apoptosis, with decreased CASP3/8 expression despite BAX induction, confirming the protective role of NPs against chemotherapy. These findings suggest that NPs promote ovarian tumor cell survival through the activation of the mTOR/BCL2 pathway and IL-6-driven inflammation, while impairing the effectiveness of chemotherapy via metabolic and structural damage, highlighting the impact of NP pollution on EOC progression and chemotherapy resistance.

Financial support: FAPESP (24/04120-5), CAPES (Finance Code 001)

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Maternal Low-Protein Diet Affects the Pituitary Gland in a Sex-Specific Manner Through Molecular and Hormonal Disorders of Post-Weaning Rat Offspring**

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Thematic axis: Cell and Molecular Biology

Keywords: Dohad. Food insecurity. Maternal protein restriction. Pituitary.

Abstract:
Epidemiological and experimental studies highlight the critical role of developmental windows for health or disease in the offspring. This panorama is based on the concept of Developmental Origins of Health and Disease (DOHaD), with one of the models used being Maternal Protein Restriction (MPR), which mimics conditions of hunger and food insecurity. The MPR could impact several systems in the descendants, increasing the risk for chronic diseases. We aim to evaluate how MPR affects the pituitary gland and metabolism of male and female rats early in life. Sprague Dawley rats (CEUA 5119280121) were divided into two groups: Rats born from dams that received a normoprotein (CTR; 17% protein) or a hypoprotein diet (GLLP; 6% protein) during gestation and lactation. At postnatal day 21, the rats were euthanized, and the blood and pituitary glands were collected for metabolic (n=8), histological (n=5), molecular (n=5), and statistical analyses (normality, and a posteriori Student's t test or Mann-Whitney, considering $p<0.05$ significant). We observed that MPR did not affect the pituitary structure in both sexes. In female rats, we showed a decrease in the insulin receptor (p=0.049) and *Pomc* (p=0.026) gene expression, despite no difference in the genes *Neurod1, Neurod4, Igf1, Pparα, Pparγ, Prl,* and *Tshr* in the GLLP group. In male rats, we showed an increase in *Neurod1* (p=0.042), *Pparα* (p=0.0075), and *Pparγ* (p=0.017), and a decrease in *Prl* (p=0.0002) gene expression in the GLLP group, despite no differences for *Neurod4, Igf1, Ir,* and *Tshr* gene expression. There was a decrease in serum T3 (p=0.0002) and T4 (p=0.0036) in the male GLLP rats. In the female rats, there was a decrease in serum T4 (p=0.001) despite no differences in T3. In conclusion, MPR affects the molecular and metabolic functions of the pituitary glands, with more notable systemic effects in males. This panorama may create a window of susceptibility to long-term pituitary and metabolic disorders.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Omics-Based Molecular Signatures of Adrenal, Kidney, and Lung Development in Male Rat Offspring Exposed to Maternal Protein Restriction**

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Thematic axis: Cellular and Molecular Biology

Keywords: Dohad. Biological Signatures. Developmental Biology. Early Life. Maternal Malnutrition.

Abstract:
Maternal malnutrition remains a global social and public health challenge, with long-lasting effects on offspring's health, as proposed by the Developmental Origins of Health and Disease (DOHaD) theory. Here, we investigated the impact of maternal protein restriction (MPR; 6% casein) during gestation and lactation on the global proteomic profiles of the kidneys, lungs, and adrenal glands in post-weaning male rats (CEUA 5119280121). A total of 36 differentially expressed proteins (DEP) were commonly dysregulated (p-value≥0.95 upregulated; p-value≤0.05 downregulated) across the three organs, enriching pathways related to cellular transport, stress response, chaperone activity, amino acid metabolism, the pyruvate metabolism, the Krebs cycle, and the cell cycle (-Log10corrected p-value). Cellular enrichment pointed to cytoskeletal and nuclear alterations, while molecular functions involved nucleoside activity, GTP binding, ubiquitination, RNA processing, and redox balance. Biochemical analysis highlighted dysregulation in NAD/NADH metabolism, oxygen transport, purine/pyrimidine turnover, gluconeogenesis, β-oxidation, glycolysis, and energy metabolism (p-value<0.05 and odds ratio). Chromosomal enrichment emphasized loci on chromosomes 4, 19, 17, 14, 7, and Interaction networks revealed clusters involving cytoskeletal organization, hemostasis, and energy metabolism (high confidence 0.90), with strong epigenetic associations involving miR- 3064-3p/3065-3p (TUBA1A), miR-350/3585-5p (MDH1), and miR-455-3p/92a-1-5p (H2AZ1). These three proteins emerged as potential early-life molecular markers of MPR. Overall, this study provides a systems-level overview of MPR effects on adrenal, kidney, and lung development, identifying shared proteomic signatures and candidate biomarkers predictive of developmental impairment and long-term risk for chronic metabolic disease.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Modulation of gut microbiota and improves MASLD by semaglutide through the microbiota–gut–liver axis in obese mice

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Thematic axis: Cellular and Molecular Biology

Keywords: Butyrate. Gut–liver axis. Obesity. Semaglutide.

Abstract:
Metabolically-dysfunction-associated steatotic liver disease (MASLD) is a chronic liver disease that frequently coexists with metabolic disorders, whose pathogenesis is multifactorial. Among these factors, alterations in gut microbiota have recently garnered significant attention. Semaglutide, a glucagon-like peptide-1 receptor agonist, demonstrates improvement in terms of liver damage. However, the mechanisms underlying this beneficial effect are not yet fully elucidated. In this context, this study investigated the impact of semaglutide on the gut-liver axis in obese mice induced by a high-fat diet (HFD). Mice (C57BL/6J) were randomly divided and fed a control diet (CON, n = 15/group) or a high-fat diet (HFD, n = 30/group). In the 12th experimental week, the HFD group was again randomly divided into two groups (n = 15/group): the high-fat diet (HFD) and the high-fat diet plus semaglutide (HFD+SEMA, 0.05 mg/Kg—translational dose) administered every 7 days for 6 weeks. All experimental protocols were approved by the Animal Use Ethics Committee (CEUA/IAM) under protocol number 190/2023. The intervention of semaglutide improved metabolic parameters and serum inflammatory markers in HFD-induced obese mice. HE staining and Oil Red O staining showed a decrease in hepatic damage and a reduction in lipid deposition. Additionally, semaglutide modulated the lipogenic and lipolytic signalling pathways and reduced hepatic inflammatory markers. In addition, semaglutide also reduced gut inflammatory markers, improved colonic integrity, and influenced the composition and diversity of gut microbiota, especially the growth of butyrate-producing bacteria. Our results suggest that semaglutide induces alterations in the gut microbiota, ameliorates MASLD and associated inflammation by modulating the gut-liver axis.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Establishing an mRNA CAR T Cell Platform Targeting Fibroblast Activation Protein (FAP)

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Thematic axis: Cellular and Molecular Biology.

Keywords: Car t cells. Cell therapy. Chagas disease. Fibroblast activation protein (FAP). Immunotherapy.

Abstract:
Chimeric Antigen Receptor (CAR) T cell therapy represents a promising immunotherapeutic approach, particularly effective in the treatment of hematological malignancies. These genetically modified T cells express synthetic receptors that mediate antigen-specific tumor recognition and cytotoxicity. However, the use of viral vectors for CAR expression raises safety concerns and increases manufacturing costs, thereby limiting their broader clinical application. In contrast, mRNA- based CAR expression has emerged as a safer, transient, and more cost-effective alternative. Our research group previously demonstrated that targeting cardiac fibrosis enhances exercise capacity in experimental models of chronic Chagas cardiomyopathy. Based on these findings, we hypothesize that fibroblast activation protein (FAP) may represent a suitable target for CAR T cell therapy in this context. Thus, our objective is to establish the foundational steps for developing FAP-targeted CAR T cells. Initially, the FAP coding sequence was cloned into the pEGIP vector using BamHI and BsrGI restriction sites, enabling the production of lentiviral vectors to generate FAP-overexpressing fibroblasts. Additionally, we designed and validated an in vitro transcription construct by inserting the ZsGreen coding sequence via Gibson assembly. HEK and BHK cells were transfected with the resulting ZsGreen mRNA construct to evaluate expression efficiency. At 48 hours post-transfection, ZsGreen expression was detected in 80% of HEK cells and 93% of BHK cells, indicating high transfection efficiency and robust protein translation. These results validate the efficacy of our molecular tool and support their application for developing mRNA-based CAR expression platforms. This approach will facilitate the future generation of FAP-targeted CAR T cells, potentially applicable to treating fibrotic cardiac diseases such as chronic Chagas cardiomyopathy.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Structural, functional, and evolutionary conservation of Dehydroascorbate reductase and its role in antioxidant defense in *Ricinus communis* L.

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Thematic axis: Cellular and Molecular Biology.

Keywords: Phylogeny. Castor bean. Isoforms.

Abstract:
Ricinus communis L. (Castor bean) is an oilseed species of the Euphorbiaceae family. It is cultivated in tropical and subtropical regions where it is often exposed to abiotic stresses that increase reactive oxygen species. Thus, the R. communis (Rc) relies on antioxidant defense systems like the ascorbate– glutathione cycle, in which dehydroascorbate reductase (DHAR, EC 1.8.5.1) plays a key role. This study aims to characterize in silico the amino acid sequences of dehydroascorbate reductase from R. communis (RcDHAR). Three sequences were retrieved from NCBI, Phytozome, and Kazusa, filtered using CD-HIT, edited in BioEdit, and analyzed for physicochemical properties (ProtParam), 3D structure (Swiss-Model, Procheck), active sites (FTMAP), conserved motifs (GeneDoc), phylogeny (IQ-TREE), and subcellular localization (CELLO). The 3D models showed over 90% of residues in favorable stereochemical regions, with predominant beta-sheets and alpha-helices. The isoforms shared a casein kinase II phosphorylation site, and conserved motifs notably linked to growth and oxidative stress response. In the active site, lysine residues participate in dehydroascorbate recognition, ascorbate release, and reduced glutathione interaction via hydrogen bonds. RcDHAR isoforms are cytoplasmic, localization essential for ascorbate recycling and oxidative stress control. Leucine and lysine were the most conserved residues. Moreover, the three isoforms are stable, hydrophilic proteins with acidic isoelectric points. RcDHAR02 and RcDHAR03 share similar key contact residues, while RcDHAR01 differs in hotspot position. Phylogenetic analysis showed RcDHAR genes clustering with angiosperms, especially Euphorbiaceae species, and orthologs sharing the same subcellular localization, reinforcing the role of taxonomy and compartmentalization in evolution. Results confirm DHAR's role in Rc antioxidant defense and its structural, functional, and evolutionary conservation, with RcDHAR01 showing potential differences in molecular interactions while RcDHAR02 and RcDHAR03 are more similar.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: MicroRNAs regulating monocarboxylate transporter 4 (MCT4) as potential therapeutic targets in oral squamous cell carcinoma

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Thematic axis: Biologia Celular e Molecular.

Keywords: Cancer metabolism. Control. MCT4/SLC16A3. MicroRNA. Post-transcriptional modifications.

Abstract:
Oral squamous cell carcinoma (OSCC) is the most common malignant neoplasm of the oral cavity, characterized by high morbidity and mortality, invasive behavior, and significant resistance to conventional therapies. Within the tumor microenvironment, metabolic reprogramming is a critical alteration, with a predominance of aerobic glycolysis leading to lactate accumulation. Monocarboxylate transporter 4 (MCT4), encoded by the SLC16A3 gene, is primarily responsible for exporting lactate into the extracellular space, promoting acidification, angiogenesis, immune evasion, and tumor progression. Concurrently, microRNAs (miRNAs), small non-coding RNAs with post-transcriptional regulatory functions, have emerged as key modulators of genes associated with tumor metabolism, including MCT4, and may serve as biomarkers or therapeutic targets. This study aimed to review the available evidence on MCT4 regulation by miRNAs in the context of head and neck squamous cell carcinoma (HNSCC), whose molecular similarity to OSCC justifies its use as a comparative model. A literature search was conducted in PubMed, MEDLINE, ScienceDirect, and BVS using the terms: "MCT4" AND "HNSCC" AND "miRNA" OR "microRNA." Studies directly analyzing the interaction between miRNAs and MCT4 were included, focusing on cellular, clinical, and preclinical models. Nine MCT4-regulating miRNAs were identified, among which miR-1, miR-31, miR- 145, miR-205, miR-425-5p, and miR-hsa-let-7b-5p were selected as candidate targets for investigation in OSCC. The data indicated that the primary biological functions of the identified miRNAs in cancer include their capacity to suppress MCT4 expression, thereby negatively impacting tumor metabolism and aggressiveness. These findings reinforce the therapeutic potential of MCT4-regulating miRNAs in controlling OSCC and HNSCC in general.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Impact of Histotechnological Pre-analytical Variables on Marker Expression in FFPE Samples for Molecular Assays and Immunofluorescence Microscopy**

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Thematic axis: Cell and Molecular Biology

Keywords: Ffpe. Molecular integrity. Protein expression.

Abstract:
Introduction: Formalin-Fixed Paraffin-Embedded (FFPE) is widely used in diagnostics and scientific research, including investigations of Nervous System (NS) tissues. FFPE samples have long-term durability and are therefore valuable for morphological and molecular analyses in research involving the NS, enabling the detection of potential neuronal and glial biomarkers associated with neurodegenerative diseases such as Alzheimer's and Parkinson's, as well as in cancer. However, pre-analytical variables such as fixation time, dehydration, diaphanization, infiltration, and storage temperature can compromise the integrity of nucleic acids, protein immunoreactive, and the preservation of cellular structures, directly affecting the quality of the resulting data. In addition, common operational factors in research laboratories such as variability in the day of euthanasia, immediate unavailability of reagents or trained personnel, protocol failures, and technical issues also contribute to result variability. **Objective:** In this context, the present study aimed to evaluate the impact of experimental variations in different histological processing parameters on the quality of immunofluorescence labeling of neuroglial cells involved in homeostasis maintenance and neuroinflammatory response. **Methods:** Histological sections of 5 µm thickness were obtained using a Leica RM2125 RTS microtome. Immunofluorescence was performed using polyclonal primary antibodies: GFAP (PA1-10019, Invitrogen, 1:5,000) for astrocyte analysis and Iba1 (PA5-27436, Invitrogen, 1:100) for microglial cell analysis.This work was approved by the Ethics Committee on the Use of Animals of the Institute of Health Sciences – ICS/UFBA. **Results:** The main factors that affected the standardized execution of a series of experiments included the fixation time and type of chemical fixative, the duration of the diaphanization steps, and the extent of paraffin infiltration. The immunofluorescence analyses are being completed. **Conclusion:** The results of this work reinforce the importance of protocol standardization for FFPE samples, improving the reproducibility and reliability of studies aimed at tissue characterization in various contexts of neurophysiology, neuropathology and cancer research.

Acknowledgments: CAPES, CNPq, FAPESB, FINEP and PIBIC-UFBA

Title: Adipose tissue and histomorphometry of heart of rats exposed to high-fat diet in different stages of life

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Thematic axis: Cardiovascular system

Keywords: Cardiovascular diseases. Metabolic programming. High-fat diet.

Abstract:
Cardiovascular diseases (CVD) currently represent 17.9 million deaths, and High consumption of saturated fats, including during the perinatal period, can cause cardiac outcomes in offspring. Therefore, the objective was to evaluate the effects of a high-fat diet on adipose tissue and cardiac histomorphometry in adult rats. Study approved by the ethics committee (protocol 04/2019). Wistar male rats were divided into three groups: Control Group (CG, n =8), composed of animals exposed to control diet (Nuvilab ®) for all life until 90º day; Control/High-fat diet Group (CHG, n = 8), formed by animals from mothers fed control diet and exposed to High-fat diet (HFD) in post-weaning (23% fat); High-fat diet/ High-fat diet Group (HHG, n =8), formed by animals exposed to the HFD for all life until 90º day. At the end of the study, on the 90º day, the animals were euthanized, and the adipose tissue and heart were removed. Statistical analysis: A one-way ANOVA was used to evaluate the data, followed by the Tukey post hoc test. The statistical significance was considered assuming a critical level of 5%. The weight of adipose tissue was higher in rats submitted to the HFD (CHG 20.76 ± 4.96; HHG 28.25 ± 8.65 g) than in the control group (CG 13.33 ± 1.92 g; p = 0.0134). In addition, the HHG presented a higher weight of adipose tissue compared to the CHG, p = 0.0002. The absolute and relative data of the heart did not show a difference in the evaluation of the thickness of the left ventricle (Absolute: CG 3.088 ± 0.28; CH 3.117 ±0.27; HHG 3.182± 0.24 mm², p =0.7759. Relative: CG 822.7 ± 110.2; CH 818.2 ± 83.03; HHG 884.4 ± 54.17, P=0.2993). The consumption of HFD was able to change the weight of adiposity in adult rats, although the HFD did not affect the thickness of the LV.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: VALIDATION OF THE DB/DB MOUSE AS A MODEL OF ERECTILE DYSFUNCTION: STRUCTURAL AND FUNCTIONAL ALTERATIONS IN THE PUDENDAL ARTERY AND CORPUS CAVERNOSUM

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Thematic axis: Sistema Cardiovascular

Keywords: Diabetes. Erectile dysfunction. Mouse. Experimental models.

Abstract:
Erectile dysfunction (ED) is a prevalent complication of diabetes, but robust animal models are limited. This study evaluated db/db and lean mice (20–24 weeks) to validate a diabetic ED model through murinometric, structural, and functional analyses of the pudendal artery (PA) and corpus cavernosum (CC). Db/db mice showed significantly higher body weight (49.4 ± 1.24 g vs. 26.4 ± 0.67 g), glycemia (421.6 ± 68.69 mg/dL vs. 175.2 ± 13.97 mg/dL), thoracic circumference (8.9 ± 0.34 cm vs. 7.04 ± 0.32 cm), abdominal circumference (11.06 ± 0.49 cm vs. 7.64 ± 0.22 cm), BMI (0.54 ± 0.02 vs. 0.32 ± 0.01 g/cm²), and Lee index (1.72 ± 0.01 vs. 1.43 ± 0.01). Histological and confocal analyses revealed decreased collagen content and smooth muscle/collagen ratio in the PA, along with hypotrophic remodeling (reduced cross-sectional area and wall thickness). The CC showed reduced total area and elevated oxidative stress. Vascular reactivity was impaired in db/db mice, with reduced distensibility of the PA under intraluminal pressure and attenuated luminal/external diameter changes. Functionally, db/db mice demonstrated endothelial dysfunction with a right-shifted acetylcholine response (pD_2: 6.87 ± 0.08 vs. 7.28 ± 0.03) and reduced responsiveness to sildenafil. However, intracavernosal pressure following cavernous nerve stimulation did not differ between groups. These results confirm that db/db mice exhibit significant structural and functional vascular alterations consistent with ED, supporting their use as a model for studying the vascular mechanisms underlying diabetes-associated erectile dysfunction.

Financial Support: CNPq, FAPESB.
The study was approved by the Ethics Committee on Animal Use and conducted in accordance with Institutional Animal Care and Use Committee from the University of South Carolina School of Medicine-Columbia (protocol (2502-101534-080720), and for Ethics in the Use of Animals of the ICS-UFBA (#6732080721).

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Objetos impressos em 3D para estudo do sistema respiratório nas oficinas makers**

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Thematic axis: Sistema Respiratório

Keywords: Objetos impressos. Sistema respiratório. Estudo.

Abstract:
O foco deste projeto em desenvolvimento é expor o projeto que tem sido desenvolvido na oficina Maker de Criação, Tecnológica e Prática. Nesta oficina buscamos estimular nos estudantes a criatividade, o pensamento crítico do uso da tecnologia e a aprendizagem prática por meio da criação de projetos interdisciplinares nas Oficinas Makers. Santos (2024) destaca que os espaços que englobam cultura maker, contribuem para a aprendizagem dos alunos e promovem a integração entre professores, estudantes e comunidade escolar. Está sendo desenvolvido objetos, através da tecnologia de impressão 3D, que envolve a impressão de itens com altura, largura e profundidade que é produzido em camadas. O objetivo central deste trabalho é produzir peças para estudo do sistema respiratório humano. Este projeto utiliza uma metodologia de pesquisa prática qualitativa, por meio da aprendizagem baseada em projetos. Franks e Franco (2020) deixam claro que a Aprendizagem Baseada em Projetos, promove o engajamento dos alunos e desenvolvimento de competências como pensamento crítico e colaboração. Franks e Franco (2020) ainda destaca que esse método contribui para um ensino mais significativo e contextualizado. Para desenvolvimento dos projetos das oficinas utilizaremos o trabalho em grupo com divisão de papeis. Também estamos utilizando os Diários de bordo por meio dos portfólios digitais com registros do processo. Através da impressão dos objetos em 3D é possível ver na prática aspectos do sistema respiratório humano e suas características. Por fim, esse projeto através das oficinas makers explora o potencial criativo dos alunos, mostrando que todos possuem ideias, sugestões e que todas as intervenções são bem vindas para o grupo como um todo.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Abordagem Fisioterapêutica Pós Videotoracoscopia em Crianças Pneumopatas em um Hospital Público de Salvador.**

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Eixo temático: Sistema Respiratório

Palavras-chave: Crianças. Derrame pleural. Fisioterapia. Pós-operatório. Videotoracoscopia.

Resumo:
O derrame pleural parapneumônico é uma complicação frequente e potencialmente grave da pneumonia na infância, associada a elevada morbimortalidade. A videotoracoscopia (VATS) tem se mostrado uma alternativa terapêutica eficaz, promovendo menor tempo de internação, redução da dor e menores taxas de complicações em comparação à toracotomia convencional. Apesar disso, ainda há escassez de evidências sobre o papel da fisioterapia no manejo pós-operatório de pacientes pediátricos submetidos a esse procedimento. O presente estudo tem como objetivo descrever as intervenções fisioterapêuticas aplicadas pós VATS em crianças internadas em unidade de terapia intensiva pediátrica, bem como analisar seu perfil clínico e evolução. Trata-se de dois relatos de caso envolvendo crianças de 11 e 10 anos, ambas com diagnóstico de pneumonia associada a derrame pleural, pós VATS em um hospital público de Salvador, com tempo médio de internação de 12 dias. CAAE:75525923.6.0000.0047. Resultados: A criança A, 11 anos, sexo masculino, apresentou pneumonia evoluindo para derrame pleural em hemitórax esquerdo. O dreno torácico foi retirado no 5º dia, com alta da cirurgia pediátrica no 6º dia. O RX de tórax demonstrou boa expansão pulmonar pós VATS e fisioterapia. As intervenções fisioterapêuticas incluíram EPAP, treino de padrões respiratórios, sedestração e deambulação, favorecendo a recuperação clínica e a alta hospitalar. A criança B, 10 anos, sexo masculino, com pneumonia e derrame pleural em hemitórax esquerdo. O dreno foi retirado no 9º dia e recebeu alta da equipe cirúrgica no 10º dia. A fisioterapia contribuiu para a reexpansão pulmonar, sendo realizado técnicas como EPAP, sedestração e deambulação. Conclusão: A fisioterapia mostrou-se uma proposta terapêutica relevante no contexto multidisciplinar, favorecendo a evolução clínica de crianças pneumopatas e devendo ser continuamente associada aos avanços tecnológicos disponíveis na assistência em saúde.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Physiotherapeutic Approach After Video-Assisted Thoracoscopic Surgery in Children with Pulmonary Diseases in a Public Hospital in Salvador.

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Thematic axis: Respiratory System.

Keywords: Children. Pleural effusion. Physiotherapy. Postoperative care. Video-assisted thoracoscopic surgery.

Abstract:
Parapneumonic pleural effusion represents a frequent and severe complication of childhood pneumonia, associated with high morbidity and mortality. Video-assisted thoracoscopic surgery (VATS) has proven to be an effective therapeutic alternative, with shorter hospital stays, reduced pain, and lower complication rates when compared to conventional thoracotomy. However, there is a lack of evidence regarding the role of physiotherapy in the postoperative management of these pediatric patients. This study aims to describe the physiotherapeutic interventions applied after VATS in children admitted to a pediatric intensive care unit, as well as to analyze their clinical profile and outcomes. It reports two clinical cases involving children aged 11 and 10 years, both diagnosed with pneumonia associated with pleural effusion, who underwent VATS in a public hospital in Salvador, with an average hospital stay of 12 days. CAAE:75525923.6.0000.0047. Results: Patient A, an 11- year-old male, presented with pneumonia progressing to pleural effusion in the left hemithorax. The chest drain was removed on the 5th postoperative day, with discharge from the pediatric surgery team on the 6th day. A chest X-ray demonstrated good pulmonary expansion after VATS and physiotherapy. Interventions included EPAP, breathing pattern training, bedside sitting, and ambulation, which supported clinical recovery and hospital discharge. Patient B, a 10-year-old male, also presented with pneumonia and pleural effusion in the left hemithorax. The chest drain was removed on the 9th postoperative day, and he was discharged by the surgical team on the 10th day. Physiotherapy contributed to pulmonary re-expansion through techniques such as EPAP, bedside sitting, and ambulation. Conclusion: Physiotherapy proved to be a relevant therapeutic proposal in the multidisciplinary context, supporting the clinical progress of pediatric patients with pneumonia and requiring continuous integration with technological advances available in healthcare.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Influence of Angiotensin-(1-7) on the Progression from Acute Kidney Injury to Chronic Kidney Disease: Antioxidant and Anti-Inflammatory Actions**

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Thematic axis: Urinary System

Keywords: Acute kidney injury. Angiotensin-(1-7). Chronic kidney disease.

Abstract:
Growing evidence suggests that angiotensin-(1-7) [Ang-(1-7)] exerts protective effects in different experimental models of kidney injury. However, its impact on late-stage recovery after rhabdomyolysis-induced Acute kidney injury (AKI) is still unknown. This study aimed to investigate the effects of Ang-(1-7) on renal recovery in a model of progression from AKI to Chronic Kidney Disease (CKD). Seventeen 10- week-old male Wistar rats were subjected to I.M. injection of either 50% glycerol (8 mL/kg) or saline. Forty-eight hours after injury induction, animals were treated with Ang-(1-7) or vehicle for 26 days. The animals were assigned to three experimental groups: Control –I.M. saline injection and vehicle treatment, n=6; Gly – I.M. glycerol injection and vehicle treatment, n=6; and Gly+Ang-(1-7) – I.M. glycerol injection and Ang-(1-7) treatment, n=5. After 28 days, animals were euthanized, and kidneys were harvested for histological analysis and assessment of inflammatory and oxidative stress markers. Serum Ang-(1-7) was measured. CEUA/ICS nº9562110322. At the end of the study, serum Ang-(1-7) levels were significantly elevated in the Gly+Ang-(1-7) group. Both Gly and Gly+Ang-(1-7) animals exhibited increased tubulointerstitial lesion area compared to controls, with no significant difference between Gly and Gly+Ang- (1-7). Gly animals showed reduction in antioxidant enzyme activity (catalase and glutathione peroxidase), which was reversed by Ang-(1-7). Ang-(1-7) significantly increased superoxide dismutase activity compared to the Gly group. Lipid peroxidation was significantly elevated in Gly animals and mitigated in the Gly+Ang-(1-7). Additionally, TNF-α levels, elevated in Gly animals, were normalized by Ang-(1-7), while IL-10 levels were significantly increased in Gly+Ang-(1-7) animals compared to Control and Gly. These findings indicate that Ang-(1-7) exerts both antioxidant and anti-inflammatory effects in the rhabdomyolysis-induced AKI-to-CKD progression model.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Pre-Conception Acute Kidney Injury Triggers Distant Organ Oxidative Stress During Gestation and Affects Nephrogenesis in Rats**

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Thematic axis: Urinary system

Keywords: Acute kidney injury. Intrauterine development. Oxidative stress. Pregnancy. Renal ischemia-reperfusion.

Abstract:
Pre-conception acute kidney injury (AKI) leads to gestational complications that may impair fetal development. We investigated whether pre-conception AKI increases maternal-fetal oxidative stress and whether this could impact on nephrogenesis. Wistar rats (230g), approved by CEUA/UFPE Nº110/23, underwent bilateral renal ischemia-reperfusion to induce AKI (IR, n=7) or sham surgery (Sham, n=5). AKI was confirmed by the elevated serum urea (420%; $p<0.001$) and creatinine (120%; $p<0.01$) 24 hours post-surgery, which normalized after 30 days. Subsequently, females were mated and euthanized on gestational day 20. The AKI did not affect placental or fetal weight. In the placentas from IR group, we observed fibrotic areas and hyperplasia of trophoblast giant cells with increased cytoplasmic content, alongside a decrease in glycogen content in the labyrinth zone (25%; $p<0.05$). Fetal kidneys from IR group exhibited a larger nephrogenic zone (24%; $p<0.001$) and higher protein content of Beclin1, Bax, and Bcl2 (34%, 38%, and 54%, respectively; $p<0.01$) compared to the Sham group. The livers of IR dams showed higher lipid peroxidation (108%, $p<0.05$), basal superoxide anion production (84%, $p<0.05$), and increased NADPH oxidase activity (33%, $p<0.01$), coupled with decreased catalase activity (40%, $p<0.01$). In the placentas of the IR group, high basal superoxide anion production (140%, $p<0.01$) and catalase activity (63%, $p<0.05$) were observed. Furthermore, the livers and kidneys of IR fetuses displayed increased lipid peroxidation (24%, $p<0.05$; 28%, $p<0.01$), basal superoxide anion production (80%, $p<0.05$; 105%, $p<0.001$), and NADPH oxidase activity (66%, $p<0.01$; 86%, $p<0.001$), alongside decreased catalase activity (55%, $p<0.01$; 36%, $p<0.05$). In conclusion, pre-conception AKI impairs the maternal-fetal environment by increasing oxidative stress, which may delay nephrogenesis and predispose the offspring to future diseases.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **IMPACT OF UNILATERAL RENAL ISCHEMIA-REPERFUSION ON CONTRALATERAL KIDNEY AND HEART FUNCTION: ROLE OF OXIDATIVE STRESS, THE RENIN-ANGIOTENSIN-ALDOSTERONE SYSTEM, AND SYMPATHETIC MODULATION**

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Thematic axis: Urinary System

Keywords: Acute kidney injury. Ischemia-reperfusion. Oxidative stress. Renal hemodynamics. Renin-angiotensin system.

Abstract:
Acute kidney injury (AKI), often associated with renal ischemia-reperfusion (IR), is linked to high morbidity and mortality. The mechanisms involved are not fully understood. This study aimed to evaluate the effects of AKI induced by unilateral IR in the left kidney on the function and oxidative stress of the right kidney (contralateral) and heart, investigating the therapeutic potential of NADPH oxidase (NOX) inhibition, AT1 receptor blockade, and β1-adrenergic blockade. The protocol was approved by CEUA/UFPE n°73/2019. Rats were subjected to hemodynamic assessment and unilateral IR (30 min of ischemia followed by 60 min of reperfusion). Groups (n=6): Sham (simulated surgery); IR; IR+apocynin (100 mg/kg, in drinking water, 24h before surgery); IR+losartan (10 mg/kg, p.o., 1h before surgery); IR+atenolol (100 mg/kg, p.o., 1h before surgery). During reperfusion, there was an increase in mean arterial pressure (25%; $p<0.05$), a reduction in renal blood flow (65%; $p<0.01$), and an increase in renal vascular resistance (180%; $p<0.001$) in the contralateral kidney. Serum levels of creatinine (95%; $p<0.01$), urea (54%; $p<0.001$), total CK (66%; $p<0.01$), and CK-MB (>4 times; $p<0.001$) were elevated. In the contralateral cortex, there was a reduction in (Na^++K^+)ATPase activity (65%; $p<0.001$), an increase in lipid peroxidation (100%; $p<0.001$), NOX activity (100%; $p<0.001$), and a reduction in SOD activity (28%; $p<0.001$). In the left ventricle, IR reduced SERCA activity (65%; $p<0.001$), increased PMCA activity (100%; $p<0.001$), elevated lipid peroxidation (40%; $p<0.001$) and NOX activity (128%; $p<0.001$), and reduced SOD (22%; $p<0.01$) and catalase (32%; $p<0.001$) activities. Most of these changes were attenuated by treatments with apocynin, atenolol, and losartan. In conclusion, unilateral renal IR induced injury in the contralateral kidney and heart through mechanisms mediated by oxidative stress and sensitive to NOX inhibition, AT1 receptor blockade, and β1-adrenergic blockade.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Nephroprotective effect of *Syagrus coronata* seeds fixed oil in an experimental model of acute kidney injury by ischemia-reperfusion: modulation of oxidative stress, inflammation and tubular integrity

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Thematic axis: Urinary system

Keywords: *Oxidative stress. Inflammation. Ischemia-reperfusion. Acute kidney injury. Licuri oil. Syagrus coronata.*

Abstract:
Acute kidney injury (AKI) induced by ischemia-reperfusion (IR) is a severe clinical condition with high mortality and limited therapeutic options. This study investigated whether *Syagrus coronata* seeds fixed oil (Scor), known for its antioxidant and anti-inflammatory properties, could exert nephroprotective effects. Adult male rats were subjected to AKI induced by bilateral IR or sham surgery. Concurrently, the rats (n=5- 8/group) received either Scor administration (75, 150, or 300 mg/kg, i.p.) or vehicle (2% Tweeen-80, used to emulsify Scor and ensure intraperitoneal absorption). After 72 h, renal cortex, blood, and urine samples were collected to analyze renal function, structure, and redox balance and inflammatory markers. The study was approved by the CEUA-UFPE (nº109/23). The statistical analysis involved one-way ANOVA (followed by Tukey's test) or Kruskal-Wallis (followed by Dunn's test) with statistical significance set at $p<0.05$. All tested doses of Scor improved kidney function by preventing the renal IR-induced increase in serum creatinine (30-60%, $p<0.05$) and urea (32-52%, $p<0.01$). Furthermore, Scor treatment prevented IR-induced glomerulonephritis, tubular atrophy and necrosis, and also blunted the decrease of $(Na^+ + K^+)$ATPase activity, estimated by the measurement of ouabain-sensitive ATP hydrolysis. The mechanism of Scor protective effects appears to be dependent of the reduction of: i) lipid peroxidation (40- 44%, $p<0.01$); ii) NADPH oxidase activity (32-43%, $p<0.01$); iii) and inflammatory cytokine TNF-α content (34%, $p<0.001$) in renal cortex. On the other hand, Scor treatment increased the activity of SOD (87- 200%, $p<0.01$) and catalase (58-69%, $p<0,05$), together with elevation of GSH (100%, $p<0,001$). In conclusion, our data indicate that Scor possesses nephroprotective effects against IR-induced AKI, likely through its antioxidant and anti-inflammatory actions.

Title: **Nephroprotective Effects of Valproic Acid and Resveratrol in Unilateral Ureteral Obstruction: Modulation of Oxidative Stress**

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Thematic axis: Sistema Urinário

Keywords: Kidney disease. Oxidative stress. Resveratrol. Unilateral Ureteral Obstruction. Valproic Acid.

Abstract:
Renal disease presents high morbidity and remains a significant public health concern with limited therapeutic options. The repurposing of valproic acid (VPA) and resveratrol (RESV) may offer a promising alternative. This study investigated the effects of VPA and RESV on oxidative stress and renal histopathology in rats subjected to unilateral ureteral obstruction (UUO). Male rats (350–400g, n=7-9/group; CEUA-UFPE: 002/2024) underwent UUO-induced kidney injury, and were daily treated with VPA (150 mg/kg, ip), RESV (25 mg/kg, ip) or VPA + RESV. A control group underwent a simulated surgical procedure (Sham). After 10 days from the UUO/Sham surgery, the rats were euthanized, and the obstructed kidney was collected. Histopathological analysis revealed that the UUO group showed glomerulosclerosis, tubular dilation, and degeneration. The RESV group showed tubular regeneration without casts; the VPA group displayed glomerular restoration and tubular regeneration; and the combined group (VPA+RESV) presented preserved glomeruli, dilated tubules, and regeneration. In the renal cortex, UUO significantly increased lipid peroxidation (440%, $p<0.001$), basal superoxide anion production (350%, $p<0.001$) and NADPH oxidase activity (74%, $p<0.01$), while simultaneously decreasing catalase activity (50%, $p<0.01$). VPA and RESV treatments, whether alone or in combination, effectively prevented the UUO-induced changes in lipid peroxidation, basal superoxide anion production, NADPH oxidase activity and catalase activity. Superoxide dismutase activity in the renal cortex was unaffected by UUO or VPA/RESV treatments. In conclusion, these results highlight the nephroprotective effects of VPA and RESV through modulation of oxidative stress.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Sepsis-Induced Acute Kidney Injury Causes Late Renal Changes and Hypertension: Protective Effects of Mycophenolate Mofetil

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Thematic axis: Renal and cardiovascular physiology

Keywords: ATPases. Kidney injury. Lipopolysaccharide (LPS). Mycophenolate mofetil. Oxidative stress. Tubular ATPases.

Abstract:
Sepsis-induced acute kidney injury (AKI) is a condition associated with high morbidity and mortality. It can predispose individuals to chronic kidney disease and hypertension, even after apparent functional recovery. Therefore, this study aimed to evaluate the late effects of lipopolysaccharide (LPS)-induced AKI in Wistar rats on systolic blood pressure (SBP), oxidative stress, tubular Na^+- transporting ATPases, renin-angiotensin system (RAS) activation, and inflammatory markers in the renal cortex. Additionally, we assessed whether mycophenolate mofetil (MMF), an immunosuppressant, could prevent LPS-induced changes. Male Wistar rats (300–350 g; n=6/group; approved by CEUA nº 0066/2018) were assigned to four experimental groups: Control, Control+MMF, LPS, and LPS+MMF. AKI was induced by subcutaneous administration of LPS (10 mg/kg). MMF (30 mg/kg, orally) was administered 24 hours before LPS. Control groups received 0.9% NaCl (1 mL/kg, s.c.), with or without MMF pre-treatment. After 4 weeks, LPS-treated rats showed reduced creatinine clearance (62%, $p<0.01$) and increased SBP (6%, $p<0.01$). In the renal cortex, they also exhibited increased lipid peroxidation (42%, $p<0.001$), higher NADPH oxidase activity (36%, $p<0.001$), and higher (Na^++K^+) ATPase activity (55%, $p<0.001$) in comparison to Control group. Interestingly, LPS did not affect the levels of AT1R, NFκB, or inflammatory cytokines (TNF-α and IL-6). MMF treatment prevented late LPS-induced changes in SBP, creatinine clearance, ATPase activity, and lipid peroxidation. In conclusion, these data suggest that sepsis-induced AKI leads to late renal changes that may increase the risk of hypertension and chronic kidney disease development. These changes might be partially dependent on immune system activation.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: AGMATINE ATTENUATES ACUTE TUBULAR INJURY INDUCED BY ISCHEMIA- REPERFUSION BY MODULATING THE REDOX BALANCE.

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Thematic axis: Urinary system

Keywords: Acute kidney injury. Agmatine. Sodium transport. Oxidative stress. Ischemia-reperfusion.

Abstract:
Acute tubular injury (ATI) is a common clinical finding in acute kidney injury (AKI), and oxidative stress is a key pathophysiological factor in this condition. Agmatine (AG) is a secondary metabolite of L-arginine that exerts protective effects through antioxidant mechanisms. The aim of this study was to evaluate the effect of AG on ischemia/reperfusion (IR)-induced AKI, focusing on the preservation of ATP-dependent tubular Na^+ transport, modulation of oxidative stress, and renal hemodynamic repercussions, using both in vitro and in vivo models. The protocol was approved by the CEUA-UFPE (no. 39/2015). In vitro, LLC-PK1 cells were exposed to AG (up to 10^{-4} M, for up to 24 h) prior to hypoxia-reoxygenation induction to assess cell viability. In vivo, male Wistar rats (120 days old) were subjected to bilateral renal IR and treated with AG (1 mg/kg, orally) for 7 days before and 24 h after IR. AG exposure preserved LLC-PK1 cell viability under basal conditions and also exerted a cytoprotective effect against hypoxia-reoxygenation in this cell line. In vivo, AG attenuated the deleterious effects of renal IR by reducing serum creatinine (40%, $p<0.05$), blood urea nitrogen levels (35%, $p<0.01$), and urinary protein excretion (80%, $p<0.01$). Furthermore, AG improved renal hemodynamics by increasing mean arterial pressure by 24% ($p<0.05$), renal blood flow by 24% ($p<0.001$), and glomerular filtration rate by 150%($p<0.001$). AG also reduced lipid peroxidation (35%, $p<0.001$) and NADPH oxidase activity (40%, $p<0.01$) and prevented the inhibition of Na^+ -transporting ATPases. In conclusion, agmatine (AG) exhibited a protective effect against ischemia/reperfusion-induced AKI, particularly through its cytoprotective action, regulation of oxidative stress, maintenance of ATPase activity, and improvement of renal hemodynamics.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: CLOSANTEL PROTECTS ACUTE KIDNEY INJURY INDUCED BY ISCHEMIA-REPERFUSION BY PRESERVATING ATP-DEPENDENT NA^+ TRANSPORT AND RENAL HEMODYNAMICS THROUGH ANTIOXIDATIVE ACTIONS

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Thematic axis: Urinary system

Keywords: Acute tubular injury. Closantel. Ischemia-reperfusion. NADPH oxidase. Oxidative stress.

Abstract:
Renal ischemia-reperfusion (IR) boosts the generation of reactive oxygen species (ROS), which compromises tubular transport, activates tubuloglomerular feedback, and reduces the glomerular filtration rate (GFR). The cotransporter NKCC2 modulates tubuloglomerular feedback and is regulated by SPAK/OSR1. Closantel, an inhibitor of SPAK/OSR1, might interfere with this regulatory axis. Thus, this study aimed to evaluate closantel's effects on renal hemodynamics, sodium tubular transport, and oxidative stress in rats subjected to renal IR. Wistar rats (300–350g; n=6-8/group; approved by CEUA-UFPE 50/2021) underwent 30 minutes of bilateral renal ischemia, followed by 72 hours of reperfusion. They received closantel (2.5, 5.0, or 10.0 mg/kg orally) 24 hours before and after ischemia. Renal IR significantly increased serum creatinine (72%, $p<0.001$), proteinuria (~4x, $p<0.001$), albuminuria (400%, $p<0.001$), and tubular injury score (700%, $p<0.001$). It also reduced (Na^++K^+)ATPase activity in the cortex (40%) but increased it in the medulla (133%, $p<0.01$). Furthermore, IR elevated lipid peroxidation (60%, $p<0.01$) and NADPH oxidase activity (100%, $p<0.01$) in both the renal cortex and medulla, while decreasing superoxide dismutase and catalase activities (40%, $p<0.01$). Closantel attenuated the IR-induced changes at all tested doses. The effects of closantel (10 mg/kg) were accompanied by an elevation of glomerular filtration rate (80%, $p<0.001$) and renal blood flow (10%, $p<0.05$), and a decrease in renal vascular resistance (30%, $p<0.01$). In conclusion, closantel likely protects sodium transport ATPases from IR-induced damage by modulating oxidative stress. This effect may occur through inhibiting NADPH oxidase and activating SOD and catalase, thereby improving renal hemodynamics.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Programming effects of maternal malnutrition on metabolism and thyroid morphology in young and aged male rats**

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Thematic axis: Endocrine and Reproductive System

Keywords: Dohad. Maternal protein restriction. Thyroid.

Abstract:
Maternal malnutrition represents a political and social issue that infringes human rights, affecting the health of both mothers and their descendants. This context is based on the Developmental Origins of Health and Disease (DOHaD) theory. Experimental research shows that Maternal Protein Restriction (MPR) can impair multiple organs and systems throughout the offspring's life, leading to metabolic programming and risk of chronic diseases. We aim to evaluate the consequences of MPR on thyroid morphophysiology in male offspring rats at postnatal day (PND)21 and 540. Sprague Dawley rats were divided into two groups: born from dams that received a normoprotein diet (CTR, 17% protein) or a hypoprotein diet (GLLP, 6% protein) during gestation and lactation. Some of the animals were euthanized at PND21, and another part at PND540. The thyroids and blood were collected for metabolic (n=8), histopathological (n=5), and molecular analyses (n=5). For statistics, we used Shapiro-Wilk for normality, and a posteriori Student T test or Mann- Whitney, considering $p<0.05$ for significance (CEUA 5119280121). At PND21, we observed a decrease in thyroid follicles ($p=0.0120$), serum T3 ($p=0.0002$), and T4 levels ($p=0.0036$), alongside an increase in the genic expression of *Tshr* ($p=0.0294$) and *Ar* ($p=0.0173$) in the GLLP group. At PND540, we showed an increase in the serum T4 ($p=0.0166$) and mast cells ($p=0.0202$), and a decrease in the elastic fibers ($p<0.001$). In addition, we observed proliferative lesions (parafollicular cell adenoma, diffuse follicular cell hyperplasia, and focal parafollicular cell hyperplasia) in the GLLP aged rats, which were associated with some miRNAs associated with a potential epigenetic programming. Therefore, our findings suggest that MPR impacts thyroid morphophysiology and causes metabolic programming early in life, leading to long- term hormonal imbalances and proliferative lesions that may impair thyroid and systemic homeostasis during aging.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Perinatal exposure to acephate, an organophosphorus pesticide, and its impact on biometric, biochemical, and hormonal parameters of rat dams and offspring**

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Thematic axis: Endocrine and Reproductive System

Keywords: Acephate. Lactation. Metabolic Programming. Pesticides. Pregnancy.

Abstract:
Brazilian agroeconomy is growing exponentially, supported by the use of pesticides such as acephate, one of the most widely used in agricultural crops. However, attention must be paid to the increasing number of poisoning cases and diseases caused by exposure to this chemical. Studies indicate that exposure to acephate during pregnancy and lactation leads to metabolic disorders that impair development, as low birth weight, which may progress to chronic diseases like type 2 diabetes mellitus and other comorbidities throughout life. The experimental protocol was approved (CEUA:004/2020). From the 7th gestational day, Wistar rats were randomized into groups: Control (CON) with filtered water; Acephate 4.5mg/kg of body weight (bw)–ACE4.5, and 0.45mg/kg bw–ACE0.45, n=8/group, exposed by orogastric gavage until weaning. Biometric, biochemical, and hormonal parameters of dams and offspring were evaluated. Statistical analysis: One-Way ANOVA followed by Dunnett's post hoc test, with $p<0.05$ as significant. ACE0.45 dams showed lower body weight during pregnancy (-7% vs CON) and lower food intake during lactation (-11% vs CON), reduced lean mass (LM, -9% vs CON) and visceral fat mass (VFM, -50% vs CON), as well as lower triglyceride (-56% vs CON) and triiodothyronine (T3, -55% vs CON). ACE4.5 dams showed lower T3 and higher insulin (-27%;2.6x vs COM). ACE4.5 male offspring showed lower body weight and naso-anal length (NAL) at birth (-15%; -7% vs CON) and at weaning (-26%; -20% vs CON). At weaning, this group had lower fat mass (FM), LM, and VFM (-39%; -21%; -59% vs CON). ACE4.5 female offspring also showed lower body weight and NAL at birth (-17%; -6% vs CON) and at weaning (-26%; -18% vs CON), lower FM and LM (-36%; -21% vs CON). We suggest that perinatal exposure to acephate, regardless of dose and sex, induces alterations that impair the growth and development of offspring.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Full-Spectrum Cannabidiol Oil Enhances Insulin Efficacy and Reduces Oxidative Stress and Inflammation in Type 1 Diabetic Rats

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Thematic axis: Sistemas Endócrino e Reprodutor

Keywords: Cannabidiol. Glycemic control. Inflammation. Insulin therapy. Oxidative Stress.

Abstract:
Diabetes mellitus is a complex disease requiring insulin therapy and lifestyle change, often associated with poor adherence due to insulin resistance and dose escalation. Cannabidiol (CBD), a non-psychoactive phytocannabinoid from *Cannabis sativa*, has shown metabolic effects in preclinical studies, though not yet tested as an adjunct to insulin in type 1 diabetes (T1D). We hypothesized that full-spectrum CBD oil could improve glycemic and metabolic outcomes in streptozotocin (STZ)-induced diabetic rats. Male Wistar rats (8–10 weeks) received STZ (65 mg/kg) or buffer and were treated for 14 days with CBD (30 mg/kg, every 12 h) or vehicle, alone or with NPH insulin (5 U/day). Groups: non-diabetic (ND, n=8), ND/CBD (n=9), diabetic control (D, n=8), D/CBD (n=8), insulin/vehicle (DI, n=5), and insulin/CBD (DI/CBD, n=5). Blood glucose was monitored daily (unfasted) and at key time points (fasting). Insulin tolerance was assessed after 14 days, and tissues were collected for analysis of oxidative stress and cytokines. Data are mean ± SEM. DI/CBD rats showed reduced unfasted glycemia vs. DI (AUC: 727.9 ± 141.8 vs. 1089 ± 694.8 mg·dL^{-1}·day^{-1}) and lower fasting glycemia (135.8 ± 16.3 vs. 296.7 ± 49.7 mg·dL^{-1}). Insulin tolerance improved in DI/CBD (AUC: 13039 ± 359 mg·dL^{-1}·min^{-1}) but worsened in DI or D/CBD alone (AUC: 8727 ± 548.2 and 5849 ± 1310 mg·dL^{-1}·min^{-1}, respectively). Insulin sensitivity (kITT) was higher in DI/CBD vs. DI (1.628 ± 0.245 vs. 0.746 ± 0.269 %·min^{-1}). Hepatic and cardiac MDA were lower in DI/CBD vs. DI (0.669 ± 0.067 vs. 1.005 ± 0.089 and 0.7138 ± 0.021 vs. 1.857 ± 0.315 nmol·mg protein^{-1}, respectively). TNF-α was reduced in DI/CBD (5.188 ± 0.748 vs. 7.114 ± 0.910 pmol·mL^{-1}), though not significantly. Results suggest that CBD enhances insulin effects and reduces oxidative and inflammatory markers in T1D. Ethics approval: CEUA 6271110324.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Sex-Specific Disruption of Thyroid–Adrenal Axis by Maternal Malnutrition in Offspring Rats: Endocrine Programming Approach.

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Thematic axis: Endocrine and Reprodutive System

Keywords: Adrenal glands. Thyroid. Dohad. Maternal protein restriction.

Abstract:
The Developmental Origins of Health and Disease (DOHaD) concept highlights that early-life development can be influenced by environmental factors, leading to long-term metabolic programming in the offspring. Maternal Protein Restriction (MPR) is a well-established model within this framework, inducing cellular stress and hormonal imbalances that disrupt basal metabolic regulation in descendants. We aim to investigate the consequences of MPR (6% gestation and lactation) on the metabolism and morphophysiological aspects of the thyroid- adrenal axis of male and female postweaning rats. Sprague Dawley rats were divided into 2 groups: Rats born from dams that received a normoprotein diet (CTR, 17% protein) or a low- protein diet (GLLP, 6%) during gestation and lactation. The rats were euthanized at postnatal day 21 (CEUA 5119280121). The blood, thyroids, and adrenal glands were collected for metabolic (n=8), histological (n=6), and molecular (n=5) analyses. Data were analyzed using the Shapiro-Wilk test, followed by the Student's t-test or Mann-Whitney test, considering significance when $p<0.05$. Systemically, there was a decrease in hormones T3 and T4 in the males and a decrease in T4 in the females. Structurally, both males and females had impacts on the thyroids and adrenals. In the thyroid, male rats showed an increase in the Tshr and Ar gene expression. In gene expression of adrenal glands, we observed an increase in the expression of the Sts gene in males and a decrease in Cyp21a2 and Mao in females. In silico analyses demonstrated the potential sex-specific disturbance of MPR, mainly on developmental biology, endocrine response, endoplasmic reticulum, and endocytic pathways, indicating a risk scenario for endocrine diseases. Therefore, we conclude that MPR directly affects the early functioning of the thyroid–adrenal axis in a sex-specific manner, highlighting its role in metabolic programming and the developmental origins of endocrine disorders.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Distinct Molecular Responses in the Placenta Due to Maternal Exposure To Glyphosate and Acephate**

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Thematic axis: Sistema Endócrino e Reprodutor

Keywords: IUGR. Maternal exposure. Pesticides. Placenta.

Abstract:
Maternal exposure to endocrine-disrupting chemicals (EDCs), such as pesticides, can disrupt the intrauterine environment, impair fetal development, and increase the risk of chronic diseases in adulthood. The placenta plays a central role in fetal growth, mediating nutrient and hormone exchange and acting as an endocrine organ. Disruption of placental function by EDCs may compromise nutrient transport and intracellular pathways essential for cellular homeostasis. Among these, nutrient-sensing mechanisms, endoplasmic reticulum (ER) stress signaling, and autophagy are key regulators of placental adaptation and fetal development. Our hypothesis is that exposure to glyphosate (GLY) and acephate (ACE) during pregnancy alters placental function and these molecular pathways. All procedures were approved (protocols 012 and 013/2022). Pregnant Wistar rats received daily oral gavage with filtered water (control), GLY (0.5 mg/kg), or ACE (4.5 mg/kg) from gestational day (GD) 6.5 to 18.5. On GD 18.5, cesarean sections were performed to collect placentas (n=8 dams/group) and fetuses. Placental efficiency was calculated, and protein expression in the junctional zone of male fetuses was analyzed by Western blot, targeting markers of nutrient sensing, ER stress, and autophagy. Pesticide exposure reduced placental efficiency (GLY: −13%; ACE: −10%) and induced intrauterine growth restriction (IUGR) (GLY: −10%; ACE: −13%). GLY exposure in males was associated with placental increased GFAT1 (1.2×), p62 (2×), eIF2α (1.8×), and p-eIF2α (2.1×), suggesting activation of nutrient-sensing and stress-response pathways. In contrast, ACE exposure was associated with placental reduced CHOP (−42.8%), eIF2α (−17.3%), and p-eIF2α (−26.8%), indicating suppression of ER stress signaling. These findings suggest that GLY and ACE differentially affect placental signaling in male fetuses, disrupting key pathways and highlighting the placenta as a target of environmental toxicity.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: EARLY-LIFE HYPOTHALAMIC AND METABOLIC PROGRAMMING BY MATERNAL PROTEIN RESTRICTION: A SEX-SPECIFIC APPROACH

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Thematic axis: Endocrine and Reproductive System

Keywords: Dohad. Developmental Biology. Hypothalamus. Maternal Malnutrition. Metabolism.

Abstract:
The Developmental Origins of Health and Disease (DOHaD) framework emphasizes that adverse conditions during critical developmental periods can lead to lasting alterations in organ function and physiology. Maternal protein restriction (MPR) is associated with disrupted homeostasis and a higher risk of metabolic diseases. Emerging evidence indicates that these outcomes may differ between sexes. We investigated the sex-specific impact of MPR on hypothalamic development and metabolism in rats early in life. Sprague Dawley offspring rats (CEUA 5119280121) were divided into two groups: CTR (17% protein diet) or GLLP (6% protein diet), where the dams received the diets throughout gestation and lactation. At postnatal day 21, the male and female offspring were euthanized, and the blood and hypothalamus were collected for metabolic and molecular analyses. For statistical analyses, the normality test was used, followed by the Student's t-test or the Mann-Whitney test, with $p<0.05$ considered significant. We observed morphological alterations in the hypothalamus for collagen, reticulin, glycoprotein, and neuronal density in the GLLP group for both sexes. We showed that aquaporin1, AR, and BDNF protein expression did not differ in males and females, although there was an increased Erα ($p=0.032$) in the females of the GLLP group. There were no differences in the matrix metalloproteinases 2 and 9 in either sex. We observed a decrease in the circulating levels of IGF1 ($p=0.0007$) and T3 ($p=0.0003$) in the males, in addition to an increase in estrogen ($p=0.006$) and testosterone ($p=0.0145$) in the GLLP group. In females, there were no differences for T3 and corticosterone, although a decrease in T4 levels. Our findings show that MPR partially alters hypothalamic structure in both sexes early in life, but leads to adverse metabolic effects mainly in males, potentially raising their long-term risk for metabolic diseases.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Endocrine and structural disruption of the testis by perinatal exposure to the environmental pollutant tributyltin**

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Thematic axis: Sistemas Endócrino e Reprodutor

Keywords: Tributyltin. Endocrine disruptor chemical. Maternal exposure. Male offspring. Testes.

Abstract:
Tributyltin (TBT) is an organotin compound widely used as a biocide in antifouling paints and industrial applications, known to contaminate aquatic environments and bioaccumulate through the food chain. As an endocrine-disrupting chemical (EDC), TBT interferes with hormonal signaling and has been associated with reproductive and metabolic toxicity. Given that exposure can occur even at low doses and during critical developmental windows, this study investigated whether maternal exposure to TBT, at environmentally relevant doses, during pregnancy and lactation affects testicular morphology, collagen deposition, and testosterone production in male offspring at weaning and puberty. The experimental design was approved (CEUA/010/2019). Wistar rats were mated, and, after pregnancy confirmation, dams were randomly assigned to three groups: control (0.01% ethanol), TBT100 (100 ng/kg bw), or TBT1000 (1000 ng/kg bw). Treatments were administered by oral gavage from gestational day 7 until the end of lactation. No significant differences were observed in body or testicular weights. At PND21, both TBT-exposed groups showed enlarged seminiferous tubule lumina compared to controls (+39% and +77%, respectively). Epithelial height was reduced in TBT1000 rats (-23%). At PND45, luminal diameter (+27, +24%, respectively) and epithelial height were increased in both TBT100 and TBT1000 rats (+22% and 62%, respectively). Significant increases in collagen deposition were observed in the testes of rats exposed to TBT. At PND21, increases of 60% and 2x and at PND45, increases of 48% and 88% were observed in the TBT100 and TBT1000 groups, respectively, compared to the control group ($p<0.0001$). At PND45, serum testosterone was reduced in both TBT100 (−54%) and TBT1000 (−71%) groups compared to controls. These findings demonstrate that early-life TBT exposure induces dose-dependent testicular fibrosis, histological changes, and impaired testosterone production in pubertal male rats.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Maternal Malnutrition Alter Transposable Element Expression in the Rat Prostate and Contribute to the Developmental Origin of Prostate Cancer**

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Thematic axis: Sistema Endócrino e Reprodutor

Keywords: DOHaD. Development. Transposable elements. Inflammation. Prostate cancer.

Abstract:
Background: The DOHaD concept establishes the association between disease throughout lifespan and the early stages of development. Exposure of dam rats to maternal malnutrition is associated with impairment in prostate growth during early-life and an increase in prostate cancer (PCa) incidence during ageing. Here, we use RNA-Seq data to identify transposable elements (TEs) expressed in the prostate and their role of enhancer of gene expression in the prostate during early life and aging to the developmental origin of PCa. Methods: We performed RNA-Seq of the ventral prostate of control (CTR, offspring of mothers fed 17% protein) and malnourished (GLLP, offspring of mothers fed 6% protein) animals on postnatal day (PND) 21 and 540 (n=4 animals per group/age/technique) (CEUA 949). We develop repetitive elements annotation in genome *Rattus norvegicus* (mRatBN7.2) using RepeatMasker tool and aligned the reads using STAR. Reads were quantified using TEtranscripts, differential expression (DE) analysis of TEs was performed with DESeq2 $|Log2 FC| \geq 1.0$ and an p-value < 0.05. Functional enrichment analyses were performed with gprofiler. Results: Genome analysis revealed TEs with the highest number of copies and predominantly LINEs, LTRs, and SINEs were identified. At PND21, we identified 18 DE TEs (13 down and 6 upregulated). At PND540, 13 TEs (11 down and 2 upregulated), with three commonly deregulated in both ages were identified. These TEs had 18,740 copies in the genome. Looking at the role of TEs as enhancers, we identified genes that were 2 kbp upstream of the TEs and were DE in the prostate in GLLP group. In PDN21, 70 neighbours' genes regulate differentiation and anatomical development process, in PND540 12 genes were identified regulating cellular senescence pathways, energy metabolism, and IL-23.
Conclusions: Our results suggest that TEs may act as enhancers of important genes for prostate homeostasis, which may act as precursors of the developmental origin of PCa.

Title: **Effect of exogenous melatonin on the testes of wistar rats undergoing early weaning**

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Thematic axis: Sistemas Endócrino e Reprodutor

Keywords: Malnutrition. Melatonin. Spermatogenesis. Reproduction. Breastfeeding.

Abstract:
Proper nutrition during the critical period of development has a profound impact on the maturation of reproductive structures and functions in mammals. Alterations in this pattern can lead to nutritional imbalance. In this context, melatonin may serve as an adjuvant to nutritional therapy in the treatment and reversal of complications arising from malnutrition. The present study was approved by the Animal Experimentation Ethics Committee of the Center of Biological Sciences at UFPE under the approval number 0052/2022. For this purpose, Wistar rats were used and divided into four experimental groups: control; early weaning; early weaning treated with melatonin at a continuous dose of 200 µg per 100 g of body weight; and early weaning treated with a vehicle composed of ethanol and saline solution. Except for the control group, all animals were weaned on the 16th day after birth. Body weight was measured weekly, and euthanasia was performed on day 51. The testes were weighed and collected for histopathological, morphometric, immunohistochemical, and oxidative stress analyses, while serum was collected for biochemical and hormonal analyses. At the end of the experiment, the early weaning group exhibited an increase in body mass, as well as structural alterations, including a reduction in the diameter and height of the seminiferous tubule epithelium, along with atrophy, vacuolization, and degeneration of germ cells. This group also showed lower production of pachytene spermatocytes, Sertoli cells, and Leydig cells, increased oxidative stress, decreased testosterone concentration, an adverse lipid profile, and reduced PCNA labeling. In contrast, the group treated with melatonin demonstrated improvement in all these parameters when compared to both the control and early weaning groups. These findings suggest that melatonin exerts a restorative role in testicular tissue through various physiological pathways involved in the regulation of this system.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Evaluation of Neonatal Treatment with Riboflavin on Oxidative Balance in Rats with Experimental Cerebral Palsy**

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Thematic axis: Nervous system

Keywords: Cerebral palsy. Oxidative stress. Developmental plasticity.

Abstract:
Cerebral palsy (CP) is the leading cause of neurological disability in childhood. It is a non-progressive condition resulting from early brain injury. It mainly affects motor control, posture and, in some cases, behavior. The ethics committee (n ° 0098/2024) approved this study Rats in estrous period were mated (2 females: 1 male) and, after pregnancy confirmation, divided into two groups treated with saline solution (CS) or riboflavin (CR). Male pups were subdivided for neonatal treatment with riboflavin, at a dose of 100 mg/kg, diluted in 1 g/10 µL, subcutaneously; or treatment with saline solution, by injections with a volume of 10 µL/g of body weight, subcutaneously, both performed during P1 to P21. Thus, the experimental groups Riboflavin Control or Saline Control were formed. At 35 days of life, the rats were euthanized and the motor cortex was collected. Data were expressed as mean ± SEM. The significance level was maintained at 5% ($p<0.05$) for all analyses. Statistical analyzes were performed using GraphPad Prism 8.0. Our data showed a decrease in protein oxidation by carbonyls in the group treated with B2 compared to the control (C: 5.673 ± 0.4313 vs B2: 3.491 ± 0.5122; $p=0.0133$). There was no statistical difference between the groups regarding MDA levels. Regarding the activity of antioxidant enzymes, we found greater activity of the enzymes CAT and SOD in the animals treated with B2, when compared to their controls (C: 0.2734 ± 0.02907 vs B2: 0.9950 ± 0.1050; C: 34.17 ± 13.81 vs B2: 95.67 ± 19.33; $p=0.0002$, $p=0.0270$). No differences were observed between GST enzyme activity (C: 1.013 ± 0.2276 vs B2: 0.6363 ± 0.08051). There were no differences between groups regarding the levels of total thiols, analyzed by sulfhydryls (C: 0.01700 ± 0.004722 vs B2: 0.01600 ± 0.002066). Riboflavin supplementation resulted in reduced oxidative stress markers and increased antioxidant activity in the motor cortex of riboflavin treated animals.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Effects of cannabidiol on anxiety-like behavioral impairments in animals submitted to chronic stress**

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Thematic axis: *Nervous System*

Keywords: Disorders. Field. Maze. Neuroprotection. Reverse.

Abstract:
In the nervous tissue, chronic stress situations trigger anxious behaviors, and isolated phytocannabinoids such as cannabidiol (CBD), from plants of the species *Cannabis sativa* have been an alternative method of treatment for this disorder. The study aimed to analyze how CBD can reverse behavioral damage caused by chronic stress, after the approval of the Ethics Committee On Animal Use (ECAU). Mice of strain C57 were submitted to a chronic stress protocol and subsequently treated with CBD injections. The animals (females) were divided into the following experimental groups: G0-Chronic stress protocol+saline treatment0.9%; G1-no stress protocol+treatment with pure olive oil; G2-chronic stress protocol+treatment with pure olive oil; G3-No stress protocol+Canabidiol 10mg/kg(i.p.); G4-Stress protocol+Cannabidiol 10mg/kg(i.p.). After stress protocols and treatments, the animals were submitted to behavioral tests for anxiety measures such as High Cross Maze (LCE) and Open Field (CA). The behaviors were filmed and subsequently analyzed. For the statistical analysis ANOVA TWO WAY test was used, and the results were expressed as the average + SEM. In the CA test when analyzing the parameter Time in the Center (seconds) group G1 (43.52±19.32) and G0 (36.32±3.44) presented the highest overall average, followed by G2 (21.42±8.55) and G3 (20.63±4.37). Having the G4 the lowest average (17.36±0.19). Demonstrating that chronic stress increased anxiety-like behavior, especially in groups G3 and G4. However, in the LCE test analyzing Open Arms Permanence (seconds), G4 (49.80±6.36) presented the longest mean time, followed by G2(45.31±7.35) and G0(39.18±6.28). Group G3(19.02±4.63) presented the lowest mean time. G1(28.45±6.04), showed intermediate mean values. Given the results obtained, it is concluded that CBD had no effect on stress reduction possibly due to the current sample number.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Use of actigraphy in the diagnosis and therapy of chronic insomnia: case reports.**

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Thematic axis: Nervous system

Keywords: Sleep/wake cycle. Sleep disorders. Activity/rest rhythm.

Abstract:
Chronic insomnia is a sleep disorder defined by criteria such as: displeasure with onset, maintenance or early awakening, significant daytime impairment, and occurrence of at least three nights per week for at least three months. Activity/rest patterns and light exposure can be monitored by actigraphy, a useful chronobiological tool in diagnosis and treatment. The objective of this study is to report the case of two patients with a suspected diagnosis of chronic insomnia who underwent actigraphy. Data were collected using the Morningness and Eveningness Questionnaire (MEQ), the Pittsburgh Sleep Quality Index (PSQI), Sleep Diaries, an AcTrust actigraph, and analysis using ActStudio software. Patient N., 53 years old, extreme morningness, average bedtime: 22:24, Total Sleep Time (TST): 06h19min, Latency: 29 minutes, Sleep Efficiency: 86%, WASO: 08-60 minutes. There were discrepancies between the actigraph recording and the PSQI report (TST = 3h), and in relation to the presence of naps. Periodicity: 23.9 hours, bimodal pattern and high amplitude of the activity/rest rhythm (3449). Patient M., 50 years old, intermediate chronotype, TST: 06h58min, Latency: 38 minutes, Efficiency: 83%, with few non-periodic naps and WASO: 00-170 minutes. Periodicity: 4.7; 14.4; 20.8 and 24.1 hours and low amplitude of the activity/rest rhythm (1356). Cognitive Behavioral Therapy (CBTi) for insomnia was indicated for both cases, with different chronotherapeutic emphases. The strategy used for N. will be phase advancement and elimination of daytime naps, and for M., increased exposure to synchronizing cycles and increased activity during the waking phase. Actigraphy was essential to rule out Advanced Sleep Phase Syndrome, to identify occasional daytime naps, and to detect low interday stability of the activity/rest rhythm, being relevant for diagnosis and in defining specific treatment for CBTi.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Assessment of sexual dimorphism in behavior in different models of obesity**

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Thematic axis: Sistema Nervoso

Keywords: Animal behavior. High-fat diet. Litter size. Obesity.

Abstract:
Considered a global epidemic, obesity is a multifactorial metabolic disease characterized by the abnormal accumulation of body fat. Evidence suggests that chronic inflammation resulting from obesity can negatively influence neural metabolism in specific regions and, consequently, result in behavioral changes. Therefore, this study aimed to compare the effects of obesity on behavioral responses in both sexes using different murine models. This work was approved by the Animal Research Ethics Committee of the Federal University of Sergipe (4519). Male and female Swiss mice were divided into control (CTRL) and obesity (OBS) groups, induced by litter size reduction (LSR), three pups per mother, or a 60% high-fat diet (HFD). Body mass was monitored weekly after weaning for 24 weeks in LSR, and 10 weeks in HFD. Behavioral analyses were performed using five tests: novel object recognition (NOR), three chamber (TCT), light preference (LPT), open field (OF), and tail suspension (TST). For both models, there was a progressive increase in body mass [LSR male $F(17,204) = 2.011$, $p=0.0121$, $n=17$; LSR female $F(17,378) = 1.962$, $p=0.0127$, $n=23$; HFD male $F(6,147) = 12.95$, $p<0.0001$, $n=22$; HFD female $F(6,161) = 7.066$, $p<0.0001$, $n=25$]. Only LSR male didn't increase adiposity but had higher food intake [$F(3,14) = 3.767$; $p=0.0358$]. OBS demonstrated social preference for conspecifics on TCT [$F(95,165) = 3.899$; $p=0.002$]. No changes were observed in NOR and OF. HFD females spent less time in LPT [$t=4.377$; $df=22$; $p=0.0002$]. HFD animals remained immobile longer in TST [$F=8.214$; $p=0.0002$]. These findings demonstrate that obesity impacts distinct behavioral domains in a sex and model-dependent manner. An increase in prosocial behavior was observed in obese animals of all models, as well as in anxiety -like behavior in females and depressive behavior in both sexes by HFD. These data highlight the need for further investigation into the specific neural circuits involved in the behavioral patterns observed in obesity.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: EFFECTS OF CANNABIDIOL ON DEPRESSIVE-LIKE BEHAVIORS IN FEMALE MICE SUBJECTED TO CHRONIC STRESS

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Thematic axis: Nervous System

Keywords: Chronic stress. Depression. Forced Swim Test. Splash Test. Cannabidiol.

Abstract:
Chronic stress is a relevant risk factor for the development of psychiatric disorders such as depression. Among the potential treatments, cannabidiol (CBD) stands out for its therapeutic effects on neuropsychiatric conditions. This study aims to evaluate the effects of chronic stress and CBD treatment on depressive-like behaviors in female C57BL/6 mice. Adult females were distributed into four experimental groups (n=4 animals/group): G1 (no stress + olive oil), G2 (stress + olive oil), G3 (no stress + CBD 10 mg/kg), and G4 (stress + CBD 10 mg/kg). During the experiments, three intraperitoneal injections were administered, one per week for three weeks. After one week of injections (CBD or olive oil), the concomitant chronic stress protocol of immobilization and predator exposure (Wistar rat) was followed. After this period, the animals were subjected to the Forced Swim Test (FST), which assesses immobility time, and the Splash Test (ST), which evaluates grooming behavior. (CEUA Protocol No. 23117-060663/2023/76). For statistical analysis, Two-Way ANOVA was used, with data expressed as Mean ± Standard Error of the Mean (SEM); $p < 0.05$ was considered significant. In the FST, no significant difference was found between the groups; however, G3 (88.25 ± 54.14) showed a tendency for reduced immobility compared to the other groups (G1: 130.33 ± 79.71; G2: 196.33 ± 4.16; G4: 186.00 ± 22), with increased immobility being one of the main parameters of depression in the test. In the ST, the groups treated with CBD, G3 (123.25 ± 49.84) and G4 (130.75 ± 39.67), showed a significant increase in grooming behavior compared to their respective controls (G1: 60.80 ± 12.51; G2: 72.75 ± 21.38); reduced grooming activity is linked to depressive-like behaviors. The data suggest a potential modulatory action of CBD on depression-associated behaviors. These partial results reinforce the importance of increasing the sample size to deepen the understanding of the observed behavioral results.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Relationship between insomnia severity index with chronotype, sleep quality and symptoms of anxiety and depression in university students.

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Thematic axis: Nervous system

Keywords: Chronotypes. Insomnia. Mental health. Sleep quality. University students.

Abstract:
Insomnia has become an increasingly common disorder among university students, resulting from multiple factors involving both academic and personal contexts. Performance pressure, constant deadlines, intense workloads, and irregular sleep habits contribute to difficulty initiating or maintaining sleep, in addition to the perception of non-restorative rest. These factors affect physical and have direct implications for mental health, favoring the emergence of anxiety and depression symptoms. Understanding these relationships is fundamental to developing health promotion strategies targeted at this population. This cross-sectional study aimed to analyze the relationship between insomnia severity, chronotype, sleep quality, and symptoms of anxiety and depression in 66 healthcare students. Data were collected using the Morningness and Eveningness Questionnaire (MEQ), the Pittsburgh Sleep Quality Index (PSQI), Insomnia Severity Index (IGI) and Hospital Anxiety and Depression Scale (HAD). The SPSS analysis included descriptive statistics, Spearman's correlation coefficient, and multivariate analysis. The majority of the sample was female (81.8%), with a mean age of 23.86 years. The results indicated that 75.8% had unsatisfactory sleep quality, 66.6% and 36.3% had signs of anxiety and depression, respectively. Clinically significant insomnia was identified in 30.3% of the participants. Correlation analyses revealed an association between the IGI and all independent variables: PSQI (0.72), HAD-D (0.60), HAD-A (0.40), and Chronotype (-0.39). Multiple linear regression resulted in a statistically significant model [$F(2.63) = 42.055$; $p < 0.001$; $R2 = 0.572$] with the PSQI score ($\beta = 0.558$; $t = 5.486$; $p < 0.001$) and the HAD-D ($\beta = 0.278$; $t = 2.736$; $p < 0.008$) being the predictor variables of the IGI. These findings reinforce the importance of integrated sleep care strategies, considering chronobiological and psychosocial aspects in the university environment.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Is there an association between water consumption and verbal memory alterations in undergraduate students during the initial year of the COVID-19 pandemic?

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Thematic axis: Sistema Nervoso

Keywords: Verbal Memory. undergraduate students. COVID-19 pandemic.

Abstract:
Water can influence cognitive functions, such as verbal recognition processing, in university students. Therefore, this study aims to investigate the relationship between water intake and verbal memory among undergraduate students during the first year of the COVID-19 pandemic. This is a cross-sectional study conducted with 64 male and female students aged
18 to 30. A Google form was used to characterize the sample, and the Rey Auditory Verbal Test was administered via video call. On the same day of the test, the students recorded their water intake on an electronic form. The study was approved by the Research Ethics Committee of the Federal University of Pernambuco (protocol number: 32360720.4.0000.5208). Data were expressed as percentages, medians (ME), minimum (MI), and maximum (MA), and analyzed using the Kolmogorov-Smirnov normality test and Spearman's correlation test, considering $p<0.05$. The study population was predominantly female (78.8%). The water intake of university students ranged from 0ml to 4250ml (ME: 1565ml), with lower intake in the early morning (MI= 0.0 ml; ME= 0.0 ml; MA= 1750 ml; $P<0.0001$), but with no differences between the other shifts of the day. The total amount of water intake during the day correlated directly with verbal recognition errors (r= 0.25; P=0.05). There was an indirect correlation between water intake in the morning shift and verbal recognition (r= -0.30; P=0.02), as well as errors made in the test (r= 0.361; P=0.003). During the early morning hours, this intake was indirectly correlated with long-term memory (r= -0.26; P=0.04) and speed of forgetting (r= -0.27; P=0.03) among university students. Therefore, the data suggest that university students consumed less water than recommended, without showing a preference for drinking at a specific time of day. Furthermore, water intake is related to the processing and consolidation of verbal memory in undergraduate students in the first year of the pandemic.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Association between solar and artificial light exposure and physical activity levels among undergraduate students during the second year of the COVID-19 pandemic

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Thematic axis: Sistema Nervoso

Keywords: Solar light. Artificial light. Physical activity. Undergraduate students. Pandemic.

Abstract:
Light exposure and physical activity among undergraduate students are known to have changed during the COVID-19 pandemic. This study sought to investigate the relationship between the effects of sunlight and screen time exposure on physical activity and sitting time among undergraduate students during the pandemic. This cross-sectional study, conducted with male and female students aged 18 to 30 (CEUA-UFPE; protocol number 32360720.4.0000.5208), was conducted in the second semester of 2021. An online form was used to collect data on sample characterization, sunlight exposure time (SLD), screen use (min/day) (S), and screen use only at night (SLN), and the International Physical Activity Questionnaire Short Form. Data were expressed as mean (±SD), or median (ME), or percentage. Comparison, post-hoc, or correlation tests were applied, considering $P<0.05$. The study included 933 university students, 22.2 ± 2.5 years of age, 71.3% of whom were female. Individuals with low levels of physical activity predominated (45.5%). Light exposure was 20 min/day for sunlight, 540 for screens, and 180 for screen use at night. Male students had greater exposure to sunlight (ME: 30.0 min/day; $P<0.0001$), screens (ME: 600.0 min/day; $P<0.01$), and screens at night (ME: 240.0; $P<0.001$). Walking ($r=0.36$; $P<0.0001$) and total physical activity ($r=0.30$; $P<0.0001$) were related to SLD. The S and SLN times, in turn, were related to the time spent sitting on weekdays (S: $r=0.54$; SLN: $r=0.41$; $P<0.0001$) and weekends (S: $r=0.39$; SLN: $r=0.34$, $P<0.0001$). Students with low levels of physical activity (SLD: ME: 10.0min/day; S: ME: 600.0 min/day) had lower SLD and higher S when compared to those with moderate and high levels ($P<0.01$). Regarding SLN, there was a difference ($P<0.05$) for students with low and moderate physical activity. Therefore, the data indicate that students were more exposed to light, and there was a relationship between sedentary lifestyle and time spent on screens during the pandemic.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: EFFECT OF CURCUMIN ON THE BRAIN ELECTROPHYSIOLOGY AND OXIDATIVE STATUS OF THE FEMALE RATS AND THEIR OFFSPRING

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Thematic axis: Nervous system

Keywords: Brain. Maternal programming. Oxidative stress.

Abstract:
Curcumin is a compound extracted from *Curcuma longa* and is an important food and medication widely used in India and China. Cortical spreading depression (CSD) is an electrophysiological phenomenon, and it is characterized by brief excitation, followed by long-lasting depression of brain cortical activity. This study aimed to investigate brain electrophysiology in female adult rats treated with curcumin and their offspring. Ethics Committee approval protocol number 42/2022. It was used Wistar rats (n = 29; weight between 120 and 140 g) maintained in a 12:12 light: dark cycle with food and water available *ad libitum*. At 42 days of age, they were divided into two groups: 1) the curcumin group (curcumin, 200 mg/kg, orogastrically) treated for 21 days, and 2) the control group (vehicle) for the same period. After that, 19 animals were submitted to CSD electrophysiological recordings, and 10 animals were used to evaluate their offspring. The amplitude, speed, and duration of CSD were analyzed in each experiment. Moreover, the oxidative stress (SOD, CAT, GSSG, GSG:GSSG, TBARS) was evaluated in the brain. Statistical analyses were performed with Prism GraphPad (version 8.0.2, Graph-Pad Software, La Jolla, CA). Values are mean ± SEM; $p<0.05$ was considered significant. Our results showed that the curcumin group adult rats presented the same amplitude (7.8±0.3 vs 7.2±0.2 mV, $p>0.05$) and duration (33.9±1.1 vs 32.8±0.8 s, $p>0.05$), but lower speed (2.8±0.1 vs 3.3±0.1 mm/min, $p<0.001$) of CSD than the control group. No significant difference in oxidative stress was observed between groups. The results of female offspring: higher amplitude (7.8±0.2 vs 6.5±0.2 mV, $p<0.001$), same duration (33.1±1.0 vs 32.5±0.8 s, $p>0.05$), and lower speed (2,7±0.0 vs 3.6±0.0 mm/min, $p<0.001$) of CSD than the control group. Our data indicated that treatment of the mother rats can influence alterations in electrophysiological parameters of their offspring, a concept known as maternal programming.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: ACUTE PHYSIOLOGICAL RESPONSES TO HEAT STRESS DURING SHORT-DURATION MATCHES IN A HOT ENVIRONMENT: A STUDY WITH BEACH TENNIS ATHLETES

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Thematic axis: Exercício Físico

Keywords: Weight loss. Dehydration. Racket sport. Thermal stress.

Abstract:
Beach Tennis is a racket sport played under environmental conditions that can lead to dehydration, even during short-duration efforts. Because it is practiced outdoors and on sand, the sport increases heat stress, yet acute physiological responses remain underexplored. The objective of this study was to analyze body weight loss in beginner Beach Tennis athletes during short matches played in a hot environment, and its relationship with environmental variables and hydration status. Beginner athletes from category D (10 men and 10 women) were evaluated before and after Beach Tennis matches, under ethics approval no. 6.860.638. Body weight, ambient temperature and relative humidity, match duration, subjective perception of hydration, and urine specific gravity were assessed. Statistical analyses were performed using Jamovi software (version 2.5.6), including paired t-tests, Spearman's correlation, Wilcoxon tests, and effect size calculations (Cohen's d and Wilcoxon r), with significance set at $p<0.05$. Participants were 32.5 ± 10.4 years old, and match durations averaged 32 ± 12.5 minutes, ranging from 12 to 53 minutes. Average weight loss was 0.3 ± 0.4 kg per athlete, equivalent to 0.5% of body weight. In 20% of athletes, weight loss exceeded 1% within less than 30 minutes. Weight loss showed a significant negative correlation with final ambient temperature ($\rho = -0.487$) and a positive correlation with relative humidity ($\rho = 0.487$). No significant differences in weight loss were found between winners and non-winners ($p > 0.05$), there was no change in the urine specific gravity between before- and post- match assessments ($p = 0.358$). Subjective hydration perception increased significantly after the matches ($p = 0.042$). Short Beach Tennis matches played in hot and humid environments can induce weight loss and dehydration to a physiologically risky level, even among beginner athletes. The average weight loss of 0.5%, associated with environmental conditions, may impair both health and physical performance.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Effects of dietary readjustment and aerobic exercise on hepatic oxidative status in early stages of aging in an experimental model of obesity**

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Thematic axis: Exercício Físico

Keywords: Aerobic Exercise. Aging. Dietary readjustment. Liver. Obesity.

Abstract:
The association between obesity and aging is strongly linked to the development of hepatic alterations, involving, among other mechanisms, the establishment of a chronic pro-oxidative environment. In this context, interventions such as dietary readjustment and physical exercise emerge as promising alternatives to mitigate the cardiometabolic outcomes associated with these conditions. This study aimed to evaluate the effects of dietary readjustment, alone or combined with physical training, on hepatic redox balance in Wistar rats during early aging stages, in a model of high-fat diet-induced obesity. Thirty-two 9-month-old male rats were used and distributed into four groups (n=8): aging + high-fat diet (HFD) and sedentary - AHS, aging + dietary readjustment (DR) and sedentary - ARS, aging + HFD and trained - AHT, and aging + DR and trained - ART. Readjustment consisted of replacing the high-fat diet with a control diet during the last two months of the experiment. Training was performed on a motorized treadmill, 3x/week, 60 minutes per session, at moderate intensity. At 14 months of age, animals were euthanized 48h after the last training session. Liver samples were collected and stored at -80°C for oxidative stress analyses. Data were analyzed using Two-Way ANOVA followed by Bonferroni post hoc test. CEUA IMS/CAT-UFBA nº 079/2020. Dietary readjustment and training reduced TBARS levels (AHS=10.6±2.1; ARS=4.3±0.5; AHT=2.8±0.5; ART=2.4±0.3) and increased catalase (AHS=0.47±0.05; ARS=0.68±0.05; AHT=0.70±0.05; ART=0.91±0.03) and GPx activity (AHS=0.05±0.001; ARS=0.06±0.002; AHT=0.06±0.003; ART=0.07±0.003). A significant interaction was observed for GPx, with higher enzyme activity when both interventions were combined. We conclude that dietary readjustment and aerobic physical training are effective strategies to restore hepatic redox balance in experimental models of obesity-associated aging.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Lifelong or therapeutic exercise training shapes inflammatory profile of soleus muscle in early stages of aging in an animal model of sarcopenic obesity**

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Thematic axis: Exercício Físico

Keywords: Aerobic exercise. Aging. Muscle. Obesity. Oxidative stress.

Abstract:
Aging and obesity are conditions frequently associated with chronic low-grade inflammation, which contributes to the progression of sarcopenia and metabolic dysfunctions. In this context, physical exercise has been widely recognized as a non-pharmacological intervention capable of modulating inflammatory mediators and preserving skeletal muscle integrity. This study aimed to evaluate the therapeutic and lifelong effects of aerobic training on the production of inflammatory cytokines in early stages of aging in a sarcopenic obesity animal model. Twenty- four male Wistar rats (initial age: 4 months; final age: 14 months) were divided into three groups (n=8/group): aging sedentary + high-fat diet (HFD) - ASed+HFD, aging lifelong trained + HFD - ALT+HFD (training conducted before and during HFD, from 4 to 14 months of age), and aging therapeutically trained + HFD - ATT+HFD (training conducted after obesity induction, from 12 to 14 months of age). Training was performed on a motorized treadmill, at moderate intensity, on alternate days, 60 minutes per session. At the end of the protocol, the soleus muscles were collected, weighed, and used for cytokine analyses. CEUA IMS/CAT-UFBA, nº 079/2020. Data were analyzed using One-Way ANOVA, and differences were considered significant when $p<0.05$. Compared to the ASed+HFD group, both training protocols increased muscle weight (ASed+HFD=0.049±0.005; ATT+HFD=0.063±0.002; ALT+HFD=0.076±0.006) and IL-10 levels (ASed+HFD=29.8±3.5; ATT+HFD=38.5±4.9; ALT+HFD=54.9±6.2), and reduced TNF-α (ASed+HFD=96.9±3.4; ATT+HFD=82.6±3.2; ALT+HFD=78.3±2.8) and IL-6 (ASed+HFD=58.6±3.2; ATT+HFD=48.6±5.2; ALT+HFD=46.3±4.8) in the soleus muscle. When comparing the training protocols, the ALT+HFD group showed significantly greater improvements in muscle mass, IL-10, and TNF-α. In conclusion, both training protocols improved inflammatory markers and preserved muscle tissue in aging obese rats; however, lifelong training resulted in more pronounced benefits.

Title: Effect of Pilates Method Training on the Functional Capacity of Individuals with Parkinson's Disease

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Thematic axis: Physical Exercise

Keywords: Functional capacity. Parkinson's disease. Pilates method.

Abstract:
Parkinson's disease (PD) is a progressive and multisystem neurological condition that causes motor symptoms. These symptoms impair functional capacity, increase the risk of injury and dependence in activities of daily living (ADLs), and negatively impact the quality of life of people with Parkinson's disease (PwPD). The aim of this study was to evaluate the effects of 12 weeks of training using the Pilates Method (PM) on the functional capacity of PwPD. This research was approved by the Research Ethics Committee of the School of Nursing at UFBA under approval number 7.306.713. The study included 20 participants (16 men and 4 women), with a mean age of 63.1 ± 7.8 years and a PD diagnosis ranging from stages 1 to 3 on the modified Hoehn and Yahr scale. They underwent two weekly PM training sessions for 12 weeks and were assessed before and after the intervention using the functional autonomy assessment protocol of the Latin American Group for Maturity Assessment (GDLAM). The Shapiro-Wilk test was used to assess data normality, and all variables showed non-parametric distribution. Inferential statistics were conducted using the Wilcoxon signed-rank test. A significant difference was found in the execution time of the Sit-to-Stand Test (STS) ($W(17) = 137.0$; $p=0.02$) and the Prone-to-Stand Test (PTS) ($W(16) = 120.0$; $p=0.04$). However, no significant differences were observed in the tests Putting on and Taking off a T-shirt (PTS-T) ($W(17) = 105.0$; $p=0.41$), Rising and Moving Around the House (RMAH) ($W(17) = 106.5$; $p=0.37$), and the 10-Meter Walk Test (10MWT) ($W(16) = 117.0$; $p=0.06$). Twelve weeks of PM training improved the execution time of STS and PTS tasks in the participants of this study. The ability to perform these postural transitions efficiently may be associated with greater independence and safety in ADLs, significantly contributing to improved functionality in this population.

Title: Effect of Pilates Method Training on the Balance of Individuals with Parkinson's Disease

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Thematic axis: Physical Exercise

Keywords: Balance. Parkinson's disease. Pilates method.

Abstract:
Parkinson's disease (PD) is a progressive neurological condition characterized by gait and balance impairments, which increase the risk of falls and injuries. These adverse events often compromise functional autonomy, negatively impacting the quality of life of individuals with PD. Recurrent falls or a sudden decline in mobility can trigger psychological and social consequences, such as isolation and depressive symptoms. The aim of this study was to evaluate the effects of 12 weeks of Pilates Method (PM) training on the balance of individuals with PD. This research was approved by the Research Ethics Committee of the UFBA School of Nursing under approval number 7.306.713. A total of 20 individuals of both sexes (16 men and 4 women) from the *Fluir Parkinson* extension project of the Research Center for Motor Skills and Health at the Federal University of Bahia participated in the study, with a mean age of 63.1 ± 7.8 years, and a diagnosis of PD at stages 1–3 of the modified Hoehn and Yahr scale. All participants underwent two weekly sessions of a PM-based physical exercise program over 12 weeks and were evaluated before and after the intervention using the Berg Balance Scale (BBS). The Shapiro-Wilk test was used to assess the normality of the data, and all variables showed a non-parametric distribution. Inferential statistics were performed using the Wilcoxon signed-rank test, and the effect size was calculated using the ordinal biserial correlation (r). Data analysis showed a marginally significant difference in the total BBS score ($W(17)=38.0$; $p=0.07$); moreover, the magnitude of the clinical effect was considered moderate ($r=0.50$). Twelve weeks of PM training improved the balance of the participants in this study. This observed improvement in balance may contribute to safer performance of activities of daily living, reduce the risk of falls, and support the maintenance of functional independence, with a positive impact on the quality of life of individuals with PD.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **CORRELATION BETWEEN PHYSICAL ACTIVITY TIME AND FUNCTIONAL PERFORMANCE AMONG ELDERLY INDIVIDUALS IN THE INTERIOR OF BRAZIL**

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Thematic axis: Physical Exercise

Keywords: Autonomy. Elderly. Physical Activity.

Abstract:
Population aging is a global reality that poses challenges to public health. Physical Activity (PA) is recognized as determining factor for the quality of life and functional autonomy of older adults. However, the impact of daily PA time, regardless of intensity, on functional variables still requires research. This study aimed to compare the performance of groups and correlate PA time with outcomes related to functional autonomy. A cross-sectional study, approved by the UFVJM Research (CAAE: 64132122.0.0000.5108). A total of 224 older adults were evaluated, 149 (66.2%) women. PA was measured using the International Physical Activity Questionnaire (IPAQ). Instrumental Activities of Daily Living (IADL); Short Physical Performance Battery (SPPB); Mini Nutritional Assessment (MAN); Handgrip Strength (HGS); and cognitive screening using the Mini-Mental State Examination (MMSE). The data were analyzed using the SPSS. Of the participants, 19 (8.5%) were classified as Very Active (MA), 150 (67%) Active (A), 38 (17%) Irregularly Active (IA) and 17 (7.6%) Sedentary (S). A significant correlation was observed between PA time and MNA ($r=0.21$, $p<0.001$); PA with IADL ($r=0.33$; $p<0.001$), PA and SPPB ($r=0.21$, $p<0.001$) and HGS ($r=0.248$, $p<0.001$). Between the groups there was a statistically significant difference in MNA between S and A, IA and A ($p<0.001$). For IADL, there was a difference between the S and A, S and MA, IA and MA groups in addition to IA and A ($p<0.001$). There was also a difference in the MMSE between S and A, S and MA ($p<0.001$). For HGS, there was a difference between S and A, IA and A ($p<0.001$). In the SPPB, difference between S and A, IA and A ($p<0.001$). These findings indicate that greater PA time, regardless of intensity, is associated with better IADL performance, better MMSE performance, greater strength (HGS), and better SPPB results, contributing significantly to the functional autonomy of older adults. The relevance of strategies that encourage increased PA time.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Impact of gestational resistance training on maternal metabolic adaptations and fetal growth in obese pregnant rats**

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Thematic axis: Physical Exercise

Keywords: Fetal development. Glycemia. Maternal obesity. Pregnancy. Strength exercise.

Abstract:
Maternal consumption of a high-fat/high-caloric diet impairs pregnancy outcomes by altering maternal metabolic health. Gestational physical exercise has been proposed as a non-pharmacological strategy to counteract these effects. Female Wistar rats received either a control diet (CD, 3.6 kcal/g, 14% fat, n=17) or an obesogenic diet (OD, 4.6 kcal/g, 49% fat, plus condensed milk (Camponesa®) supplemented with mineral and vitamin mix) for six weeks before and through pregnancy. During pregnancy, half of the rats performed daily resistance training (RT) on stairs (5 days/week, 50% of maximum carrying capacity (MCC) during the first gestational week, and 80% during the second and third weeks). Euthanasia occurred on the 20th gestational day. CEUA-UFPE approval 009/2024. OD increased maternal pre-pregnancy body weight (OD 244.9±16.4; CD 233.6±14.2, g, p=0.03) and weight gain (OD 43.1±10.5; CD 32.9±8.0, %, p=0.002), with no difference in the glucose tolerance test. During pregnancy, OD-NT had increased maternal body weight at G14 (OD-NT 307.2±21.7; CD-NT 278.0±27.8, g, p=0.01) and G20 (OD-NT 365.7±31.2; CD-NT 316.8±18.6, p<0.0001, and OD-T 328.8±28.2, p=0.0009, g). OD-T and CD-T groups had increased their MCC through pregnancy, with no difference between groups. At sacrifice, OD group had increased fat mass (OD-NT3.8±0.8 vs. CD-T 2.7±0.7, p=0.02; OD-T 3.2±0.8 vs. CD-T 1.7±0.3, p=0.0006, %) and fasting glycemia (OD-NT 73.7±7.8 vs. CD-NT 66.8±7.2, mg/dl, p=0.03). No difference was observed in albumin or triglycerides levels. Male fetus from OD-T groups were heavier (OD-T 3.9±0.7, CD-T 2.7±0.2, g, p=0.03). No differences in other murinometric parameters and placental efficiency. Maternal obesogenic diet impaired maternal weight gain, adiposity, and glycemia. Gestational resistance training improved maternal fasting glucose in pregnant rats that received obesogenic diet. In obese rats, resistance training increased male fetus weight.

Financial support: APQ-1062-4.05/22, UFPE 23076.038106/2024-72, UFPE 23076.0049969/2024-65.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Sex-dependent effects of resistance training and western diet on fetal liver histology and oxidative stress**

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Thematic axis: *Physical Exercise*

Keywords: Fetal development. Liver. Oxidative Stress. Pregnancy. Strength exercise.

Abstract:
The liver is essential for metabolic, synthetic, and physiological functions that sustain fetal viability and offspring survival. Insults during pregnancy can affect liver development and function. Female Wistar rats received either a control diet (CD, 3.6 kcal/g, 14% fat) or aWestern diet (WD, 4.6 kcal/g, 49% fat) for three weeks before and during pregnancy. Half of the rats performed daily resistance training on stairs (5 days/week, 80% of maximum carrying capacity during the same period) while the others remained untrained. Four groups were formed: Control Diet-Untrained (CD-U), CD-Trained (CD-T), Western Diet-Untrained (WD-U) and WD-Trained (WD-T), with n=7 each. Euthanasia occurred on gestational day20. CEUA: 105/2021. In female fetuses, liver histologyhad no change, but superoxide dismutase and catalase activities and MDA levels were increased in CD-T group (SOD: CD-T 474.6 ± 145.5 vs CD-U 247.5 ± 77.5, U/mg protein, p=0.005; CAT: CD-T 12570 ± 836 vs. CD-U6461 ± 635; and vs. WD-T 8371 ± 1456, U/mg protein, both p<0.0001; MDA: CD-T 0.132 ± 0.04 vs CD-U 0.07 ± 0.01, p=0.01; and WD-T 0.06 ± 0.02, p=0.003, µM/mg protein). In male fetuses, WD-T group had increased hepatocyte number (WD-T 35.0 ± 7.4 vs CD-T 25.5 ± 4.3, n, p=0.02) and CD-T group had increased red blood cells (CD-T 19.4 ± 4.6 vs CD-U 10.3 ± 4.1, n, p=0.02). SOD and CAT activities were elevated in the WD-U group (SOD: WD-U 456.4 ± 74.8 vs CD-U 258.0 ± 32.4, p=0.003; vs. WD-T287.1 ± 112.8, p=0.009; CAT: WD-U 13097±1216 vs. CD-U 7360±2346, p=0.0007; vs. WD-T8270±2360, p=0.001, U/mg protein). Nitric oxide levels were higher in CD-T (CD-T 36.2±3.9 vs CD-U 19.5±4.9, p<0.0001; vs. WD-T22.4 ± 2.7, p=0.0002, µM) and WD-U groups (WD-U32.2 ± 6.5 vs CD-U19.5 ± 4.9, p=0.0004; vs. WD-T22.4 ± 2.7, p=0.0058, µM). Maternal resistance training and Western diet modulated fetal liver oxidative stress and histological parameters in a sex-dependent manner, highlighting the importance of maternal lifestyle factors on fetal development.

Financial support: APQ-1062-4.05/22, UFPE 23076.038106/2024-72, UFPE 23076.0049969/2024-65.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Título: **Efeito do treinamento físico nas alterações microcirculatórias renal e parâmetros mateabólicos em modelos pré-clínicos de diabetes**

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Eixos Temáticos: Sistema Digestório, Nutrição e Metabolismo

Palavras Chaves: Treinamento Físico. Microcirculação renal. Diabetes tipo 2 (TD2).

Resumo:
O diabetes tipo 2 (T2D) representa um grave problema de saúde global, afetando milhões de pessoas e estando associado a complicações microvasculares e macrovasculares, especialmente nos rins. O exercício físico tem se destacado como uma estratégia essencial para prevenir e retardar as complicações do T2D, por meio da melhora da sensibilidade à insulina e redução de riscos cardiovasculares. No entanto, os efeitos específicos do exercício sobre a microcirculação renal e os mecanismos moleculares envolvidos ainda não estão completamente esclarecidos. Dessa forma, este estudo investiga o impacto do treinamento aeróbico na microcirculação renal em camundongos com T2D. Camundongos C57BL/6 (6-8 semanas de idade) foram divididos em três grupos: controle (CTL), diabéticos (T2D) e diabéticos submetidos ao treinamento aeróbico (T2D EX). Ao final de 36 semanas de protocolo, os animais foram submetidos a análises histopatológicas (hematoxilina e eosina e tricrômico de Masson), bioquímicas e de fluxo microvascular renal por meio de laser speckle (LSCI). Os resultados foram expressos como média±erro padrão da média e analisados por ANOVA one-way com pós-teste de Tukey ($p<0,05$). A experimentação animal foi aprovada pela licença L-012/2018A2. O treinamento físico nos animais com T2D reduziu o peso corporal ($p>0,01$), a pressão arterial sistólica ($p>0,001$) e a gordura subcutânea ($p>0,05$) em comparação aos camundongos T2D sedentários. Quanto aos parâmetros glicêmicos, o treinamento físico não apresentou efeito significativo. Nos parâmetros bioquímicos, observou-se no grupo T2D EX um aumento do HDL ($p>0,05$), uma redução do colesterol total ($p>0,05$) e do colesterol hepático ($p>0,01$). Em relação à microcirculação e à histopatologia, o grupo T2D EX apresentou aumento do fluxo renal ($p>0,01$) e diminuição de fibrose e infiltrado inflamatório ($p>0,05$ e $p>0,001$, respectivamente).O treinamento físico foi capaz de melhorar os parâmetros metabólicos, microcirculatórios e histopatológicos. Assim, concluímos que o treinamento físico é um possível tratamento não farmacológico para o T2D e suas complicações.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Sucralose impairs renal function and aspartame affects glycemia and body composition in a preclinical model of chronic kidney disease**

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Thematic axis: Sistema Digestório, Nutrição e Metabolismo

Keywords: Chronic kidney disease. Non-sugar sweeteners. Oxidative stress.

Abstract:
There is limited research about the effects of artificial sweeteners consumption on chronic kidney disease (CKD). Thus, this study assesses the effects of sucralose and aspartame in a preclinical model of CKD. Male *Wistar* rats, were divided in Sham (n=10), 5/6 nephrectomy (Nx, n=8), Nx Sucrose (NxSuc, n=8), Nx Sucralose 5 mg/kg/day (NxS5, n=7), Nx Sucralose 15 mg/kg/day (NxS15, n=7), Nx Aspartame 50 mg/kg/day (NxA50, n=7), Nx Aspartame 40mg/kg/day (NxA40, n=6) groups (FDA and EFSA recommendations). Sweeteners were administered in the drinking water for 8 weeks. Renal function, glycemia, body composition, thiobarbituric acid reactive substances (TBARS), and protein carbonylation (PC) were analyzed (ethics approval 9803060520). The NxS5 group had higher urea (82.50 ±16.55 vs. 67.63±5.975 mg/dL; p=0.03), creatinine (0.85±0.18 vs. 0.67±0.09 mg/dL; p=0.03), and reduced eGFR (1.10±0.30 vs. 1.60±0.32 mL/min; p=0.03) compared to the Nx group. The NxS5 group also showed higher urea compared to the NxS15 group (82.50±16.55 vs. 65.43±7.82 mg/dL; p=0.01). The NxA40 group presented a higher glycemia after 30 min of dextrose administration (p=0.0175) and area under the glycemic curve (p=0.0452), and less adipose tissue (p=0.0005) and fat mass (p=0.0006) compared to the Nx group. The NxA40 group showed a lower percentage of adipose tissue compared to the NxA50 group (p=0.0345). Plasma TBARS were decreased in the NxS5 group (p=0.0002) and NxA50 group (p=0.0007) compared to Nx. Kidney TBARS were higher in NxS5 and NxS15 compared to Nx (0.6±0.05 and 0.6±0.1 vs. 0.4±0.1 nmol/mg protein; p=0.0185 and p=0.017, respectively). Heart TBARS was increased NxS5 (p=0.04) groups compared to Nx. Carbonyl proteins were higher in plasma NxA50 group (p=0.0158) and NxA40 (p=0.0001), and lower in the heart in NxS15 (p=0.015), NxA50 (p=0.04), and NxA40 (p=0.0068) compared to Nx. In the colon, it was higher in NxA40 (p = 0.02). In conclusion, sucralose aggravates renal dysfunction and lipid peroxidation in a preclinical model of CKD, while aspartame affects glycemia and body composition.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: *Time-Restricted Feeding* Influences Food Response to Stress in an Experimental Model of Obesity.

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Thematic axis: Digestive System, Nutrition and Metabolism

Keywords: Behavior. Acute stress. Obesity. Wistar rats. *Time-Restricted Feeding*.

Abstract:
Introduction: Obesity involves neuroendocrine and behavioral changes, often influenced by stress. Time-Restricted Feeding (TRF) can modulate metabolic and behavioral responses in these contexts. **Objective:** To investigate the effects of TRF on feeding behavior and acute stress response in obese Wistar rats. Methods: With ethical approval (protocol 0017/2023), 24 rats were divided into control (C, n=7) and obese (O, n=17) groups. Obesity was induced by a hypercaloric diet (4.6 kcal/g; 38% carbohydrates, 24% proteins, 38% lipids). The obese group was subdivided into ad libitum obese (OA, n=8) and obese with TRF (OR, n=9). The TRF protocol consisted of 12 h fasting during the dark phase and 12 h feeding during the light phase. Body weight, caloric and macronutrient intake, and palatable diet consumption after acute stress (tail pinch test) were evaluated. Shapiro-Wilk and unpaired Student's t-tests were used ($p<0.05$). **Results:** Group O showed higher body weight (249.1 ± 27.56 g) than C (195.6 ± 16.58 g; $p<0.05$), while TRF attenuated this gain (OR = 222.3 ± 8.21 g; #$p<0.05$). Total caloric intake was lower in OR (3809 ± 282 kcal) compared to C (4662 ± 182 kcal; $p=0.0003$). Protein intake was reduced in O (1081 ± 108 kcal) and OR (933 ± 69 kcal) versus C (1371 ± 53 kcal; $p=0.0001$), with OR consuming the least. Glycemic intake was also lower in O (1752 ± 175 kcal) and OR (1512 ± 112 kcal) compared to C (2795 ± 109 kcal; $p=0.0001$), with OR having the lowest values. After stress, OR consumed more palatable diet (30 min: 3.08 ± 0.88 g; 1 h: 3.80 ± 1.49 g), with significant differences compared to other groups and standard diet ($p<0.05$; MD 30 min: 3.40 g, $p=0.0101$; 1 h: 3.39 g, $p=0.0106$). **Conclusion:** TRF reduced weight and caloric intake in obese rats but intensified hedonic feeding behavior under stress. These findings suggest TRF may increase reward-driven eating in stressful situations.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: NEONATAL FLUOXETINE INTERVENTION REDUCES DIPOCYTE HYPERTROPHY INDUCED BY MATERNAL HIGH-CALORIE DIET IN RATS

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Thematic axis: Digestive System, Nutrition and Metabolism

Keywords: Adipocytes. Diet. Fluoxetine. Obesity. White Adipose Tissue.

Abstract:
Maternal exposure to a high-fat, high-calorie diet (HFHCD) during gestation and lactation can negatively impact offspring neurodevelopment and metabolic health. Selective serotonin reuptake inhibitors (SSRIs), such as fluoxetine, may mitigate the effects of nutritional overload. This study evaluated the impact of neonatal fluoxetine on retroperitoneal white adipose tissue (RWAT) accumulation and adipocyte histomorphometry in Wistar rats whose dams were subjected to an HFHCD. Wistar female rats were divided into groups receiving either a control diet (C, 3.44 kcal/g) or an HFHCD (4.62 kcal/g) during gestation and lactation. On postnatal day 1 (PND1), each litter was adjusted to 8 pups. Of these, 4 received sterile saline (S) and 4 received fluoxetine (F, 10mg/Kg) daily during lactation (PND1 to PND21), forming the subgroups C-S, C-F, DHH-S, and DHH-F. On PND30 and PND60, RWAT was collected for absolute weight (AW) and relative weight (RW) measurements, followed by histomorphometric analysis of adipocyte area and perimeter after Hematoxylin-Eosin (HE) staining. Statistical analysis used ANOVA with Tukey's post-hoc test, with significance set at $P < 0.05$. This project was approved by the Ethics Committee on Animal Use (CEUA) of UFPE, under number 0029/2018. At PND30, the DHH-F and C-F subgroups exhibited lower RWAT AW and RW compared to their respective controls (DHH-S and C-S). At PND60, RWAT AW in the DHH-F subgroup was lower than in DHH-S. Histomorphometric analysis revealed that adipocyte area and perimeter in DHH-F were smaller than in DHH-S at both PND30 and PND60. At 30 days of age, adipocytes from the fluoxetine-treated subgroups (DHH-F and C-F) were visually smaller. In conclusion, neonatal fluoxetine significantly attenuated the effects of maternal HFHCD consumption, promoting reductions in RWAT accumulation, as well as in adipocyte area and perimeter in 30- and 60-day-old rat offspring. These findings suggest that serotonin reuptake inhibition may promote a lean phenotype, even in the face of early nutritional overload.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: TIME-RESTRICTED FEEDING IN LIGHT-PHASE ASSOCIATED WITH A WESTERNIZED DIET: IMPACTS ON CIRCADIAN GLYCEMIA AND LIPID PROFILE IN WISTAR RATS

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Thematic axis: Sistema digestório, nutrição e metabolismo.

Keywords: Circadian cycle. Lipids serum. Intermittent fasting. Obese female rats.

Abstract:
Time-restricted feeding (TRF) is a form of intermittent fasting that limits food intake to a specific period of the day, generally aligning eating patterns with circadian rhythms. This strategy has been associated with improvements in lipid profiles when aligned with the circadian cycle—particularly in the context of high-fat diets (Chaix et al., 2014)—but may lead to adverse effects when misaligned to circadian rhythm. This study evaluated the effects of a Western diet and TRF during the light phase on triacylglycerol-TAG and total cholesterol-TC) body weight, energy intake, and circadian glycemia in female *Wistar* rats. Following ethical approval (protocol 0017/2023), 24 female rats were assigned to three groups: control (C, n = 7), Western diet *ad libitum* (O, n = 8), and Western diet with time-restricted feeding (OR, n = 9). Statistical significance was set at $p<0.05$. Interestingly, the OR group had a lower energy intake, but body weight did not differ between groups O and OR; both showed significantly higher body weight than the control group after six weeks on the diet. The analysis revealed a significant effect of treatment ($F (2, 21) = 7.371$; $p = 0.0038$), time ($F (2.68, 55.3) = 1228$; $p < 0.0001$), and treatment × time interaction ($F (22, 228) = 6.832$; $p < 0.0001$). Neither the Western diet nor time restriction altered lipid levels (TAG and TC). However, the OR group exhibited significantly lower glycemia at 12 h and 16 h compared to the control and O groups ($p < 0.05$). In conclusion, while the protocol did not demonstrate an effect of the Westernized diet or TRF on lipid parameters, it did increase body weight without increasing energy intake, suggesting an effect of the nutritional composition of the diet.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Macronutrient composition of a Westernized diet drives body weight gain independently of total energy intake in adult male rats

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Thematic axis: Digestive System, Nutrition and Metabolism

Keywords: Obesity-diet induced. Macronutrient subtype proportion. Energy intake

Abstract:
The Western diet is characterized by excessive intake of processed and ultra-processed foods that are high in simple sugars, saturated and trans fats, energy-dense, and low in nutritional value. Although the impact of energy surplus on adipose tissue accumulation is well established, the role of macronutrient proportion in relation to body weight gain is less clear. This study evaluated the influence of diet composition on body weight in adult rats. Adult male *Wistar* rats (100 days old) were divided into two groups: Standard Chow Diet (SD; n = 9) and Westernized Diet (WD; n = 9). Animals were fed for 34 weeks with either a standard diet (3.5 kcal/g; CHO: 60%; PRO: 29%; FAT: 11%) or a Westernized diet (4.3 kcal/g; CHO: 46%, of which 48% were from sucrose and fructose; PRO: 15%; FAT: 39%, of which 38% were saturated fats). Body weight was recorded weekly, and food intake was measured every two days to calculate weekly energy intake. All procedures were approved by the Institutional Ethics Committee (CEUA – Protocol No. 0016/2024). Statistical significance was set at $p < 0.05$. From week 16 onward, there was a significant difference in body weight between groups (SD = 459.38 ± 19.07 g; WD = 512.42 ± 32.83 g, $p < 0.05$). By the end of 34 weeks, the WD group had 25.0% (±7.77) more body weight than the SD group (SD = 509.30 ± 41.42 g; WD = 635.87 ± 57.94 g). Despite the type of diet, no significant differences in median energy intake were observed between groups throughout the 34 weeks (SD = 572.53 ± 20.5 kcal; WD = 526.74 ± 5.2 kcal). However, differences were noted in the energy contribution from macronutrients. These findings indicate that total energy intake alone does not explain the observed weight gain; rather, the proportions of macronutrients and the specific types of carbohydrate and fat are critical determinants of body- weight increase.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Onset of Insulin Resistance in Adult Rats Fed a Westernized Diet.**

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Thematic axis: Digestive System, Nutrition and Metabolism

Keywords: Insulin resistance. Westernized diet. Wistar rat.

Abstract:
The Westernized diet is characterized by a high intake of ultra-processed foods, rich in simple sugars, trans and saturated fats, high caloric density, and low nutritional value. This dietary pattern is strongly associated with metabolic disorders such as obesity and insulin resistance. This study evaluated the impact of prolonged exposure to a Westernized diet on body weight and glycemic profile in adult Wistar rats. With approval from the Institutional Ethics Committee (CEUA – Protocol No. 0016/2024), eighteen male rats, aged 100 days, were divided into two groups according to the diet received: standard diet (SD, n=9) and Westernized diet (WD, n=9), and were fed for 34 weeks. The standard diet provided 3.5 kcal/g (60% carbohydrates, 29% proteins, 11% lipids), while the Westernized diet provided 4.3 kcal/g (46% carbohydrates, of which sucrose and fructose accounted for nearly 50%; 15% proteins; 39% lipids, of which 38% were saturated fats). A significance level of $p < 0.05$ was adopted. The WD group showed a greater weight gain starting at week 16 (SD = 459.4 ± 19.1 g; WD = 512.4 ± 32.8 g), which persisted until the end of the experiment (SD = 509.3 ± 41.4 g; WD = 635.9 ± 57.9 g). Fasting blood glucose was significantly higher in the WD group at week 34 (SD = 96.6 ± 6.7 mg/dL; WD = 107.6 ± 6.9 mg/dL). In the oral glucose tolerance test, the WD group maintained elevated glucose levels from 60 minutes onward (60 min = 163.3 ± 10.4 mg/dL; 90 min = 159.9 ± 12.5 mg/dL; 120 min = 158.4 ± 22.3 mg/dL), whereas the SD group showed a progressive and expected decline (60 min = 142.3 ± 16.2 mg/dL; 90 min = 138.5 ± 10.7 mg/dL; 120 min = 111.6 ± 6.8 mg/dL). In the insulin tolerance test, the WD group exhibited resistance to the expected glucose decrease at 60 minutes, compared to the reference group (SD = 33.9 ± 7.8 mg/dL; WD = 47.6 ± 7.9 mg/dL). Thus, the Westernized diet induced increased body weight and impaired glycemic response, suggesting a state of insulin resistance.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Adult-onset exposure to a Westernized diet does not induce dyslipidemia in *Wistar* rats, with or without metformin

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Thematic axis: Digestive System, Nutrition and Metabolism

Keywords: Lipid profile. Adulthood rat. Western-style diet.

Abstract:
The Westernized diet, commonly associated with the consumption of processed and ultra-processed foods high in simple sugars, saturated and trans fats, and characterized by high caloric density and low nutritional value, is a major factor linked to the development of metabolic disorders. This study evaluated the effects of prolonged exposure to a Westernized diet and metformin treatment on the lipid profile of adult rats. Adult male *Wistar* rats (100 days old) were divided into three groups: Standard Diet (SD; n = 8), Westernized Diet (WD; n = 8), and Westernized Diet with Metformin (WM; n = 8). Animals received either a standard diet (3.5 kcal/g; CHO: 60%, PRO: 29%, FAT: 11%) or a Westernized diet (4.3 kcal/g; CHO: 46%, of which 48% were from sucrose and fructose; PRO: 15%; FAT: 39%, of which 38% were saturated fats) for 40 weeks. Statistical significance was set at $p < 0.05$. Procedures were approved by the Institutional Ethics Committee (Protocol No. 0016/2024). Biochemical analyses showed that neither the Westernized diet alone nor in combination with metformin altered plasma lipid parameters: total cholesterol (TC), lipoprotein subfractions (HDL, LD), or triglycerides (TG): TC (SD = 86.50 ± 23.40; WD = 83.38 ± 24.52; WM = 120.00 ± 48.83), HDL (SD = 51.75 ± 19.29; WD = 54.75 ± 21.06; WM = 81.63 ± 32.64), LDL (SD = 21.50 ± 9.45; WD = 22.60 ± 5.23; WM = 26.09 ± 10.98), and TG (SD = 86.38 ± 17.90; WD = 68.00 ± 24.51; WM = 72.38 ± 29.07). These findings suggest that when exposure to a Westernized diet begins in adulthood, animals may show increased resistance to the development of dyslipidemia.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Ultra-processed diets increase fat intake and reduce overall consumption in lactating rats, independent of environmental enrichment.**

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Thematic axis: Digestive System, Nutrition and Metabolism

Keywords: Ultra-processed foods. Enriched environment. Food intake. Lactation. Rodents.

Abstract:
Ultra-processed foods (UP) are high in calories and fats and have high palatability. UP consumption promotes hyperphagia in experimental animals. As an intervention, the enriched environment (EE) mitigates changes in energy balance and food intake. The effects of EE and UP on food intake parameters in lactating rats were evaluated. From the 1st to the 21st day of lactation, Wistar rats with 8 pups received either Nuvilab chow (3.47 kcal/g) or a diet with UP combined with Nuvilab (4.12 kcal/g) and were housed in an enriched environment with wheels, ladders, and tunnels or a control environment without objects (C). The groups were as follows: control diet/control environment (CC; n=5), control diet/enriched environment (CE; n=5), ultra-processed diet/control environment (UPC; n=5), and ultra-processed diet/enriched environment (UPE; n=5). Absolute, caloric, and fat intakes were analyzed. Statistical analysis used the Shapiro-Wilk test, two-way ANOVA, and Tukey's post hoc test (significance level $p \leq 0.05$). Approved by the Ethics Committee on Animal Use of UFPE (0083/2021). From the second week of lactation, UPC (374,6±46,20; $p<0.025$) and UPE dams (381,2±30,76; $p<0.005$) showed lower absolute intake than CC dams (470,0±20,24). Regarding maternal caloric intake, UPC dams showed a reduction than CC dams (UPC: 1359,0±152,7 and CC: 1630,9±70,2; $p<0.020$) from the 2nd week. From the first weeks of lactation, UPC group consumed more fat than CC animals (CC: 12,87±0,8 and UPC:51,47±17,5; $p<0.026$), and the UPE group consumed more fat than the CE group (UPE: 48,53±12,8 and CE:11,41±1,31; $p<0,009$). The consumption of ultra-processed foods increased fat intake and reduced both absolute and caloric intake in lactating rats. Environmental enrichment did not mitigate these effects, underscoring the importance of diet quality during the lactation period.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Early enriched environment attenuates the increase in visceral adiposity in offspring of dams exposed to ultra-processed foods during lactation.**

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Thematic axis: Digestive System, Nutrition and Metabolism.

Keywords: Enriched Environment. Lactation. Ultra-processed foods. Adipose Tissue. Rodents.

Abstract:
Ultra-processed food consumption is a risk factor for obesity and accumulation of abdominal fat. An enriched environment (EE) can mitigate metabolic dysfunctions associated with rodents' excess weight. We analyzed the effects of continuous EE exposure for 30 days on body weight (BW) and fat pads in the offspring of dams exposed to ultra-processed foods (UP) during lactation. Male pups were fed a control diet (Nuvilab) or UP and housed in a control or enriched environment, forming the groups: CC (control diet/control; n=10), UPC (UP/control; n=10), CE (control diet/EE; n=10), and UPE (UP/EE; n=10). BW was assessed at lactation (days 1, 7, 14, 21) and post-weaning (days 25, 30, 40). On day 41, the relative weight (%BW) of white adipose tissues (inguinal, retroperitoneal, and mesenteric) was measured. Data were expressed as mean ± SD and analyzed using the Kolmogorov-Smirnov test and two-way ANOVA (significance level $p \leq 0.05$). UFPE Animal Ethics Committee (0083/2021). The UPC group had higher BW than CC on days 14 (UPC: 32.29±1.79; CC: 29.35±3.62; $p=0.0162$) and 21 (UPC: 49.72±3.02; CC: 46.19±3.80; $p=0.0023$). UPE showed higher BW than EE on day 21 (UPE: 49.91±1.63; EE: 47.01±3.31; $p=0.0185$). At day 40, UPC had higher BW than CC (UPC: 159.74±7.55; CC: 148.22±17.25; $p=0.0076$), and EE had higher BW than CC (166.66±8.04; $p<0.0001$). Regarding fat depots, UPC showed greater retroperitoneal (UPC: 0.227±0.04; CC: 0.147±0.02; $p=0.0006$) and inguinal fat (UPC:0.507±0.05; CC: 0.339±0.09; $p<0.0001$) than CC. However, UPE showed lower retroperitoneal (UPE: 0.142±0.04; $p=0.0003$) and inguinal fat (UPE: 0.392±0.05; $p=0.0049$) than UPC. No differences in mesenteric fat were observed. Nevertheless, the visceral adiposity index was lower in UPE than UPC (UPE: 0.360±0.07; UPC: 0.468±0.07; $p=0.0102$). These findings suggest that UP exposure during lactation promotes weight gain, increases visceral and subcutaneous fat accumulation, whereas EE mitigates adipose tissue accumulation in the offspring.

Title: *Impact of* Parkinsonia aculeata *and Light-Phase Feeding Restriction on Body Composition in obese female Wistar rats*

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Thematic axis: Sistema Digestório, Nutrição e Metabolismo

Keywords: Western-style diet. Metabolism. Adiposity.

Abstract:
Parkinsonia aculeata, a plant native to the Xingó region in northeastern Brazil, is traditionally used by local communities for diabetes management, but little is known about its effects on somatic parameters. In the other hand, the time restricted feed-TRF is a strategy used to obesity management. This study evaluated the effects of TRF and *P. aculeata* used during the light-phase on murinometric parameters and the Lee index in female *Wistar* rats. After approval by the Ethics Committee (Protocol No. 0017/2023), 24 rats were divided into two groups: control (C) and obese (O). The obese group was further subdivided into O (untreated), OP (treated with *P. aculeata* extract at 140 mg/kg/day by gavage for 30 days), and OR (submitted to 12 h TRF during the light phase). Obesity was induced using a Western-style diet (4.6 kcal/g; 40% carbohydrates, 24% proteins, 36% lipids). Body weight was recorded at three time points: post-weaning, after 8 weeks of obesogenic diet, and after 4 weeks of intervention. Lee index and thoracic/abdominal circumferences were also measured. Data were analyzed using the Shapiro–Wilk test, ANOVA, Kruskal–Wallis, and Tukey's post hoc test and adopted significance of 5%. After 8 weeks, no difference in body weight was observed between groups. However, after 4 weeks of intervention, the OP group had higher and the OR group had lower body weight compared to controls ($p < 0.05$), with no difference between OP and OR. Treatment ($F2,21=8.030, p=0.0004$), time($F1.267,27.88=17.21, p<0.0001$), and interaction ($F4,44=6.359, p<0.0004$) effects were significant. The Lee index and thoracic circumference confirmed these findings ($F2,20=14.23, p=0.0001$). In conclusion, *P. aculeata* did not reduce murinometric measures, while time-restricted feeding in the light phase reduced body weight and fat index in obese female rats.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **An early enriched environment attenuates hyperglycemia in the offspring of dams fed ultra-processed foods during lactation**

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Thematic axis: Digestive System, Nutrition and Metabolism.

Keywords: Environmental enrichment. Ultra-processed food. Serum biomarkers. Rodents. Lactation.

Abstract:
In experimental models, the diet with ultra-processed foods (UPF) mimics the Western dietary profile and its biochemical impacts. Environmental enrichment (EE) attenuates metabolic alterations in rodents by promoting sensory, social, and physical stimuli. We analyzed the effect of EE exposure for 30 days on the metabolic markers of the offspring of rats exposed to UPF during lactation. Ethics Committee on Animal Studies (nº 0083/2021). From the 1st to the 21st day of life, Wistar rats and 8 pups received Nuvilab® feed (3.47kcal/g) or ultra-processed foods and Nuvilab® (4.12kcal/g). From the 1st to the 30th day, they were housed in a control or enriched environment, divided into the following: Nuvilab/Control (NC); Nuvilab/Enriched (NE); Ultra-processed/Control (UC), and Ultra-processed/Enriched (UE). The EA were large cages with running wheels, ladders, and tunnels, which were reorganized and replaced weekly. On the 22nd day, the nursing mothers and females were removed, maintaining 4 males/cage. On day 41, blood samples were collected, centrifuged to collect serum, and analyzed in triplicates with a colorimetric enzymatic assay for serum levels of Albumin, Creatinine, Glucose, Cholesterol, Urea, Uric acid, ALT, and AST. All statistical analyses were performed in GraphPad Prism® (significance 5%). The UE group (53.20±4.80; n=11) had higher urea levels than the NE (46.37±5.54; n=9; p=0.04) and UC (46.07±4.70; n=9; p=0.03). The group that consumed ultra-processed foods in a control cage (UC: 240.6±68.88; n=9) had higher glycemia than the group that ate Nuvliab® (NC: 130.7±64.2; n=13; 0.0007). The group that ate ultra-processed foods housed in AE had lower glycemia compared to UC (UE: 160.6±58.8; n=12; p=0.02). Accommodation in an environment enriched with wheels and stairs attenuated the hyperglycemic effect resulting from the consumption of ultra-processed foods, demonstrating early EE as a protective agent against glycemic changes.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Obesity exacerbates renal dysfunction in mice: insights from a pre- clinical model**

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Thematic axis: Digestive System, Nutrition and Metabolism

Keywords: Obesity. Lipotoxicity. Chronic Kidney Disease.

Abstract:
Obesity is an independent risk factor for chronic kidney disease (CKD) and dysfunctional adipose tissue expansion is capable of promoting lipotoxicity and renal dysfunction. The purpose of this study was to understand the metabolic changes caused by obesity in a pre- clinical model of CKD. In order to do this, male C57BL/6 mice were divided into two groups: Control (C; n=20) and High Fat (HF; n=20, diet with 48% lipids) for 12 weeks to establish obesity. Following this, they were divided into: C(n=8), C+CKD (CKD; n=12, diet with 0.25% adenine), HF (n=10, diet with 48% lipids), and HF+CKD (HFCKD; n=10, diet with 48% lipids + 0.25% adenine) for 2 weeks to establish CKD. After 14 weeks, mice were euthanized and the kidneys, adipose tissue, and plasma were collected for biochemical and histological analysis (CEUA-n° 5396200122). The CKD group showed lower adiposity compared to the HFDRC group (0.42±0.58 vs 6.86±2.82 [%], p=0.0112), while the HF group had higher percentages compared to the HFCKD group (13.32±0.97 vs 6.86±2.82 [%], p=0.0475). Plasma creatinine was elevated in the HFCKD group compared to the CKD group (2.51 ± 0.45 vs 2.14 ± 0.37 [mg/dL], p=0.0491), as well as plasma urea levels in the comparison between HFCKD and HF (365.6 ± 86.17 vs 71.70 ± 12.65 [mg/dL], p<0.0001). Regarding plasma triglycerides, the HFCKD group had higher levels than the HF group (17.50 ± 2.41 vs 47.50 ± 47.54 [mg], p<0.0001). Lipid peroxidation in kidney tissue showed no difference between the groups.The qualitative analysis of renal morphology indicated tubular hyperdilation in both groups with CKD and lipid accumulation in the HFCKD group. In conclusion, Obesity impaired renal function markers without elevating lipid peroxidation. More studies are required to investigate the subjacent mechanisms involved in both diseases' progression.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Nutritional actions of the carotenoids fucoxantin and lutein on gut microbiota: Bactericidal or prebiotic-like effects? Open questions on the literature

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Thematic axis: Sistema Digestório, Nutrição e Metabolismo

Keywords: Dysbiosis. Gram-positive and gram-negative gut bacteria. Inflammation. Intestinal permeability. Nutraceuticals.

Abstract:
Carotenoids are nutraceutical compounds with antioxidant and anti-inflammatory actions, reducing the risk of gut disorders. However, the molecular mechanisms behind these effects remain unclear. Questions persist about the relative contribution of their bactericidal or prebiotic-like effects. This review aimed to evaluate recent evidence supporting the bactericidal or prebiotic-like roles of fucoxanthin (Fx) and lutein on gut microbiota (GM). A literature search was conducted in PubMed, Scopus, and Web of Science for studies published since 2020 using key terms such as microbiota-dependent effects, prebiotic-like action, and bactericidal properties of carotenoids. Preclinical studies demonstrated that Fx exerts prebiotic-like effects in high-fat diet models by increasing short-chain fatty acids (SCFAs) and reducing intestinal permeability. Direct bactericidal effects were shown in epithelial cell lines. In metabolic syndrome, Fx reduced the Firmicutes/Bacteroidetes ratio. Lutein restored GM altered by chronic alcohol intake and in colitis models. Among in vivo preclinical studies, 60–70% reported benefits to bacteria, SCFAs, and tight junctions. Human data remain limited. One fermentation study using non-obese fecal samples showed Fx reaches the colon and modulates GM. Only 4–7 in vitro or human studies investigated Fx-GM interactions; no clinical trials were found up to 2023. Serum lutein variability was observed in humans, possibly influenced by GM composition. Ex vivo studies showed bactericidal effects of Fx and lutein, mainly against gram-positive bacteria. Lutein in apple extract reduced H. pylori numbers, confirmed in vivo after a carotenoid-rich meal. Fx also showed efficacy against S. aureus. Whether colon concentrations are sufficient for direct bactericidal action remains unknown. In conclusion, Fx and lutein show potential to improve GM diversity, but it remains unclear whether such changes are causative or secondary to other bioactivities.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: DOES SUPPLEMENTATION WITH ONION PEEL POWDER (*ALLIUM CEPA L.*) INDUCE CHANGES IN HOMEOSTATIC FEEDING BEHAVIOR IN RAT OFFSPRING EXPOSED TO A HIGH-FAT DIET DURING GESTATION AND LACTATION?

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Thematic axis: Sistema Digestório, Nutrição e Metabolismo.

Keywords: Dietary supplementation. High-fat diet. Metabolic programming. Feeding behavior. Wistar rats.

Abstract:
Excessive consumption of unbalanced diets during the fetal period can lead to hyperphagia and obesity in adulthood. Considering that bioactive compounds can mitigate these effects, this study aims to evaluate the effects of supplementation with onion peel powder post-weaning on the homeostatic feeding behavior of offspring exposed to a high-fat diet during pregnancy and lactation. The study was approved by the Animal Experimentation Ethics Committee of the Faculty of Veterinary Medicine and Animal Science of UFBA, protocol no. 04/2019. Male rats (Wistar) were grouped into: Group CC (n=9), animals exposed to a control diet during gestation and lactation, remaining on this diet post-weaning; Group HC (n=9), rats exposed to a high-fat diet during gestation and lactation and fed a control diet from day 21 of life; HCOP group (n=8), exposed to a high-fat diet during gestation and lactation and fed a control diet supplemented with 7% onion peel powder after weaning. At 45 days, homeostatic feeding behavior was evaluated with the satiety behavioral sequence test, in addition to the average feeding duration (min). The Shapiro-Wilk normality test, one-way comparison test (ANOVA), and Tukey's post-hoc test were used in the statistical analysis. Statistical significance was considered $P \leq 0.05$. It was observed that the animals in the HC group presented hyperphagia, with a longer feeding duration in minutes compared to the CC group (CC: 7.83 ± 2.13 min vs. HC: 21.43 ± 2.38 min, $p<0.0001$). The HCOP group presented an advance in satiety and a shorter feeding duration (HC: 21.43 ± 2.38 min vs. HCOP: 15.34 ± 5.85 min, $p=0.0075$). Furthermore, the HCOP group, compared to the CC group, presented a longer feeding time and a delayed satiety (CC: 7.83 ± 2.13 min vs. HCOP: 15.34 ± 5.85 min, $p=0.0011$). Therefore, the results show that supplementation with onion peel powder after weaning can reverse changes in homeostatic feeding behavior caused by early high-fat dietary exposure.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Effects of onion peel powder consumption on the bone structure of adult rats

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Thematic axis: Sistema digestório, Nutrição e Metabolismo

Keywords: Western diet. Bone structure. Onion peel. Supplementation.

Abstract:
Onion peel can be used to mitigate the harmful effects caused by high-fat diets, due to the presence of fiber and phenolic compounds. The objective of this study was to evaluate the effects of supplementation with onion peel powder on the bone structure of rats fed a high-fat diet. The study was approved by the ethics committee of EMEVZ/UFBA under protocol 04/2019. Male Wistar rats were divided into 4 groups: CC: rats that received a control diet (Nuvilab®) during gestation, lactation, and post-weaning until 90 days of age; CH: rats that consumed a high-fat diet (23% fat) after weaning; CCOP: rats that consumed the control diet supplemented with 7% onion peel powder; and CHOP: rats that consumed a high-fat diet supplemented with 7% onion peel powder. After 90 days the femur was collected for later weighing and biomechanical analysis. For statistical analysis, one-way ANOVA followed by the Bonferroni test was used. $p<0.05$ was considered in all cases. The femur weight was lower ($p<0.05$) in the CH group (0.94 ±0.04 g) when compared to the CC group (1.10 ±0.07 g), but there was no difference between the CHOP (0.90 ±0.05 g) and CCOP (1.05 ±0.05 g) groups in relation to their respective control groups (CH and CC). The maximum strength did not present statistical differences between the CC (108.1 ±10.1 N), CH (102.3 ±13.2 N), CCOP (103.2 ±7.7 N) and CHOP (105.8 ±12.6 N) groups. The elastic modulus was lower ($p< 0.05$) in the CH group (482817 ±134090 Mpa) when compared to the CHOP group (577015 ±69647 Mpa). The CC (534620 ±57852 Mpa) and CCOP (574835 ±68589 Mpa) groups did not present statistical difference, as well as no difference between the CC and CH groups. Supplementation with onion peel powder appears to prevent a reduction in bone strength parameters when supplemented to a high-fat diet. However, further studies, especially with longer exposure times to diets and supplementation, as well as more specific analyses, are needed to better understand this relationship.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Redox and structural improvement of brown adipose tissue following dietary readjustment in aging and obese rats

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Thematic axis: Sistema Digestório, Nutrição e Metabolismo

Keywords: Aging. Brown adipose tissue. Dietary readjustment. Obesity. Oxidative stress.

Abstract:
Aging and obesity are conditions associated with profound metabolic changes, including impaired thermogenic activity and redox imbalance in brown adipose tissue (BAT). BAT plays a crucial role in energy expenditure and metabolic regulation, and its dysfunction may contribute to the progression of obesity-related comorbidities in older individuals. Thus, strategies that preserve BAT structure and function during aging are of growing interest. This study aimed to evaluate the effects of dietary readjustment on the morphology and redox status of BAT in aged Wistar rats with diet-induced obesity. Twenty-four male rats (CEUA- UFBA 079/2020) were divided into three groups (n=8): Aging + Control Diet (ACD), Aging + High-Fat Diet (AHD), and Aging + Dietary Readjustment (ADR). The high-fat diet was initiated at 9 months of age and replaced with a normocaloric control diet during the last two months of the experiment in the ADR group. BAT samples were processed for histological and enzymatic analysis to assess morphometric parameters and oxidative stress markers. Data were analyzed using One-Way ANOVA, and differences were considered significant when $p<0.05$. Dietary readjustment reversed the effects of the high-fat diet on total adipocyte number (ACD=142.6±11.3; AHD=121.5±8.7; ADR=149.7±15.4) and the number of unilocular adipocytes (ACD=25.0±2.8; AHD=33.1±3.5; ADR=23.6±3.2), indicating structural preservation of BAT. Furthermore, oxidative imbalance observed in the AHD group was mitigated by dietary intervention, with reduced TBARS levels (ACD=11.6±1.5; AHD=17.3±1.8; ADR=13.6±2.0) and increased GPx activity (ACD=0.084±0.01; AHD=0.062±0.01; ADR=0.084±0.01). In conclusion, dietary readjustment at advanced stages of life was effective in restoring brown adipose tissue morphology and antioxidant capacity in obese aging rats, supporting its potential as a non-pharmacological strategy to counteract metabolic dysfunctions associated with aging and high-fat diet exposure.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: FATIGUE AND BODY PARAMETERS IN INFLAMMATORY BOWEL DISEASE

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Thematic axis: Digestive System, Nutrition and Metabolism

Keywords: Body composition. Crohn's disease. Fatigue. Inflammatory bowel disease. Nutrition. Ulcerative colitis.

Abstract:
Introduction: Chronic inflammation, nutrient malabsorption, stress, excess body fat, muscle loss, and medications are known factors in the onset and worsening of fatigue in patients with inflammatory Bowel Disease (IBD). Objective: To evaluate the association between anthropometric parameters and fatigue in patients with IBD. Methods: Cross-sectional study in IBD patients over 18 years of age. Clinical and sociodemographic data, and a specific fatigue instrument for IBD (IBD-F) were used. Body Mass Index was calculated, and body composition assessment was done using biodynamic® tetrapolar impedance data. Results: In 106 patients with IBD, the prevalence of fatigue was 83.0%, regardless of disease activity ($p>0.05$). Patients who were employed (86.4% vs 61.1%, P = 0.011), diagnosed with Ulcerative colitis (UC) (58.0% vs 22.2%, P = 0.006) and with Crohn's disease (CD) diagnosed between 17 and 40 years of age (73.0% vs 42.9%, P = 0.045) had a higher prevalence of fatigue when compared to those without fatigue. No statistical association was observed between fatigue and sarcopenia, and body composition ($p > 0.05$). Regression analysis did not indicate fatigue risk for underweight (OR = 5.192), overweight (OR = 3.701), lean body mass (OR = 0.583) and phase angle (OR = 1.386), nor for the criteria defining sarcopenia, handgrip strength (OR = 1.115) and walking speed (OR = 2.001), $P > 0.05$. Conclusions: The prevalence of fatigue was high in IBD patients, predominantly adults, even in the remission phase of the disease, particularly in those with UC and CD diagnosed between 17 and 40 years of age, and body composition was not associated with fatigue.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: DO PATIENTS WITH INFLAMMATORY BOWEL DISEASE CONSUME ULTRA-PROCESSED FOODS?

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Thematic axis: Digestive System, Nutrition and Metabolism

Keywords: Chronic Disease. Crohn's Disease. Food Consumption. Processed Foods. Ulcerative Colitis.

Abstract:
Diet plays a fundamental role in supporting the conventional treatment of Inflammatory Bowel Disease (IBD). However, eating habits are often modified by patients due to fear of triggering disease activity or gastrointestinal symptoms. These changes, however, frequently occur without considering the level of food processing. To assess the dietary intake of patients with IBD, with an emphasis on the degree of processing of consumed foods. This was a cross-sectional study, with non-probabilistic sampling, conducted at a specialized IBD outpatient clinic between March 2023 and March 2024. Data were collected through a semi-structured questionnaire. Dietary intake was assessed using two non-consecutive 24-hour dietary recalls. Foods were classified according to the NOVA classification (Monteiro et al., 2010), which categorizes foods based on the extent and purpose of their processing. A total of 101 patients were evaluated, with a mean age of 39.4 ± 14.1 years; 51.5% were male. Most had Crohn's Disease (68.3%), lived in the interior of Bahia (58.4%), had a family income of up to two minimum wages (66.3%), and had up to 14 years of education (62.4%). All participants reported consuming at least one ultra-processed food. The most frequently mentioned items were: cream cracker biscuits, added sugar, cake, sausage (calabresa), margarine, pasta, soda, and French bread. Patients with IBD frequently consume ultra-processed foods, often on a daily basis.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Onion peel powder supplementation attenuates mesenteric adiposity and *Nfkb* gene expression in rats exposed to a high-fat diet in the perinatal and post-weaning periods

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Thematic axis: Sistema digestório, Nutrição e Metabolismo

Keywords: High-fat diet. Pregnancy. White adipose tissue. Nuclear factor-κB expression. Onion.

Abstract:
The consumption of a high-fat diet (HFD) can promote the development of obesity. However, these effects can be mitigated by onion peels, which are rich in phenolic compounds. This study aimed to evaluate the effects of onion peel powder supplementation on mesenteric adiposity and *Nfkb* gene expression in rats exposed to a high-fat diet. The study was approved by the EMEVZ/UFBA (Protocol 04/2019). Wistar rats were subdivided into three groups: Control (CC=10), which consumed a control diet (Nuvilab®); HFD (HH=10), rats that consumed an HFD in the perinatal and post-weaning periods; and HFD+Onion Peel Powder (HHOP=10), rats that consumed an HFD associated with 7% onion peel powder. On the 90th day of life, blood was collected for triglyceride analysis, and then the MAT was weighed for subsequent histological and molecular analysis. For statistical analysis, ANOVA was followed by Tukey, and the Kruskal-Wallis test was followed by Dunn's test. The software used was GraphPad Prism software, and data were considered statistically significant when $p<0.05$. In this study, it was observed that the HH group presented a higher weight of MAT and adipocyte area compared to the control, but the supplementation was able to reduce these parameters, respectively (CC=0.9350±0.1779g; HH=1.726g±0.3685; HHOP=1.157±0.3272g; $p<0.0001$) and (CC=25686±13559cm; HH=41814±21056cm; HHOP=24279±11598cm, $p<0.0001$). Triglycerides were also reduced with supplementation (CC=68.65±14.06mg/dl; HH=76.09±13.84mg/dl; HHOP=42,81±12,33 p= 0.0017). There was an increase in *Nfkb* gene expression in the HH group, but supplementation reduced this gene (CC=1.004±0.08; HH=1.890±0.37; HHOP=1.232±0.37; $p=0.0019$). Therefore, exposure to the HFD was able to increase weight and adipocytes of MAT, in addition to elevating triglyceride concentrations and *Nfkb* gene expression, related to inflammatory processes and cardiovascular risk. However, supplementation with onion peel powder was able to mitigate these effects.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Supplementation with onion peel powder attenuates changes in the intestinal mucosa of rats exposed to a high-fat diet in the perinatal and post- weaning periods.

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Thematic axis: Sistema digestório, Nutrição e Metabolismo

Keywords: High-fat diet. Pregnancy. intestinal histomorphometry. Onion. rats.

Abstract:
The high-fat diet (HFD) can alter the components of the intestinal mucosa. These effects can be mitigated by onions, which are rich in phenolic compounds (FC) and fiber. The aim was to evaluate the effects of onion peel powder supplementation on structural components of the intestinal mucosa in rats exposed to an HFD. The study was approved by the EMEVZ/UFBA (Protocol 04/2019). Wistar rats were subdivided into three groups: Control (CC=10), which consumed a control diet (Nuvilab®); HFD (HH=10), rats that consumed an HFD in the perinatal and post-weaning periods; HFD + Onion Peel Powder (HHOP=10), rats that consumed an HFD associated with 7% onion peel powder. On alternate days, the consumption of FC and fiber was assessed. On day 90 of life, the intestine was weighed and its length measured for subsequent histological analysis. For statistical analysis, ANOVA was followed by Tukey, and the Kruskal-Wallis test was followed by Dunn's test. The software used was GraphPad Prism software, and data were considered significant when $p<0.05$. It was observed that increased consumption of FC and fiber in the HHOP groups compared to the HH (CC=0.4064±0.05; HH=1.021±0.10; HHOP=5.202±0.83) and (CC=12.10±1.41; HH=6.717±0.66; HHOP=11.21±1.78), respectively. The HH group had a lower intestinal weight and length compared to the control; however, supplementation was able to increase intestinal weight (CC=17.17±1.054; HH=12.46±1.004; HHOP=12.73±2.093; $p<0.0001$); (length,CC=160.2±8.16; HH=140.2±10.83; $p<0.0001$). There was also atrophy of the mucosal and submucosal the HH group compared to the CC group, but the supplementation attenuated the atrophy of these layers (mucosa CC=286.8±86.10; HH=191.3±61.97; HHOP=226.5±34.03); (submucosa CC=43.16±12.00; HH=25.98±8.53; HHOP=27.29±7.40 $p<0.0001$). The exposure to an HFD resulted in an atrophy of the intestinal mucosa layers. However, increased consumption of phenolic compounds and fiber present in onion peel powder was able to mitigate these effects.

Title: INFLUENCE OF MATERNAL NUTRITIONAL STATUS ON CHILDREN'S METABOLIC PROFILE AND OXIDATIVE STRESS

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Thematic axis: Digestive System, Nutrition and Metabolism

Keywords: Child health. Maternal factors. Cardiometabolic risk.

Abstract:
The increasing prevalence of overweight and obesity in women and children represents an important risk factor for cardiometabolic disorders. This is a quantitative, analytical, cross-sectional study conducted in the municipality of Vitória de Santo Antão, Pernambuco, Brazil. Mothers and children with overweight and obesity were selected through the "Family in Focus" project in municipal schools. Anthropometric parameters, biochemical profiles, and markers of oxidative stress were evaluated (CAAE: 80956824.3.0000.9430). Twenty-nine mothers (35.9 ± 6.2 years) and 29 children (8.9 ± 1.7 years) classified according to BMI were evaluated. The relationship between maternal nutritional status and children's metabolic and oxidative parameters was investigated using the Student's t-test with Mann-Whitney and Spearman's correlation. Among mothers, 93.1% were overweight, with 72.4% having excess body fat, which was associated with greater visceral ($p < 0.001$) and subcutaneous adiposity ($p = 0.009$), lower HDL levels ($p = 0.033$), and higher triglyceride levels ($p = 0.016$). Among children, 24.1% were overweight, had higher BMI ($p = 0.001$), higher total and subcutaneous fat, and significantly increased oxidative stress markers TBARS ($p = 0.034$) and carbonyls ($p = 0.001$). A positive correlation was observed between maternal and infant HDL levels ($\rho = 0.428$; $p = 0.021$), as well as correlations between maternal oxidative markers and infant parameters, including VLDL and carbonyls ($\rho = -0.444$; $p = 0.038$), thiols and lean mass ($\rho = -0.451$; $p = 0.027$), and GST and fasting glucose ($\rho = -0.487$; $p = 0.016$). This study demonstrates that excess maternal body fat and alterations in lipid and oxidative profiles are directly associated with worse indicators of body composition, metabolism, and oxidative stress in children. These findings reinforce the need for preventive and interventional strategies focused on maternal nutritional status to reduce cardiometabolic risks and promote infant health.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Evaluation of intestinal epithelial barrier and colon inflammation in male mice fed a high-fat diet with or without Bisphenol S exposure

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Thematic axis: Digestive System, Nutrition and Metabolism.

Keywords: Bisphenol S. Obesity. Colon. Inflammation. Epithelial barrier.

Abstract:
Bisphenol S (BPS) is an environmental contaminant with endocrine-disrupting properties, capable of eliciting gastrointestinal disturbances. The objective is to demonstrate that BPS, in combination with high-fat diet (HF), can induce intestinal remodeling and barrier dysfunction. Adult male C57BL/6 mice were divided into control (SC), SC+BPS (SCB), HF (HF), and HF+BPS (HFB) groups. BPS (25 µg/kg/day) was given in water for 12 weeks. Body mass (BM) and colon histological, immunohistochemical, and Western blot analyses were performed. Data are expressed as means ± standard deviation. Group differences were assessed using one-way ANOVA, followed by the Holm-Sidak post hoc test. $p<0.05$ will be considered significant. The study approved by the CEUA/UFF (CEUA 1929240521). All groups exhibited increased BM gain compared to the SC (SCB: +82; HF: +364%; HFB: +329%) and adiposity (SCB: +42%; HF: +177%; HFB: +146%). The HFD exhibited higher BM gain (HF: +154%; HFB: +134%) and adiposity index (HF: +94%; HFB: +73%) in relation to the SCB. Reductions, in relation to the SC, were seen in colon length (SCB: -14%; HF: -15%) and crypt depth (SCB: -22%; HF: -23%; HFB: -29%). Goblet cell density in the SCB decreased compared to SC (-77%), the HF (-60%), and the HFB (-63%). In the HF (-42%) and HFB (- 38%), it was reduced compared to the SC. Occluding expression decreased in all groups (SCB: -37%; HF: -50%; HFB: -40%). Cclaudin-2 increased in relation to the SC (HF: +90%; HFB: +72%). There was an increase in the HF compared to the SCB (+57%). ZO-1 was higher in all groups compared to the SC (SCB: +173%; HF: +95%; HFB: +248%). SCB and HFB increased ZO-1 in relation to the HF (SCB: +39%; HFB: +78%), and HFB increase when compared to SCB (+27%). Higher TLR-4 expression was observed in all groups compared to the SC (SCB: +65%; HF: +149%; HFB: +191%). 5-HT-secreting cells was increased in all groups compared to the SC (SCB: +63%; HF: +110%; HFB: +100%). BPS and HF can promote intestinal remodelling and barrier dysfunction.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: METABOLIC DYSFUNCTION-ASSOCIATED STEATOTIC LIVER DISEASE: DIETARY PROFILE OF PATIENTS

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Thematic axis: Digestive System, Nutrition, and Metabolism.

Keywords: Ultra-processed foods. Fatty liver disease. Lifestyle. Fat.

Abstract:
The contemporary dietary pattern has been characterized by an increased consumption of ultra-processed foods (UPFs), to the detriment of meals prepared with fresh or minimally processed foods. This trend is associated with overweight and the development of metabolic disorders, such as Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD). This cross-sectional study aimed to evaluate UPF consumption among outpatients with MASLD. The study protocol was submitted to and approved by the Research Ethics Committee of the School of Nutrition (Approval 7.598.703). Individuals aged ≥18 years, diagnosed with hepatic steatosis by ultrasound and meeting the criteria for metabolic syndrome, were included. Anthropometric data were collected using a scale, measuring tape, bioelectrical impedance, and handgrip dynamometer. Clinical and dietary data were obtained through a structured questionnaire. Body mass index (BMI) was categorized as overweight (≥25kg/m²) or not overweight (<25kg/m²). Dietary assessment was based on three 24-hour dietary recalls, with food items classified according to the NOVA system. The Mann–Whitney test was used to compare nutrient intake between groups defined by hepatic steatosis severity. UPF consumption at or above the 75th percentile (P75) was considered high. The sample consisted of 98 patients (aged 18 to 75 years), of whom 80.6% were women. Among them, 59.0% did not engage in regular physical activity, 95.9% were overweight, and 62.2% had hypertension. Regarding dietary habits, 92.0% reported consuming some type of UPF, with the most frequently consumed being cookies (38.4%), margarine (27.1%), sausage-type processed meats (24.9%), and soft drinks (9.6%). Caloric intake from UPFs ranged from 5.06 to 1653.64 kcal. UPFs accounted for 21.2% of total carbohydrate intake, 13.5% of protein intake, and 38.7% of total fat intake. The findings suggest that UPF consumption makes a substantial contribution to fat intake among patients with MASLD.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Bisphenol S induces hepatic endoplasmic reticulum stress and steatosis in male C57Bl/6 mice**

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Thematic axis: Sistema Digestório, Nutrição e Metabolismo

Keywords: Obesity. Metabolic-associated steatotic liver disease (MASLD). Bisphenol S. Endoplasmic Reticulum Stress.

Abstract:
Bisphenol S (BPS), most used bisphenol A (BPA) substitute, is a widely spread unregulated environmental contaminant associated with metabolic disruptions. Recent studies have linked BPS with metabolic dysfunction-associated steatotic liver disease (MASLD), but its mechanisms remain unclear. We assessed the impact of 4 (B4), 25 (B25) and 50 (B50) µg/kg/day of BPS for 12 weeks on the liver of C57BL/6 mice (CEUA1929240521). Data was analyzed by one- way ANOVA with Holm-Sidak post-hoc test ($p<0.05$). B4 and B25 groups presented higher body mass at the end of the protocol compared to both control (CT) and B50 groups (B4: +8.96% and +7,97%, respectively; B25: +19.46% and +18.38%, respectively). The area under curve of oral glucose tolerance test was higher in B25 group in comparison to CT (+18.54%). Liver mass and stereology-quantified percentage of steatosis were higher in all interventions in relation to CT group, but only B50 group presented a higher amount of binucleated hepatocytes in comparison to CT group (+113.64%, $p<0.05$). Compared to CT group: GRP78 and CHOP protein expression rose in B25 (+151.9%, +224.0%), while ATF4 increased in all BPS groups (B4 +121.4%, B25 +184%, B50 +91.4%); p/t-AMPK decreased in B4 (-55.98%), B25 (-39.99%) and B50 (-51.96%); p/t-Akt declined in B4 (-49.5%). G6Pase expression increased in B4 (+40.4%), B25 (+77.2%) and B50 (+62.8%); PEPCK rose in B25 (+86.4%) and B50 (+77.4%); PPARγ increased in B25 (+38.7%) and B50 (+123.3%); and PLIN5 rose in B25 (+117.8%) and B50 (+103.8%). In conclusion, BPS showed steatogenic behavior, activated hepatic endoplasmic reticulum stress and led to increased gluconeogenesis and lipid metabolism disruption. Our results show metabolic disruptions caused by BPS in hepatocytes across all the doses analyzed, which highlights the importance of studying BPA analogs and their impact on non-communicable chronic diseases such as MASLD.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: OBESITY AND CARDIOMETABOLIC DISEASES IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE

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Thematic axis: Digestive System, Nutrition, and Metabolism.

Keywords: Cardiometabolic diseases. Inflammatory bowel disease. Obesity.

Abstract:
Parallel to the progressive increase in inflammatory bowel disease (IBD), there is also a growing prevalence of obesity in this group. This study aims to determine whether obesity is associated with metabolic diseases in people with IBD. A cross-sectional study was conducted between March 2023 and April 2024 at a referral IBD outpatient clinic. Data collection consisted of a semi-structured questionnaire. Anthropometric measurements were standardized and performed in duplicate, and body mass index (BMI) was used to identify obesity (BMI ≥ 30 kg/m2). In the sample of 143 patients, 61.5% had Crohn's disease (CD), and obesity occurred in approximately 10.0% of patients. However, overweight (BMI ≥ 25 kg/m2) was found in more than 30.0% of both those with CD and those with ulcerative colitis (UC) ($p>0.05$). Most patients with CD were in clinical remission (76.1%) when compared to patients with UC (52.7%) ($p<0.05$). The prevalence of diabetes, systemic arterial hypertension (SAH), dyslipidemia, cardiovascular disease (CVD), and osteoporosis did not differ between the types of IBD ($p>0.05$). However, the prevalence of SAH was higher in the obese group than in those without obesity (29.4% and 6.3%, respectively), but this result was not observed for diabetes, dyslipidemia, and CVD ($p>0.05$). These associations were also observed when comparing the groups with and without overweight. In patients with IBD, obesity was not high, but was associated with the presence of SAH. This association highlights the need to monitor the nutritional status of these patients.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **FETAL PROGRAMMING INDUCED BY LOW-PROTEIN AND HIGH- PROTEIN DIETS: EFFECTS ON BODY GROWTH AND CRANIAL MORPHOMETRY IN WISTAR RATS.**

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Thematic axis: Digestive System, Nutrition, and Metabolism.

Keywords: Cranial morphometry. Lactation. maternal nutrition. somatic growth. wistar rats.

Abstract:
Maternal nutrition during lactation plays a decisive role in the growth and development of offspring, especially during critical periods. Nutritional challenges, such as low-protein and high-fat diets, can compromise body and cranial morphometric parameters, with lasting repercussions on postnatal health. This study analyzed the effects of a low-protein diet (8% casein) and a high-fat diet (23% lipids), administered to mothers during lactation, on cranial axis growth, weight evolution, and somatic development of the offspring. Twenty-four male Wistar neonatal rats were used, divided into three groups (normonourished – N, malnourished – DES, and high-fat – HL). Evaluations were conducted from the 1st to the 21st postnatal day, including weight evolution (WE), anteroposterior cranial axis (APCA), and laterolateral cranial axis (LLCA). Statistical analysis was performed using GraphPad Prism software, with Two-way ANOVA and Bonferroni post-test ($p < 0.05$). CEUA: EMEVZ - UFBA No. 33/2019. The DES group showed lower body weight than the N and HL groups from the 12th day onward (20.90 ± 3.00), with significant differences from the 14th (22.49 ± 3.36) to the 21st day (27.01 ± 4.28). The HL group also showed reduced weight compared to the N group from the 20th day (35.55 ± 8.48). Regarding APCA, both HL and DES groups presented lower values than the N group at various time points, such as HL from the 5th (2.21 ± 0.06) to the 8th (2.57 ± 0.13) and from the 10th (2.75 ± 0.14) to the 21st day (3.45 ± 0.13); DES from the 11th (2.87 ± 0.07) to the 12th (2.94 ± 0.09) and from the 14th (3.08 ± 0.09) to the 21st day (3.35 ± 0.13). In LLCA, the HL group showed reduced growth compared to the N group from the 5th (1.12 ± 0.08) to the 17th day (1.53 ± 0.07), while the DES group showed differences only on the 20th (1.53 ± 0.06) and 21st (1.57 ± 0.05) days. It is concluded that maternal low-protein and high-fat diets during lactation impair somatic and cranial growth of the offspring, highlighting the influence of maternal nutrition on postnatal developmental programming.

Financial support: CNPq, FAPESB.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **EFFECTS OF NEONATAL SUPPLEMENTATION WITH THE SEROTONIN PRECURSORS L-TRYPTOPHAN AND 5-HTP ON SOMATIC GROWTH AND NEURODEVELOPMENT PARAMETERS.**

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Thematic axis: Sistema Digestório, Nutrição e Metabolismo

Keywords: Neurodevelopment. Serotonin. reflex ontogeny. rats.

Abstract:
Introduction: Serotonin (5-HT) plays a crucial modulatory role during critical periods of development, influencing neural and non-neural tissues and potentially altering metabolic programming. Objective: To investigate the effects of neonatal supplementation with the serotonin precursors L-Tryptophan and 5-Hydroxytryptophan (5-HTP) on somatic growth, physical maturation, and reflex ontogeny in rats. Methods: Twenty-four male Wistar neonates from normonutritional dams were supplemented from postnatal day (PND) 2 to 21 with saline (SAL), 5-HTP (10 mg/kg/day), or L-Tryptophan (TRIP, 15 mg/kg/day) (n=8/group). Animals were maintained under controlled laboratory conditions (temperature 23±2°C, humidity, 12h light/dark cycle) with food and water ad libitum. Parameters evaluated included body weight (BW), longitudinal axis (EL), cranial axes [latero-lateral (ELLC) and anteroposterior (EAPC)], tail length (CC), physical milestones [ear canal and pinna opening (ACA, APA), lower and upper incisor eruption (IIS,IRS), and eye opening (AO)], and reflexes [righting reflex (RD), startle response (RS), vibrissae placing (CV), negative geotaxis (GN), cliff aversion (AP), acceleration (AC)]. Ethical approval: CEUA/EMEVZ/UFBA no. 33/2019. Data were analyzed using two-way ANOVA (Bonferroni) or Kruskal–Wallis (Dunn's), with significance set at $p \leq 0.05$. Results: The 5-HTP group showed reduced BW on PND21 ($p<0.001$ vs. SAL and TRIP). TRIP promoted greater EL growth on PND16 ($p<0.01$ vs. SAL) and on PND14 and 16 ($p<0.05$) and PND20 ($p<0.01$ vs. 5-HTP). For ELLC, TRIP was larger on PND1 ($p<0.001$) and PND9 ($p<0.005$ vs. SAL), and from PND8–10, 18, and 21 ($p<0.01$ vs. 5-HTP). No group differences were observed for EAPC. CC growth was reduced in the 5-HTP group on PND20. Regarding reflex ontogeny, TRIP anticipated CV (vs. both) and AP (vs. 5-HTP), but delayed GN (vs. SAL and 5-HTP). No significant differences were found in RD, RS, or AC. For physical milestones, APA occurred earlier in 5-HTP vs. TRIP, and IIS eruption was also anticipated in 5-HTP vs. TRIP. Conclusion: Neonatal supplementation with serotonin precursors exerted distinct effects. 5-HTP reduced weight gain and accelerated specific physical maturation markers, while L-Tryptophan promoted greater, though discontinuous, growth in neural and non-neural tissues and contributed to sensorimotor development. These findings highlight the differential and specific roles of serotonin precursors during critical windows of postnatal development.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Avaliação dos Efeitos Antinociceptivos da Ozonioterapia Sistêmica em Modelo Experimental de Hiperalgesia por Carragenina**

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Thematic axis: Farmacologia, Toxicologia, Produtos Naturais e Química Medicinal

Keywords: Mediação da dor. Músculo masseter. Ozônio

Abstract:
A dor orofacial, especialmente nos músculos mastigatórios, é uma queixa frequente em consultórios médicos e odontológicos. Entre as abordagens terapêuticas em estudo, destaca- se a ozonioterapia, que consiste na aplicação de uma mistura de oxigênio e ozônio com o objetivo de estimular a oxigenação tecidual e modular processos inflamatórios. No entanto, são escassos os estudos sobre seus efeitos na dor miofascial relacionada aos músculos da mastigação. Este estudo avaliou os efeitos da ozonioterapia sistêmica sobre a nocicepção induzida por carragenina no músculo masseter de ratos. Ratos machos adultos foram distribuídos em seis grupos: Sal (solução salina), Car (carragenina), Ibup + Sal (ibuprofeno + salina), Ibup + Car (ibuprofeno + carragenina), O_3+Sal (ozônio + salina) e O_3 + Car (ozônio + carragenina). A mistura de ozônio/oxigênio foi administrada por via intraperitoneal em cinco sessões ao longo de 10 dias. A alodinia mecânica foi avaliada nos tempos 0, 5 h, 1, 3 e 7 dias após a injeção, por meio do limiar de retirada da cabeça, medido com anestesiômetro eletrônico de von Frey. O grupo Car apresentou limiar nociceptivo significativamente reduzido em comparação ao grupo Sal nos tempos de 5 h, 1 d e 3 d ($p < 0,001$). O tratamento com ozônio (O_3 + Car) aumentou o limiar nociceptivo nos tempos de 5 h e 7 d ($p < 0,001$), com eficácia comparável à do ibuprofeno (Ibup + Car). Os dados sugerem que a ozonioterapia sistêmica atenuou a hiperalgesia induzida por carragenina, revelando um potencial efeito antinociceptivo. Conclui-se que a aplicação sistêmica de ozônio pode representar uma alternativa promissora e complementar no manejo da dor miofascial orofacial. O estudo foi aprovado pelo Comitê de Ética no Uso de Animais do Instituto de Ciências da Saúde da UFBA (protocolo nº 5523240320).

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Effects of double neonatal stress on female rat sexual behaviour**

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Thematic axis: Farmacologia, Toxicologia, Produtos Naturais e Química Medicinal

Keywords: Double neonatal stress. Female Rat Sexual Behaviour. Limited bedding and nesting. Maternal separation. Sex.

Abstract:
This study investigated the effects of double neonatal stress (DNS), a combination of repeated maternal separation (MS) and limited nest material availability (LBN), on the sexual behavior of adult rats. Adult male and female Wistar rats from our colony, produced through controlled mating, were used, and the estrous cycle of females was determined through vaginal smears. Wistar rats were subjected to the MS and LBN protocols from postnatal days 1 to 15. Thirty-two litters were separated into two groups: one subjected to LBN and the other to environmental control (EC). LBN was obtained by removing part of the wood shavings contained in the boxes. The boxes were sanitized, and the wood shavings were changed every two days. Litters in the LBN and EC groups were subdivided, with one subjected to MS and the other to maternal separation control (CS). Litters were separated from their mothers for 180 minutes each day. At P21, the rats were weaned and separated by sex. At P75, females underwent estrous cycle length assessments. Sexual behavior was assessed in adulthood (P90) in an arena with a 10-minute adaptation period. Subsequently, a sexually experienced male was introduced for interaction for 30 minutes. Sexual receptivity was analyzed by lordosis quotient, and proceptivity by jumping and running, ear flapping, and rate of genital exploration. The tests were videotaped and evaluated by three observers. Data were analyzed by two-way ANOVA and Tukey HSD tests, with $P<0.05$ considered. DNS significantly reduced female receptive and proceptive behavior, leading to sexual inhibition in males. Latency and frequency of mounting, intromissions, and ejaculations were assessed. DNS inhibited female sexual response, with LBN being the main factor. Neonatal stress may affect the development of neural circuits involved in female sexual response.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: POTENTIAL USE OF G-CSF THERAPY IN SKELETAL MUSCLE ALTERATIONS INDUCED BY *BOTHROPS LEUCURUS* VENOM

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Thematic axis: Pharmacology, Toxicology, Natural Products and Medicinal Chemistry

Keywords: *Bothrops leucurus.* G-CSF. Inflammation. Myotoxicity. Venom.

Abstract:
Snakebite is a major public health issue in tropical regions. In Bahia/BR, 70% of these incidents are caused by *Bothrops leucurus* snake (BL). Antivenom neutralizes systemic effects and prevents death, but it does not address the local effects that cause significant sequelae. Therefore, research has been conducted to find complementary alternatives to minimize the local effects caused by *Bothrops* venom. Experimental Granulocyte Colony-Stimulating Factor (G-CSF) treatments in skeletal muscle (SM) showed an increase in the diameter of regenerative fibers, a rise in myocyte numbers, and enhanced angiogenic effects, improving tissue recovery. This study aimed to characterize the temporal progression of SM injury and repair induced by BL venom in an experimental model. Effect of G-CSF treatment (Filgrastim®) on these parameters was also evaluated. Swiss mice (n=5) were inoculated with BL venom (50µg/paw) and euthanized at 3h, 6h, 24h, 7d, 14d, and 28d (CEUA-ICS 3470020420). G-CSF (0,3µg/µL) was administered to distinct groups at 7d and 28d post-inoculation. Local damage was assessed through plasma creatine kinase (CK) quantification, histology (HE and Picrosirius Red staining), inflammatory cell counts, and cytokine gene expression (RT-qPCR). Statistical analysis was performed using a t-test or one-way ANOVA followed by Tukey's test. Venom-induced myotoxicity was confirmed by elevated CK at 6h, along with edema, hemorrhage, myonecrosis, myofibrillar hypercontraction, and delta lesions. Inflammatory infiltrates were observed at all time points, peaking at 14d. Gene expression revealed increased levels of IL-6, IL-10 at 24h, TNF-α, IL-1β, ARG, VEGF at 7d and INF-γ at 14d. G-CSF treatment reduced pro-inflammatory cytokine expression, improved vascular growth, and lowered collagen deposition, suggesting enhanced muscle recovery. These findings suggest that G-CSF could be an effective adjunctive treatment to reduce musculoskeletal damage following BL envenomation.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: RUTIN POTENTIAL AS A NEUROPROTECTIVE AGENT IN RETINAL CULTURES SUBJECTED TO ISCHEMIC STRESS

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Thematic Axis: Pharmacology, Toxicology, Natural Products and Medicinal Chemistry

Keywords: Retina, Rutin, Retinal Detachment

Abstract:
Introduction: Cases of blindness and low vision are globally increasing according to the World Health Organization. Vision loss is often a consequence of the progression of retinopathies that can lead to irreversible neuronal loss. Retinal detachment (RD) is a common condition that results in neuronal death and total or partial vision loss, even with currently available treatments. Previous studies have demonstrated the potential of rutin as a neuroprotective and immunomodulatory compound. However, its potential to preserve retinal neurons during ischemic damage remains poorly explored. This study investigates the effect of rutin on neural cell survival and glial response in an Oxygen and Glucose Deprivation (OGD) model. **Objectives:** To investigate the effect of rutin on the survival and immune response of retinal neural cells from mice subjected to an OGD model. **Materials and Methods:** All procedures involving animals were approved by CEUA-UFBA (protocol nº 6731220818). Mixed retinal cultures from mice (P0–P4) were maintained for 7 days or until confluence. The cultures were characterized by morphology (Rosenfeld) and immunocytochemistry (ICC) (βIII-tubulin and GFAP). Rutin cytotoxicity was evaluated using the MTT assay. **Results:** The presence of neurons, astrocytes, and Müller glia in the mixed retinal cultures was confirmed through ICC and morphology. Rutin (0.1–35 μM) did not show significant cytotoxicity at any of the tested time points: 24 h, 48 h, and 72 h ($p > 0.05$, Kruskal-Wallis with Dunn's test, $N = 3$). **Conclusion:** Rutin showed a safe profile in mixed retinal cultures, with no cytotoxicity at the evaluated concentrations. These results suggest rutin could be investigated as a neuroprotective compound in OGD models, opening perspectives for therapeutic studies in retinopathies.

Funding: CAPES, FAPESB, CNPq

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Analgesic potential of *Lactobacillus acidophilus* LA85 on experimental chronic painful neuropathy

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Thematic axis: Pharmacology, Toxicology, Natural Products, and Medicinal Chemistry

Keywords: Analgesic. *Lactobacillus acidophilus.* Neuropathy. Pain. Probiotic therapy.

Abstract:
Neuropathic pain (NP) is a debilitating and difficult-to-control condition, with limited current treatments. Studies support the cytokine modulation in NP relief. Modulation of the gut microbiota with probiotics, particularly the *Lactobacillus acidophilus* LA85 strain, has shown promising results in experimental models of inflammation and chronic pain. Based on these evidence, the present study aimed to characterize the analgesic potential of *Lactobacillus acidophilus* LA85 (LA85) in a preclinical model of chronic painful neuropathy induced by sciatic nerve constriction. Adult male C57BL/6 mice (CEUA-UFBA No. 03/2024) were divided into groups (n=6): *naïve*, *sham*, vehicle, LA85 (1×10^9 CFU, p.o., once a day), and gabapentin (70 mg/kg, p.o., twice a day). Nociceptive thresholds for response to mechanical stimuli (von Frey test), thermal stimuli (Hargreaves test), and motor performance (rota-rod test) were measured before and on the day of model induction, and on alternate days during 28 days of treatment. Samples of the spinal cord (L4–L5) were collected for determination of interleukin (IL)-1β and IL-10 by ELISA. Treatment with LA85 increased the mechanical nociceptive threshold ($p<0.05$), compared to the vehicle group, from day 18 onward, reaching baseline levels from day 24 onward. LA85 treatment gradually increased the thermal nociceptive threshold ($p<0.05$) from day 5, compared to the vehicle group, restoring basal levels from day 8 and remaining consistent until the end of the experimental period, similarly to naive animals. No LA85-induced motor impairment was evidenced in the rota-rod test, which supports the analgesic effect. ELISA analysis revealed that LA85 treatment reduced interleukin-1β levels but did not increase IL-10 levels in the spinal cord of neuropathic mice. The data suggest that treatment with *Lactobacillus acidophilus* LA85 modulates painful sensory signaling in the proposed model. Subsequent analyses are needed to better characterize the mechanisms.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Antinociceptive Effects of *Pogostemon cablin* Essential Oil: Role of the K^+ATP/NO Pathway

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Thematic axis: Pharmacology, Toxicology, Natural Products, and Medicinal Chemistry

Keywords: Analgesic. Anti-inflammatory. Essential oil. Patchouli. *Pogostemon cablin*.

Abstract:
Pogostemon cablin essential oil (POEO), commonly known as "patchouli", has traditionally been used, in some cultures, for its analgesic properties by oral route. However, Brazilian regulations restrict the use of essential oils to inhalation. This study evaluated the analgesic potential of POEO administered both by inhalation (150-600 µL) and oral route (10–40 mg/kg) in classical experimental models. POEO (3.1–200 µg/mL) was evaluated for cytotoxicity and nitric oxide production in LPS + IFNγ–stimulated raw 264.7 macrophages. Adult male *Swiss* mice (CEUA n. 27/2021) were used to assess chemical (formalin test) and thermal (tail-flick test) nociception, as well as motor integrity (rota-rod test). Functional antagonism assays were performed to explore potential mechanisms of action. POEO showed no cytotoxicity up to 25 µg/mL, allowing progression to further assays. At non-cytotoxic concentrations, POEO (3.125–25 µg/mL) reduced nitrite levels in macrophage cultures, indicating an anti-inflammatory response. In the formalin test, POEO inhalation inhibited the first phase at 600 µL and the second phase at 300 and 600 µL, while by oral route reduced nociceptive behavior in both phases in the same doses (20–40 mg/kg). In the tail-flick test, both POEO inhalation (300–600 µL) and oral administration (20–40 mg/kg) increased thermal nociceptive thresholds ($p<0.05$), without reducing motor function. Pharmacological antagonism assays revealed that opioid, α2-adrenergic, GABAergic, serotonergic, and cholinergic pathways are not involved in POEO's antinociceptive mechanism. In contrast, K^+ATP channel blockade slightly reversed its effect. Inhibition of the nitric oxide synthase fully reversed antinociception, while L-arginine pretreatment enhanced it, indicating involvement of the NO pathway. These findings suggest that both oral and inhaled POEO induce antinociception, partly via K^+ATP/NO pathway, and exhibit anti-inflammatory potential, supporting further *in vivo* investigations.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Involvement of the Prostaglandin Pathway and Opioid Receptors in the Anti-inflammatory and Antinociceptive effects of the Thiophenic Derivative 7CN03: An Integrated Approach of *In Silico*, *In Vitro*, and *In Vivo* Studies.

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Thematic axis: Pharmacology, Toxicology, Natural Products and Medicinal Chemistry

Keywords: Analgesic. Anti-inflammatory. Thiophene derivates.

Abstract:
Thiophene derivatives, such as 7CN03, have shown promising anti-inflammatory potential due to their structural versatility. Given current therapy limitations in managing pain and inflammation, the search for new pharmacological options remains crucial. This study aimed to evaluate the anti-inflammatory and antinociceptive properties of 7CN03 and investigate its mechanisms of action. *In silico* molecular docking assessed the binding affinity of 7CN03 to key inflammatory targets. *In vitro* assays using stimulated J774 macrophages evaluated effects on cell viability, nitric oxide (NO) and cytokine production. Male Swiss mice (CEUA/UFPB nº4709140523) were orally treated with 7CN03 (0.001-10.0 mg/kg) and subjected to the formalin test. Opioid receptor involvement was evaluated using functional antagonism. Additionally, in the CFA-induced inflammation model, effects were assessed on paw edema (plethysmometry), mechanical nociception (von Frey filaments), and PGE_2 levels (radioimmunoassay). Motor function was assessed with rotarod test. Molecular docking revealed strong binding affinity of 7CN03 to COX-2, iNOS, and NF-κB, with favorable interactions at active sites. *In vitro* assays showed 7CN03 was non-cytotoxic up to 500 µg/mL and inhibited NO production (IC_{50}=78.29 µg/mL; $p<0,05$), without affecting TNF-α or IL-1β levels. *In vivo* assays demonstrated that 7CN03 reduced nociceptive behavior in both formalin test phases ($p<0,05$); this effect was reversed by naloxone, indicating opioid system involvement. In the CFA-induced inflammation model, 7CN03 reduced paw edema ($p<0,05$), increased mechanical nociceptive threshold ($p<0,05$) and reduced PGE_2 levels in the inflamed paw ($p<0,05$). Rotarod showed preserved motor function. Together, these findings indicate that 7CN03 exhibits anti-inflammatory and antinociceptive effects, likely mediated by PGE_2 inhibition and opioid receptor activation, supporting its potential as a candidate for analgesic and anti-inflammatory drug development.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Effect of rutin on morphogenesis, plasticity and anti-inflammatory process in cerebellum and PC12 cultures

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Thematic axis: Farmacologia, Toxicologia, Produtos Naturais e Química Medicinal.

Keywords: Cerebellum. Neuroplasticity. PC12. Rutin.

Abstract:
Neuroplasticity is the neural network's ability to continuously remodel itself. Rutin is a flavonol and a potential drug due to its in vitro and in vivo modulatory effect on plasticity and neuroinflammation. The PC12 cell line, derived from a rat adrenal medulla pheochromocytoma, is used to study drug cytotoxicity, neuroinflammation, and neuroplasticity. Another study model is primary culture of cerebellar cells (project approved by CEUA nº 6731220818), which are responsible for the perception and progression of sensory and motor skills, modulation of cognitive and emotional capacities, and an atypical neurogenic niche. Cerebellar primary culture were prepared of mouses (P0-P3) and PC12 undifferentiated were treated rutin 0.1; 0.5; 1; 5µM (PC12) 0.1; 1µM (cerebellum). Cytotoxicity was determined by the MTT test after 24h, 48h and 72h of treatment with rutin. The neuroprotection potential was analyzed by the propidium iodide test after 12h (PC12) or 24h (cerebellum) of exposure to LPS 1µg/mL (cerebellum) or 5µg/mL (PC12) and subsequently 24h of treatment with rutin. Cellular morphology was demonstrated by phase contrast microscopy, panoptic staining and immunofluorescence. RESULTS: Both cultures did not show a reduction in cell viability at any of the rutin concentrations tested. By phase contrast microscopy, it was observed, in the PC12 cultures, that the remaining adhered cells, presented vacuolization and cytoplasmic retraction suggestive of stress as the concentration and time of exposure to rutin increased, while the cells of the cerebellum culture showed no changes in the extracellular medium or morphology in any rutin treatment group. In the cerebellum culture, morphologies suggestive of astrocytes were observed, in addition to neurons that grew predominantly grouped in dense islands. Cell viability by the propidium iodide test and morphological characterization by immunofluorescence still need to be investigated.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Psychobiotic Potential of *Lactobacillus acidophilus* LA85 in Mice

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Thematic axis: Pharmacology, Toxicology, Natural Products and Medicinal Chemistry

Keywords: Anxiolytic. antidepressant. *Lactobacillus acidophilus.* Probiotic therapy. Psychobiotic.

Abstract:
Preclinical and clinical evidence indicates that the administration of psychobiotics, probiotics with central nervous system activity, especially specific *Lactobacillus* substrains, can reduce anxiety- and depression-related behaviors. This study evaluated the psychobiotic potential of the *Lactobacillus acidophilus* strain (LA85) in a preclinical setting. Male Swiss mice (CEUA No. 63/2022) were divided into groups (n = 10) and orally treated for 14 days with LA85 (1×10^9 CFU in skim milk, 200 µL), vehicle (skim milk, 200 µL), escitalopram (20 mg/kg), or diazepam (3 mg/kg), gold-standard drugs for depression and anxiety, respectively. Anxiety-related behaviors were evaluated using the open field test (OFT), elevated plus maze (EPM), and light-dark box test (LDB). Depression-like behaviors were assessed through the tail suspension test (TST) and forced swim test (FST). Behavioral assessments were performed on days 0, 7, and 14 of treatments. In the anxiety models, response patterns varied across paradigms. In the OFT and LDB, LA85 did not produce significant effects. In contrast, in the EPM, LA85 treatment increased both the number of entries and the time spent in the open arms, suggesting a potential anxiolytic effect ($p < 0.05$) comparable to diazepam. Results from both the FST and TST showed that LA85 treatment increased the latency to immobility and reduced immobility time ($p < 0.05$), similar to escitalopram, indicating significant antidepressant-like properties. To explore a possible modulation of the hypothalamic-pituitary-adrenal axis, adrenal gland weights were found to be significantly reduced ($p < 0.05$) in both the LA85- and escitalopram-treated groups compared to the control. Data are expressed as mean ± SD (n = 8–9/group) and were analyzed using one-way or two-way ANOVA followed by Tukey's or Bonferroni's post hoc tests with significance set at $p < 0.05$. These results suggest that *Lactobacillus acidophilus* LA85 has potential antidepressant effects and an indicative anxiolytic profile. Further studies are warranted to clarify its mechanisms of action and therapeutic potential, particularly as an antidepressant.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Anti-Inflammatory Properties of the Essential Oil of Jurema Branca (*Mimosa verrucosa*)**

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Thematic axis: Pharmacology, toxicology, natural products and natural chemistry

Keywords: Essential oil. Mimosa verrucosa. Nociception. inflammation.

Abstract:
Inflammation and pain are common symptoms in various clinical conditions, and the search for more effective therapies with fewer side effects is essential to expand treatment options. Essential oils are volatile compounds produced by the secondary metabolism of plants and possess great therapeutic potential. Mimosa verrucosa, commonly known as Jurema Branca, is a species native to the Brazilian Caatinga, traditionally used as an analgesic, antipyretic, and anti-inflammatory agent. This study aimed to evaluate the anti-inflammatory properties of the essential oil from Mimosa verrucosa (OEMV) using in vitro and in vivo experimental models. Initially, the anti-inflammatory potential was investigated in vitro, using the J774 stimulated macrophages assay, to evaluated the effects of OEMV on cell viability (Alamar Blue assay), and nitric oxide (NO) production (Griess method). In vivo studies were performed on male Swiss mice (25–30g). Anti-inflammatory activity was investigated using the CFA-induced paw inflammation model, evaluating the effects of OEMV on paw edema (plethysmometry) and mechanical nociception (von Frey filaments). Motor function interference was tested in the rota-rod assay. All procedures involving animals were approved by the Animal Ethics Committee of FIOCRUZ/BA (CEUA-IGM 027/2021). In vitro assays showed that OEMV was non-cytotoxic up 100 µg/mL and decreased NO production, in a concentration-dependent manner, between 50 and 6.25 µg/mL ($p < 0.05$), indicating potential anti-inflammatory effects. In vivo, OEMV reduced the CFA-induced paw edema at 100 mg/kg ($p < 0.05$). The essential oil also induced antinociceptive effect at 200 mg/kg for up to 8 hours, with no motor impairment. These findings suggest that OEMV possesses relevant anti-inflammatory properties under experimental conditions, supporting its traditional use. Further studies are needed to clarify its mechanisms and validate clinical applicability.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: *In Vitro* Evaluation of Anti-inflammatory Potential of Pregnane Glycosides from *Ruehssia caatingae* Root

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Thematic axis: Pharmacology, Toxicology, Natural Products and Medicinal Chemistry

Keywords: Anti-inflammatory. Macrophages. Pregnane glycosides. Ruehssia caatingae.

Abstract:
Ruehssia caatingae is a shrub of the Apocynaceae family, endemic to the Brazilian semi-arid region. The Apocynaceae family contains plants with anti-inflammatory properties, although no pharmacological studies have been reported for *Ruehssia caatingae*. In this study, the *in vitro* anti-inflammatory potential of fourteen purified pregnane glycosides isolated from the roots of R. caatingae was investigated. The plant material was collected in Paraíba, Brazil (6°55'18"S, 35°58'22"W; SISGEN A5B0BFC). The anti-inflammatory potential of the compounds was evaluated in the stimulated macrophage assay. Init ially, the cytotoxicity of compounds was evaluated in J774 macrophages stimulated with LPS and IFN-γ using the Alamar Blue assay. The anti- inflammatory activity was evaluated by measuring the effects of the compounds on the production of nitric oxide (NO) and cytokines IL-1β and IL-6 by macrophages, using the Griess method and ELISA, respectively. IC_{50} values were calculated based on the concentration-effect curves. The compounds showed low or no cytotoxicity up to 500 μM. All compounds reduced NO production ($p < 0.05$), however, with distinct pharmacological profile. The pharmacological potency of the compounds ranged from 136.9 to 17.5 μM, and was lower than that of the gold standard drug dexamethasone (4.8 μM). The efficacy, i.e., the maximum achievable response, of compounds 6, 11, 12, 13, 14, and 15 was similar to or superior to that of dexamethasone (40 μM, 51.6%). Compounds 4 and 7 exhibited the highest efficacies of the series, with inhibition above 70%. Regarding cytokines, most compounds significantly decreased the levels of IL-1β and IL-6 ($p < 0.05$). The inhibitory effects of compounds 4, 6, 7 and 13 on IL -1β and IL-6 levels were equivalent to those of dexamethasone. Taken together, the results demonstrate that the compounds exhibit potential anti-inflammatory activity, supporting their promise as prototypes for the development of new drugs.

Title: Hybrid Molecules of Anandamide and Celecoxib with Potential Anti-Inflammatory

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Thematic axis: Pharmacology, Toxicology, Natural Products and Medicinal Chemistry

Keywords: Anandamide. Anti-inflammatories. Celecoxib. Endocannabinoids. Novel drugs.

Abstract:
Pain and inflammation are common in chronic diseases such as cancer, rheumatic disorders, diabetes, cardiovascular, and neurodegenerative conditions, significantly affecting patients' quality of life. Conventional analgesics and anti-inflammatory drugs have limited efficacy and may cause adverse effects, especially with long-term use, reinforcing the need for safer therapies. Molecular hybridization is a promising strategy that combines bioactive molecules to improve pharmacological properties. In this study, hybrid compounds were developed by combining anandamide (an endocannabinoid) and celecoxib (a selective COX-2 inhibitor) to enhance anti-inflammatory activity. Fifteen hybrid molecules were synthesized and evaluated for cytotoxicity and inhibition of nitric oxide (NO) production in LPS + IFNγ-stimulated peritoneal macrophages (CEUA-IGM 002-2024). Cytotoxicity (1.9–1000 μM) was assessed using the Alamar Blue assay, and anti-inflammatory activity (1.9–125 μM) was evaluated by the Griess method, with IC_{50} values calculated. Eleven compounds were non-cytotoxic. Four showed CC_{50} values between 703–951 μM. Twelve compounds significantly inhibited NO production ($p < 0.05$). The most potent were: LQFM247 (IC_{50} = 1.09 μM), LQFM305 (2.46), LQFM301 (2.50), LQFM299 (2.51), and LQFM297 (2.60), all more effective than dexamethasone (IC_{50} = 4.8 μM). Compounds with halogen substitutions at the ortho and meta positions of the phenyl ring, as well as those without substituents or with trifluoromethyl groups, were particularly effective in inhibiting NO production, suggesting they are promising prototypes for new anti-inflammatory agents.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Antinociceptive properties of cannabigerol oil in diabetic neuropathy in mice**

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Thematic axis: Farmacologia, Toxicologia, Produtos Naturais e Química Medicinal

Keywords: Antinociceptive. Cannabigerol. Diabetic Neuropathy.

Abstract:
Diabetic neuropathy (DN) is a frequent and debilitating complication of diabetes mellitus, for which there are currently no effective therapeutic approaches. The antinociceptive activity of Cannabis sativa components has been widely studied, and more recently, the antinociceptive effects of cannabigerol (CBG) have been demonstrated. CBG is a non-psychoactive phytocannabinoid considered a precursor to other cannabinoids. Thus, the present study evaluated the antinociceptive potential of CBG oil (CBGO) in a mouse model of diabetic neuropathic pain (NP). Male C57BL/6 mice (CEUA 118/2023) were subjected to a streptozotocin-induced DN model. Body weight, glycemia, motor function (rotarod test), mechanical (von Frey test) and thermal (Hargreaves test) nociceptive thresholds were assessed before and after NP induction throughout the experimental period. CBGO (10–40 mg/kg) and vehicle (olive oil, 20 mg/kg) were administered intraperitoneally in a daily regimen (every 12 hours). Gabapentin (70 mg/kg, oral route) served as the reference drug. Diabetic mice exhibited behavioral signs of sensory neuropathy, characterized by mechanical allodynia and heat hypoalgesia ($p < 0.05$). A single administration of CBGO (20–40 mg/kg) attenuated neuropathy-associated nociceptive threshold changes ($p < 0.05$). These effects were not dose dependent and were unrelated to motor impairment. Repeated CBGO treatment (20 mg/kg) for 10 days alleviated heat hypoalgesia until the end of the experimental period. However, mechanical allodynia was only reduced during the first 8 days of treatment, suggesting that repeated CBGO administration may induce tolerance to its antinociceptive effects. No significant changes in body weight or glycemia were observed during treatment. The results demonstrate that cannabigerol oil exhibits antinociceptive properties in diabetic neuropathy, modulating both mechanical and thermal sensitivity.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Lipid system improves analgesic properties of cannabidiol**

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Thematic axis: Pharmacology, Toxicology, Natural Products and Medicinal Chemistry

Keywords: Analgesic**.** Antinociceptive effect. Bioavailability. Cannabinoids. Lipid-based formulations.

Abstract:
Neuropathic pain is a chronic and debilitating condition with high prevalence and limited response to conventional pharmacological treatments. Cannabidiol (CBD), a phytocannabinoid from *Cannabis sativa*, has shown analgesic potential, however, its clinical application is limited due to its low bioavailability. To overcome this obstacle, lipid-based systems have been developed to improve CBD absorption and efficacy. This study aimed to investigate and compare the antinociceptive effects of a lipid-based CBD system (SL-CBD) and CBD in a preclinical model of neuropathic pain induced by sciatic nerve ligation. Male C57BL/6 mice were used (CEUA UFBA No.118/2023). The animals were divided into six groups (n=6–8): naïve, sham, SL-blank, SL-CBD, CBD, and CBD vehicle, administered orally. Thermal (Hargreaves test) and mechanical (von Frey test) nociceptive thresholds and motor performance (rota-rod) were evaluated before and after induction, during acute treatments (25, 50, and 75 mg/kg; 1, 2, 4, 6, 8, and 10 hours) or repeated treatments (50 mg/kg; every 12 hours for 7 days). Results demonstrated that, after neuropathy induction, mechanical and thermal nociceptive thresholds were reduced ($p<0,05$), confirming the establishment of neuropathic pain. Acute treatment with SL-CBD produced antinociceptive effects at all doses ($p<0,05$), which were significantly greater than those of CBD ($p<0,05$). However, the 75 mg/kg of SL-CBD caused motor impairment. Therefore, 50 mg/kg was selected for repeated treatment. Similarly, SL- CBD and CBD increased thermal and mechanical thresholds at 50 mg/kg and did not induce motor deficits. SL-CBD showed a statistically superior antinociceptive effect compared to CBD ($p<0,05$), indicating potentiation of CBD activity. The data demonstrate that SL-CBD induced enhanced antinociceptive effects in a neuropathic pain model, suggesting that the formulation improved the therapeutic performance of CBD.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **The reduction in cardiac contractility induced by *Lippia grata* essential oil appears to involve TRPM4 channels: A promising target in cardiovascular diseases**

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Thematic axis: Pharmacology, Toxicology, Natural Products and Medicinal Chemistry

Keywords: Cardiovascular diseases. Essential oil. Hypertension. *Lippia grata*.

Abstract:
Hypertension is a major risk factor for cardiovascular disease. Essential oils from medicinal plants, such as *Lippia grata* (LG), which is rich in carvacrol and thymol, have effects on the cardiovascular system, with potential cardiac effects. This study aimed to investigate the chronotropic and inotropic effects of LG extract and elucidate its underlying mechanisms of action. Atrial tissues were isolated from normotensive Wistar and spontaneously hypertensive rats (SHR), aged 12 to 18 weeks, following euthanasia in a CO_2 chamber. Contractility and rhythmicity were assessed in left and right atria, respectively. The involvement of β-adrenergic signaling and TRPM4 channels was evaluated using propranolol (10μM) and 9-phenanthrol (10μM), respectively. All procedures were approved by the Institutional Animal Ethics Committee (protocol no.130/2017,ICS/UFBA). In the left atria of Wistar (44.5%±11.2 and 12.2%±4.6) and SHR (56.7%±8.9 and 13.7%±4.2) rats, LG
induced a negative inotropic effect at 0,03 and 0,1μg/mL, respectively, compared to the control (100%±0.0; n=5; p<0.001) and at a concentration of 0.3μg/mL completely abolished atrial contraction. In the right atrium of SHR, the reduction in heart rate was significant at concentrations of 0.3μg/mL (92,30%±1,16) and 1.0μg/mL (92,30%±1,16). In the right atrium of Wistar animals, LG had no significant effect at the concentrations tested. The negative inotropic effect persisted in the presence of propranolol but was significantly attenuated after pre-incubation with 9-phenanthrol. These findings indicate that LG exerts direct cardiac effects by decreasing both contractile force and heart rate in a concentration-dependent manner, particularly under hypertensive conditions. The preserved response in the presence of a β-adrenergic blocker and its attenuation by TRPM4 inhibition suggests a mechanism independent of adrenergic signaling, potentially mediated via modulation of TRPM channels. Financial

Support: CNPq, FAPESB and UFBA.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Gestational Acephate Exposure Alters Placental Transcriptome: Compensatory Mechanisms for Fetal Growth Restriction and Links to Preeclampsia**

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Thematic axis: Farmacologia, Toxicologia, Produtos Naturais e Química Medicinal

Keywords: Acephate. IUGR. Pesticide. Placenta. RNA-Seq.

Abstract:
Acephate (ACE) is the most used insecticide in Brazil, although it has been banned in some countries. ACE can act as an endocrine disruptor chemical, as its negative effects on glucose homeostasis and the reproductive system have already been demonstrated, but the impacts of *in utero* exposure have not yet been fully investigated. Our hypothesis is that maternal exposure to ACE during pregnancy may alter placental function and cause sex-specific changes in the offspring. From 6.5th to 18.5th day of gestation, rats were exposed by gavage with water (control) or acephate (4.5 mg/kg body weight; ACE). On the 18.5th day, placentas (n=8 dams/group) and fetuses were obtained via cesarean section (CEUA 012/2022). We extracted placental total RNA and performed transcriptomic analyses and protein-protein interaction using the STRING database. Statistic: Student's t-test ($p<0.05$) showed that ACE exposed-dams had fetuses of both sexes with intrauterine growth restriction (IUGR) (-13%). Placental efficiency was reduced in males (-10%) and increased in females (+20%). Transcriptomic analyses (FDR<0.01; FC>=2) revealed no differential expression in male placentas; female placentas had 135 genes up-regulated and 171 down-regulated. Genes associated with processes such as angiogenesis, BMP signaling, and cellular activity, like THBS4, BMP6, and HMox1, important for protection against preeclampsia and IUGR are down-regulated. 15 genes from the SLC transporter family, including Slc7a7, Slc1a5, and Slc2a3, and genes involved in vascularization processes, response to angiotensin, and immune system, such as Agtr1a, Flt1, and C1qc, were upregulated, suggesting a compensatory response to the reduction in fetal weight, but can be associated with preeclampsia. In conclusion, the fetal development and the placental transcriptome are modified by gestational exposure to acephate in a sex-specific manner, triggering mechanisms that may be related to IUGR and preeclampsia.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Oxidative stress as a mechanism of placental dysfunction induced by gestational acephate exposure.**

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Thematic axis: Farmacologia, Toxicologia, Produtos Naturais e Química Medicinal

Keywords: Acephate. Endocrine disruptors. Maternal exposure. Placental function. Redox homeostasis.

Abstract:
Acephate (ACE) is an organophosphorus pesticide that is widely used in Brazil and is classified as a potential endocrine-disrupting chemical (EDC). However, the impact of maternal exposure to this pesticide on placental function, particularly regarding redox homeostasis, is not well understood. The hypothesis of this study is that exposure to ACE during pregnancy may alter placental metabolism and impair redox homeostasis, resulting in sex-specific changes in fetal development. Pregnant Wistar rats were treated by gavage from gestational day (GD) 6.5 to 18.5 with vehicle (filtered water; control) or acephate(4.5 mg/kg body weight), n=8/group. On GD18.5, cesarean sections were performed, and placentas and fetuses were collected. We evaluated placental weight, placental efficiency, fetal weight, and placental redox homeostasis in the labyrinth and junctional zones of the placenta. Redox markers included activity of catalase (CAT), total superoxide dismutase (SOD), and protein carbonylation. Protocol approved: CEUA 012/2022. Statistical analysis was performed using a Student's t-test (considering $p<0.05$). Maternal exposure to ACE resulted in significant changes to the evaluated parameters. In the placenta, we observed that females exposed to ACE had increased placental efficiency (+20%), whereas males showed a reduction (-10%). Fetal weight decreased in both males and females (-13%). Redox analysis revealed a reduction in CAT activity in the junctional zone of male placentas (0.0067 U/mg CON VS 0.0019 U/mg ACE) and a reduction in SOD in the junctional zone of females (0.079 U/mg CON VS 0.048 U/mg ACE). Additionally, protein carbonylation increased in the labyrinth zone of males (+1.6x) and females (+87%) exposed to ACE. Maternal exposure to ACE alters placental redox homeostasis, with sex-specific effects on fetal development and placental efficiency. These results suggest that ACE affects placental function through oxidative stress, which could compromise offspring development.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Immunomodulatory Potential of Physalin F: Effects on Human PBMC and *In Silico* Interaction with Calcineurin

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Thematic axis: Pharmacology, Toxicology, Natural Products and Medicinal Chemistry

Keywords: Calcineurin. Physalin F. Immunomodulation.

Abstract:
Numerous inflammatory diseases, autoimmune conditions, allergies, and immunodeficiency syndromes can arise when the immune system is undesirably or excessively activated. However, the drugs currently used to treat these conditions often present serious adverse effects, highlighting the need for new therapeutic agents. In this context, physalins are compounds found in plants of the *Solanaceae* family, especially in species of the genus *Physalis* spp., with physalin F standing out for its anti-inflammatory and immunosuppressive biological activities. Nevertheless, there is limited data in the literature regarding the effects of this molecule on human cells and its potential mechanisms of action. Therefore, the aim of the present study was to investigate the immunomodulatory effects of physalin F on human peripheral blood mononuclear cells (PBMCs) and its possible mechanisms of action. Initially, a cytotoxicity assay was performed. Subsequently, the effect of the treatment on mitogen-activated lymphoproliferation was evaluated by CFSE labeling, and the compound's impact on inflammatory mediator production was assessed by ELISA or ELISPOT. In addition, molecular docking was performed to evaluate the interaction between physalin F and calcineurin, and the compound's effect on gene expression was assessed by qRT-PCR. All experiments were conducted following approval by the Research Ethics Committee (CEP no. 5.839.71). Physalin F, at the tested concentrations (0.5, 1, and 2 μM), showed no cytotoxicity toward PBMCs. Following treatment, physalin F inhibited lymphoproliferation and reduced the levels of inflammatory mediators such as IL-2 and IFN-γ. The compound modulated key genes in the NFAT pathway, including *NFAT1*, *NFAT2*, *PPP3CA*, *PPP3CB*, and *PPP3CC* and showed a favorable *in silico* interaction with calcineurin. These findings demonstrate a potent immunosuppressive activity of Physalin F, likely mediated through modulation of the NFAT signaling pathway.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: ***Immunomodulatory Activity of 6,6a-Dihydrodemethoxyguadiscin Isolated from Guatteria friesiana***

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Thematic axis: Pharmacology, Toxicology, Natural Products, and Medicinal Chemistry

Keywords: Annonaceae. Immunomodulation. Natural Products.

Abstract:
Inflammation is a physiological response of the body to tissue injury or harmful agents, which can lead to pathological changes when dysregulated. Although synthetic anti-inflammatory drugs are effective, their use is frequently associated with adverse effects. As an alternative, natural compounds from the Annonaceae family have shown promising therapeutic potential. This study aimed to evaluate the anti-inflammatory and toxicological potential of the compound 6,6a-dihydrodemethoxyguadiscin (DHG), isolated from *Guatteria friesiana*, through *in silico* and *in vitro* approaches. *In silico* predictions were performed using the ADMETlab 3.0 platform to assess physicochemical properties, absorption, distribution, metabolism, excretion, and toxicity. Toxicity predictions were complemented using the Protox 3.0 platform. *In vitro*, cytotoxicity was evaluated in RAW 264.7 macrophages using the AlamarBlue assay, and the hemolytic potential of DHG was assessed in human erythrocytes. To validate its anti-inflammatory effect, nitric oxide levels were measured using the Griess assay in macrophage cultures stimulated with LPS and IFN-γ. All experiments were conducted following approval by the Research Ethics Committee (CEP no. 7.304.069). *In silico* analyses suggested pharmacokinetic properties compatible with oral administration, including good absorption, metabolic stability, and permeability, along with low predicted toxicity and no major safety alerts. DHG showed no cytotoxicity at the tested concentrations and did not induce hemolysis. Importantly, it significantly ($p < 0.05$) reduced nitric oxide production, with an effect comparable to that of dexamethasone. These findings support *Guatteria friesiana* as a promising natural alternative for the development of safer therapies targeting immune-mediated diseases, emphasizing the need for further studies to investigate its mechanisms of action and efficacy in preclinical models.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Marine Alkaloid Caulerpin Modulates Immune Responses in Human Peripheral Blood Mononuclear Cells**

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Thematic axis: Pharmacology, Toxicology, Natural Products, and Medicinal Chemistry

Keywords: Caulerpin. Immunomodulation. Peripheral Blood Mononuclear Cells.

Abstract:
Inflammation plays a central role in the pathogenesis of numerous immune-mediated diseases and remains a therapeutic challenge due to the adverse effects and limited efficacy of conventional treatments, such as glucocorticoids and non-steroidal anti-inflammatory drugs. In this context, marine natural products have attracted growing interest as novel sources of bioactive compounds with immunomodulatory potential. Among these, caulerpin, a bisindole alkaloid isolated from the marine alga *Caulerpa racemosa*, has shown anti-inflammatory properties in preclinical models, though its mechanisms of action in human immune cells remain poorly understood. Here, we investigated the immunomodulatory effects of caulerpin in human peripheral blood mononuclear cells (PBMCs), following a protocol approved by the Research Ethics Committee (CEP nº 7.304.069). *In silico* predictions using the ADMETlab 3.0 platform revealed physicochemical and pharmacokinetic properties compatible with oral bioavailability, including favorable absorption, stability, permeability, and compliance with key drug-likeness rules. PBMCs isolated from healthy donors were assessed for cytotoxicity (MTT assay), lymphoproliferation (CellTiter-Glo), production of inflammatory cytokines IL-2 and IFN-γ (ELISA), and gene expression (*IL2*, *IL2RA*, *IFNG*, *CD28*, *CCL5*, and *PIK3CA*) by qRT-PCR. Caulerpin significantly inhibited lymphocyte proliferation ($p < 0.05$), achieving 56% suppression at 40 µM, without compromising cell viability. Notably, caulerpin reduced IL-2 and IFN-γ secretion and downregulated the expression of key genes associated with T cell activation, costimulation, and inflammatory chemotaxis. These findings highlight caulerpin as a promising lead compound for the development of safer, natural-product-based therapies for immune-mediated disorders, warranting further mechanistic and preclinical validation.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Effect of 7-Hydroxyflavone on Lymphocyte Proliferation and Inflammatory Cytokine Production in Human Peripheral Blood Mononuclear Cells

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Thematic axis: Pharmacology, Toxicology, Natural Products, and Medicinal Chemistry

Keywords: 7-Hidroxyflavone. Immunomodulation. Natural Products.

Abstract:
Inflammation is an essential defense mechanism for combating infections and tissue repair. However, when dysregulated or chronic, it contributes to the pathogenesis of several diseases, including autoimmune disorders, inflammatory conditions, and cancer. Given the limitations and adverse effects of conventional anti-inflammatory drugs, there is increasing interest in natural compounds with immunomodulatory potential. Flavones, a subclass of flavonoids widely distributed in plants, exhibit notable anti-inflammatory and immunomodulatory properties. Among them, 7-hydroxyflavone (7HF) has drawn attention, although its effects on human immune cells remain underexplored. This study aimed to evaluate the cytotoxicity of 7HF, its ability to inhibit lymphocyte proliferation, and to modulate the production of inflammatory cytokines in human peripheral blood mononuclear cells (PBMCs). PBMCs were isolated from healthy donors, following a protocol approved by the Research Ethics Committee (CEP No. 7.304.069), and cultured with different concentrations of 7HF. Cytotoxicity was assessed by flow cytometry using propidium iodide staining; lymphocyte proliferation was evaluated using the CellTiter-Glo assay, and cytokine levels were quantified by ELISA. 7HF showed no cytotoxicity at any of the concentrations tested and significantly inhibited lymphocyte proliferation, with the 40 μM concentration reducing proliferation by approximately 89%, compared to 60% inhibition by dexamethasone (positive control). Furthermore, 7HF markedly reduced IL-
1 and IFN-γ secretion by 45% and 73%, respectively, at the highest concentration tested (40 μM), highlighting its promising immunomodulatory effects. These findings suggest that 7HF is a potential candidate for the development of safer, natural anti-inflammatory therapies, supporting further preclinical investigation.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: *Immunomodulatory Effects of 6,6a-Dihydrodemethoxyguadiscine, isolated from Guatteria friesiana, on Lymphocyte Function*

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Thematic axis: Pharmacology, Toxicology, Natural Products, and Medicinal Chemistry

Keywords: *Guatteria friesiana*, Immunomodulation, Lymphocyte function.

Abstract:
The Amazon region is rich in plant species with therapeutic potential, many of which remain unexplored. Among them, the Annonaceae family stands out for producing bioactive compounds with anti-inflammatory and immunomodulatory properties. Given the limitations and adverse effects of current immunosuppressive therapies, the search for safer alternatives is essential. This study aimed to evaluate the immunomodulatory effects of 6,6a-Dihydrodemethoxyguadiscine (DHG), isolated from *Guatteria friesiana* (Annonaceae), on lymphocyte function. Initially, the influence of DHG on lymphoproliferation was assessed in splenocytes activated with Concanavalin A (Con A). The antiproliferative effect of different DHG concentrations (2.5, 5, 10, and 20 µM) was evaluated using the CellTiter-Glo® reagent, which quantifies ATP levels via bioluminescence. Subsequently, the production of IL-2 and IFN-γ cytokines was measured in the supernatant of lymphocytes activated with Con A and treated with DHG for 24 hours. Cytokine levels were determined using a sandwich ELISA assay. For all assays involving murine cells, the project was reviewed and approved by the FIOCRUZ Animal Ethics Committee (Approval number: L-007/2024). The results demonstrated a significant ($p < 0.05$) and concentration-dependent reduction in splenocyte proliferation. At the highest concentration tested (20 µM), DHG produced an effect comparable to the reference drug dexamethasone. Additionally, DHG significantly decreased the levels of IL-2 and IFN-γ, cytokines that play a critical role in lymphocyte activation and proliferation. These results indicate that DHG exhibits promising immunomodulatory activity on lymphocyte function, supporting further investigations in complementary experimental models.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Capsaicin-induced TRPV1 channel activation effects on corpus cavernosum and pudendal artery in an animal model of erectile dysfunction**

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Thematic axis: Farmacologia, Toxicologia, Produtos Naturais e Química Medicinal

Keywords: Erectile dysfunction. Capsaicin. Hypertension. TRPV1 channels

Abstract:
Erectile dysfunction (ED) is a clinical condition commonly associated with abnormalities in penile arteries, and there is a functional correlation between the expression of TRPV1 channels and changes in blood pressure. This study aimed to investigate the function of TRPV1 channels in corpus cavernosum (CC) and internal pudendal artery (IPA) of animals with ED (SHR) and controls (Wistar rats).The expression of TRPV1 channels and related proteins was assessed by Western blot analysis. Functional reactivity assays were conducted in the CC and IPA to investigate the mechanisms of TRPV1-mediated responses. Erectile function was evaluated using the apomorphine-induced erection assay. All experimental procedures were approved by the Institutional Animal Care and Use Committee of ICS/UFBA (no. 130/2017). Western blot analyses showed higher TRPV1, p-38 MAPK, AKT, and COX-2 expression in SHR compared to Wistar rats. Cumulative administration of capsaicin and the thermal stimulus induced relaxation in the CC of Wistar and SHR rats. Notably, capsaicin-induced relaxation was significantly enhanced in the CC from SHR ($E_{3x10^{-4}}$:91.46± 14.04; n=7) compared to controls ($E_{3x10^{-4}}$:89.15±6.90%; n=7). Furthermore, the presence of a CB1 receptor antagonist markedly reduced the relaxant response elicited by capsaicin, suggesting a modulatory role of the endocannabinoid system in TRPV1-mediated vascular effects.Additionally, the presence of NOS inhibitor or a specific soluble guanylyl cyclase inhibitor decreased the relaxation promoted by capsaicin in Wistar and SHR rats.The relaxant response induced by capsaicin was significantly attenuated by the selective PKA inhibitor, only in the CC from SHR rats. Interestingly, capsaicin attenuated Ca2+ influx and the adrenergic response in the CC from Wistar and SHR rats. Moreover, the cumulative administration of capsaicin in precontracted IPA rings induced endothelium-independent vasorelaxation. However, in behavioral tests with apomorphine, capsaicin administered at a dose of 800µg/Kg did not improve erectile function in the animal model of ED. This is the first evidence of the effects induced by this channel in the CC and IPA of Wistar and SHR rats, demonstrating that this channel may be a new target for the treatment of hypertension associated ED.

Financial Support: CNPq, FAPESB.

Title: Uncovering the Immunomodulatory Potential of Magnolin: A Natural Product Derivative from the *Annona* Genus

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Thematic axis: Pharmacology, Toxicology, Natural Products, and Medicinal Chemistry

Keywords: Immunomodulation. Magnolin. Natural products.

Abstract:
Inflammation is a fundamental biological process for host defense, but when persistent or dysregulated, it plays a critical role in the development of immune-mediated diseases. Current treatments, such as glucocorticoids and non-steroidal anti-inflammatory drugs, often cause adverse effects, limiting their long-term use. Therefore, there is an increasing demand for safer and more effective alternatives. In this context, our goal was to evaluate the anti-inflammatory activity of magnolin, a lignan-type phenolic compound isolated from *Annona* species (Annonaceae). To explore this potential, *in silico* analysis was conducted using the Protox 3.0 platform, to perform toxic predictions. Subsequently, RAW 264.7 macrophages were used to assess cytotoxicity via the Alamar Blue assay after stimulation with LPS and IFN-γ for 24 h. Hemolytic activity was tested at concentrations from 5 to 80 μM using human samples. Then, the anti-inflammatory activity of magnolin was evaluated in macrophages activated with LPS plus IFNγ, through nitric oxide, IL-6 and TNF-α production using the Griess method and ELISA respectively. All experiments were conducted following approval by the Research Ethics Committee (CEP no. 7.304.069). *In silico* analysis, revealed low predicted toxicity, no major safety alerts and a strong probability of the compound in modulate immune cells. Magnolin showed no cytotoxic or hemolytic effects under the tested conditions. Magnolin significantly reduced ($p < 0.05$) the release of pro-inflammatory mediators in a similar way when compared with dexamethasone. These findings indicate that magnolin has potent and selective *in vitro* anti-inflammatory activity in activated macrophages, without compromising cell viability or causing hemolysis. This supports its potential for developing new immunomodulatory therapies based on natural products.

Title: Zebrafish-Based Toxicological Screening of Syzygium cumini Extract: Insights into Safe Dosage in Embryos and Larvae

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Thematic axis: Pharmacology, toxicology, natural products and medicinal chemistry.

Keywords: Danio rerio. Herbal extract. Jambolan. Phenolic compounds.

Abstract:
Syzygium cumini (L.) Skeels, known as jambolan, is rich in phenolic compounds, especially anthocyanins, which contribute to its biological properties. Despite its bioactivity, determining safe dosage levels is essential. This study was approved by the Animal Use Ethics Committee of the Federal University of Rio Grande do Norte (CEUA/UFRN), under protocol no. 035/2022 and certificate no. 301.035/2022. And aimed to evaluate the toxicity of the hydroalcoholic extract of jambolan (EJ) in zebrafish (Danio rerio) embryos and larvae. EJ was obtained from lyophilized fruits (pulp + peel) using 70% ethanol (v/v) via cold extraction. Zebrafish were exposed to EJ concentrations (10–400 µg/mL) for acute toxicity, behavioral, and morphological assessments. Doses above 50 µg/mL increased malformations and mortality. LC_{50} was 118.4 ± 11.7 µg/mL for embryos. Chronic toxicity was estimated at 10.22 µg/mL. No cardiotoxicity or neurotoxicity was seen in larvae, though 10 µg/mL reduced behavior performance ($p < 0.0001$). In conclusion, EJ appears safe at moderate concentrations (~25 µg/mL) for both zebrafish life stages. Further studies are needed to fully assess its safety and therapeutic potential.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Potential anti-inflammatory applicability of methotrexate and chitosan electrolytic nanocomplex**

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Thematic axis: Pharmacology, Toxicology, Natural Products and Medicinal Chemistry.

Keywords: Inflammation. Methotrexate. Nanoparticles.

Abstract:
Methotrexate (MTX) presents systemic collateral side effects even in low concentrations due to its accumulation in the body. To minimize this problem, this study aimed to develop an electrolytic nanocomplex of methotrexate and chitosan for anti-inflammatory application. Wistar rats (200-220 g; CEUA/UECE nº 03610944/2023) were treated with MTX (40 µg kg^{-1}) or methotrexate and chitosan electrolytic nanocomplex (QTS/MTX) (20 - 40 µg kg^{-1}) by subcutaneous route 30 min before arthritis induction with intra-articular zymosan (300 µg/25 uL) for evaluation of the following parameters: joint edema (digital caliper); nociception (digital analgesimeter); cavity leukocyte influx and MPO activity. The systemic toxicity was also induced by single dose of MTX (2 mg/kg) via oral route. After five days, the toxicity was evaluated by changes in the body mass, organ mass (kidney, spleen, liver) and the biochemical parameters for the kidney and liver markers: urea, creatinine, alanine aminotransferase (ALT) and aspartate aminotransferase (AST). The antiinflamatory evaluation demonstrated that QTS/MTX reduced joint edema (7.2 ± 0.3 vs. Zymosan: 8.0 ± 0.5 mm), hypernociception (55 ± 15 *vs.* zymosan: 34.4 ± 13 g), leukocyte migration (841 ± 285 *vs.* zymosan: 2920 ± 619 leukocytes/mm^3) and MPO (3.0 ± 0.85 *vs*. Zymosan: 11.87 ± 2.5 UI/mL) activity, along with less alterations in ALT (50 ± 1.4 *vs*. MTX: 69.80± 2.59 UI/L) and AST (46.4 ± 6.8 *vs*. MTX: 135 ± 12 UI/L) activities. QTS/MTX attenuate acute joint inflammation in the rat model of zymosan-induced arthritis without causing hepatic injury.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Evaluation of the antileishmanial potential of *Ganoderma lucidum* and *Hericium erinaceus* fungal extracts

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Thematic axis: Pharmacology, Toxicology, Natural Products, Medicinal Chemistry

Keywords: Extract. Leishmania. Mushroom.

Abstract:
Leishmaniasis remains a significant public health issue in tropical and subtropical regions. Despite advances in understanding its immunopathology, current treatments remain limited by toxicity and resistance. Fungi such as *Ganoderma lucidum* and *Hericium erinaceus* possess pharmacological properties, including antiparasitic potential. This study evaluated the *in vitro* antileishmanial activity and selectivity of extracts from these mushrooms against *Leishmania braziliensis*. Extracts were acquired and diluted according to manufactured instructions (KANKEIRR, China). Cytotoxicity and antileishmanial assays were conducted using J774 murine macrophages and wild-type *L. braziliensis*. Both cell types were treated with varying extract concentrations. After 72 hours of incubation in 96-well plates, cells were stained with Alamar Blue, and absorbance was measured at 450 and 490 nm using a spectrometer. Cytotoxicity was expressed as the CC_{50}—the concentration required to reduce cell viability by 50%. For promastigote assays, parasites were exposed to extracts in axenic medium, and IC_{50} values were determined. Amphotericin B, a drug with proven antileishmanial activity, was used as positive control. The Selectivity Index (SI) was calculated as the ratio between CC_{50} and IC_{50}. Data were analyzed using Student's t-test or one-way ANOVA in GraphPad Prism ($p < 0.05$). *G. lucidum* showed a CC_{50} of 35.21 ± 5.06 µg/mL and an IC_{50} of 35.00 ± 8.03 µg/mL, resulting in an SI of 1.00, indicating no preferential toxicity toward the parasite. In contrast, *H. erinaceus* presented a CC_{50} of 48.97 ± 23.16 µg/mL and an IC_{50} of 5.55 ± 0.43 µg/mL, yielding an SI of 8.82, suggesting markedly higher toxicity to the parasite than to host cells. Among the extracts tested, *H. erinaceus* demonstrated promising antileishmanial activity and selectivity, supporting further studies on fractionation, bioactive compound identification, and *in vivo* validation.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: SYNTHETIC CHALCONE (E)-1-benzo[d][1,3]dioxol-5-yl)-3-(3-bromo-4-ethoxy-5-methoxyphenyl)prop-2-en- 1-one) (FERAI) INHIBITS PROMASTIGOTES AND AMASTIGOTES AND OF *Leishmania braziliensis IN VITRO.*

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Thematic axis: Pharmacology, Toxicology, Natural Products, Medicinal Chemistry

Keywords: Amastigotes. Chalcona. *Leishmania*. Promastigotes.

Abstract:
Leishmaniasis is a zoonotic disease caused by protozoa of the genus *Leishmania*. Due to the high toxicity and cost of current treatments, there is a growing demand for safer and more effective therapies. Synthetic chalcones have emerged as promising candidates in this context. This study evaluated the activity of the chalcone FERAI against both promastigote and amastigote forms of *L. braziliensis*. The compound (E)-1-(benzo[d] [1,3] dioxol-5-yl)-3-(3-bromo-4-ethoxy-5-methoxyphenyl) prop-2-en-1-one (FERAI) was synthesized at the Organic Chemistry Laboratory of the Federal University of Paraíba. J774 macrophages and *L. braziliensis* promastigotes were used in the assays. Cytotoxicity (CC_{50}) and antiparasitic activity (IC_{50}) were assessed using the Alamar Blue assay. The selectivity index (SI) was calculated as the ratio of CC_{50} to IC_{50}. The percentage of infected macrophages and the number of amastigotes per macrophage were determined after treatment with FERAI. Additionally, combination therapy was evaluated to investigate the pharmacological interaction between FERAI and amphotericin B. Serial dilutions were performed in quadruplicate at 1:1 and 10:1 ratios of FERAI to amphotericin B. FERAI exhibited promising leishmanicidal activity, with an IC_{50} of 11.8 ± 1.9 µM against *L. braziliensis*. Amphotericin B showed an IC_{50} of 0.8 ± 0.9 µM. FERAI demonstrated low cytotoxicity (CC_{50} = 66 ± 0.12 µM) compared to amphotericin B (CC_{50} = 3.6 ± 0.50 µM). The calculated SI was 5.6, indicating selective toxicity toward the parasite. FERAI significantly reduced both the infection rate and the number of amastigotes per macrophage. Combination index analysis revealed synergistic effects between FERAI and amphotericin B. These findings suggest that FERAI exhibits potent inhibitory activity against *L. braziliensis* at non-toxic concentrations and holds potential as a novel therapeutic alternative.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Antioxidant and anti-inflammatory effect of the seed galactomannan from *Delonix regia* in the osteoarthritis induced by monoiodoacetate**

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Thematic axis: Farmacologia, Toxicologia, Produtos Naturais e Química Medicinal.

Keywords: Plant polysaccharide. Oxidative stress. Joint mobility. Inflammatory biomarkers. Intra-articular infiltration.

Abstract:
Chronic arthropathies are significant causes of functional disability, characterized by inflammation, hyperalgesia, and joint stiffness. Osteoarthritis (OA) is characterized by inflammatory infiltrate and high content of cytokines such as TNF-α, IL-1β and IL-6, which are responsible for synovial hyperplasia, hypernociception and cartilage damage. Conventional OA treatment, is palliative and cause side effects, limiting its long-term use. In this context, plant-derived polysaccharides have gained attention due to their availability, low toxicity, and immunomodulator properties. Galactomannans from *Delonix regia seeds* (GM-DR) exhibit anti-inflammatory, antinociceptive, and wound-healing activities have been considered potential new therapeutic approaches for OA and have shown effects on hypernociception and chondroprotection through mechanisms that remain unknown. This study evaluated the anti-inflammatory effect of GM-DR in the rat model of OA induced by sodium monoiodoacetate (MIA). Male Wistar rats (200–220 g; CEUA/UFC No. 9994050421), were divided into three groups: saline, MIA, and MIA + GM-DR. OA was induced by MIA injection in tibio-tarsal joint and later received GM-DR (100 µg) by joint infiltration weekly and the following parameters were evaluated: nocturnal mobility; oxidative stress markers (NO_3^-, MPO, MDA, GSH) and leukocyte migration. GM-DR increased nocturnal mobility by 40% and GSH levels in serum (33%); reduced nitrite levels in joint fluid (14%) and serum (15%); MPO activity in blood (48%); MDA levels in serum (47%) and joint fluid (51%). GMDR did not alter the leukocyte migration. The galactomannan from *Delonix regia* exhibits antioxidant and anti-inflammatory effects in the MIA-induced OA model.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: *Stigma maydis* Attenuates Vascular Tone via Kir and KATP Channels and Suppresses Atrial Contractility: A Pre-Clinical Antihypertensive Assessment

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Thematic axis: Pharmacology, Toxicology, Natural products, Medicinal Chemistry

Keywords: Cardiovascular modulation. Hypertension. *Stigma maydis*.

Abstract:
Stigma maydis (SM), a plant traditionally used in folk medicine, has been reported to possess antihypertensive potential. This study aimed to investigate the vascular and cardiac mechanisms underlying the pharmacological effects of SM extract. Vascular and cardiac responses were evaluated using isolated superior mesenteric artery (SMA) rings and atrial preparations from Wistar rats, respectively. All experimental protocols were approved by the Institutional Animal Care and Use Committee of ICS/UFBA (No.9272170724). Acute hemodynamic effects were assessed in spontaneously hypertensive rats (SHRs) following intravenous administration of SM at doses of 0.005, 0.01, and 0.05mg/kg. In phenylephrine-precontracted SMA rings (1μM), SM induced a concentration-dependent vasorelaxation (Emax=48.24±9.75%; n=6). Notably, removal of functional endothelium significantly enhanced vasorelaxation at 30μg/mL (E−=31.81±7.35%vs. E+=9.38±3.56%; n=6). Pre-contraction with depolarizing KCl (80mM) solution did not affect SM-induced relaxation (KCl Emax=77.14±7.09%vs Phe Emax=68.34±16.48%; n=6). However, vasorelaxation was attenuated in the presence of glibenclamide (10μM) and $BaCl_2$, indicating involvement of KATP and Kir potassium channels. Additionally, SM reduced calcium-induced contractions in depolarized SMA preparations pre-incubated with 30μg/mL (85.59±10.13%) and 300μg/mL (11.29±3.21%) compared to control (100±0.0%). In isolated atrial preparations, SM exhibited negative chronotropic (1μg/mL=96.23±1.26%;10μg/mL=94.06±0.97%; control=100±0.0%; $p<0.05$; n=5) and inotropic effects (0.1μg/mL=43.62±19.0%;1μg/mL=22.00±14.88%;10μg/mL=9.60±6.17%). In vivo studies, the 0.01mg/kg dose significantly reduced systolic blood pressure by 6.0±1.1%. Altogether, the findings suggest that SM induces vasorelaxation likely through modulation of Kir and KATP channels and inhibition of calcium influx. Furthermore, SM exerts direct negative inotropic and chronotropic effects, supporting its potential as an antihypertensive agent. Further studies are warranted to elucidate the cellular and molecular pathways involved in these effects.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **CRUDE METHANOLIC EXTRACT OF THE LEAVES OF LEANDRA DASYTRICHA INDUCES VASORELAXATION AND HYPOTENSION VIA THE NITRIC OXIDE AND POTASSIUM CHANNELS PATHWAY**

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Thematic axis: Farmacologia, Toxicologia, Produtos Naturais e Química Medicinal

Keywords: Hypertension. Natural products. Nitric oxide. Potassium channels.

Abstract:
Hypertension affects approximately 1.28 billion adults worldwide, with poor control in most cases. Medicinal plants are a valuable source of bioactive compounds for drug development. *Leandra dasytricha* has shown potential as a treatment for hypertension and cardiovascular diseases. This pre-clinical study investigated the vasorelaxant mechanism of its methanolic leaf extract (LDE) in the superior mesenteric artery and its hemodynamic effects in vivo using Wistar and spontaneously hypertensive rats (SHR). Isometric tension measurements revealed endothelium-dependent vasorelaxation in phenylephrine-precontracted rings ($E_{300\ \mu g/mL}$= 99.73 ± 14.17%; n = 6). This effect was attenuated under high K^+ conditions (20 mM KCl: $E_{300\ \mu g/mL}$= 68.58 ± 21.35%; 60 mM KCl: $E_{300\ \mu g/mL}$= 27.82 ± 10.83%; n = 5), [illegible] K^+ efflux involvement. Further analysis indicated nitric oxide synthase (L-NAME: $E_{300\ \mu g/mL}$= 28.48 ± 11.89%; n = 5), soluble guanylyl cyclase (ODQ: $E_{300\ \mu g/mL}$= 28.66 ± 6.55%; n = 5), and large-conductance Ca^{2+}-activated/voltage-sensitive K^+ channels contribute to LDE's mechanism. Intravenous LDE administration induced a dose-dependent blood pressure reduction in SHR (%MAP= -12.42 ± 1.2 mmHg at 20 mg/kg) but not in Wistar rats (%MAP=-8,22 ± 1,43; mmHg at 20 mg/kg). HPLC analysis demonstrated that dihydrochalcone nothofagin was the main compound in the extract. These findings highlight LDE's vascular activity, elucidate its mechanism, and support LDE as a promising source of bioactive compounds for future pharmacological research.

The study was approved by the Ethics Committee on Animal Use (protocol 130/2017) and conducted in accordance with CONCEA-Brazil guidelines for the care and use of laboratory rats.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Screening and preliminary SAR analysis of Isoindolone derivatives as inhibitors of staphyloxanthin production**

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Thematic axis: Pharmacology, Toxicology, Natural Products and Medicinal Chemistry

Keywords: bacterial resistance. Screening. Antivirulence. Raman.

Abstract:
The excessive use of antibiotics accelerates the natural selection of resistant bacteria, causing approximately 700,000 deaths worldwide annually. Addressing antimicrobial resistance requires innovative strategies, such as targeting non-essential virulence factors that increase pathogen susceptibility to the host immune system, such as staphyloxanthin (STX) from *Staphylococcus aureus*. To identify inhibitors of STX production that do not decrease *S. aureus* viability. Twelve Isoindolone derivatives were synthesized by Silva, purified by HPLC, and characterized using 1H NMR (300 MHz). Compounds solubilized in DMSO were assayed for their effects on S. aureus viability via the microdilution method, and on STX production using an in-situ quantification approach based on Raman spectroscopy. Eight compounds significantly reduced cell viability ($p < 0.05$, one-way ANOVA) at 100 µM and were excluded from further analysis. The remaining four compounds visibly reduced STX production without significantly affecting viability. Their effects on carotenoid Raman peaks (1005 cm^{-1}, 1160 cm^{-1}, and 1525 cm^{-1}) were evaluated across five concentrations, allowing calculation of EC_{50} values (using the 1523 cm^{-1} peak intensity at 5% DMSO as negative reference and terbinafine (100 µM) as positive control). Among these compounds, QHM 855 stood out for its promising potency (EC_{50} = 5.3 µM) and lower molecular weight compared to the other bioactive derivatives. Moreover, initial structure–activity relationship (SAR) analyses suggest that the presence of an electron- donating group (NH_2) on the benzyl ring increases activity (QHM 855 vs. QHM 851). Therefore, Isoindolone ring represents a useful scaffold for developing STX production inhibitors and ongoing studies are focused on elucidating the structure-activity relationships of this compound class, explore their mechanism of action, and assess their effects on *S. aureus* biofilm formation.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: 9-Methoxyisomoschatoline: a promising alkaloid with immunomodulatory activity

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Thematic axis: Pharmacology, Toxicology, Natural Products, and Medicinal Chemistry

Keywords: Annonaceae. *Guatteria hispida.* Natural Products.

Abstract:
Although widely used and essential in controlling inflammation, NSAIDs and glucocorticoids have significant clinical limitations, especially when administered for long periods. Their adverse effects, which include gastrointestinal and cardiovascular damage, reinforce the importance of research aimed at identifying and developing innovative molecules capable of offering high efficacy combined with greater safety in the treatment of inflammatory diseases. Thus, this study evaluates the immunomodulatory potential of the oxoaporphine alkaloid 9-methoxyisomoschatoline (9-MI), integrating *in silico* and *in vitro* studies. The physicochemical, pharmacokinetic, and toxicological properties of 9-MI were estimated (ProTox v3.0). Cytotoxicity was tested in macrophages, murine splenocytes, and human red blood cells. At non-toxic concentrations, nitric oxide (NO) inhibition was evaluated in macrophages stimulated with LPS + IFN-γ. Finally, the effect of 9-MI was evaluated on lymphoproliferation in cells stimulated with concanavalin A. Ethical approval was obtained (CEP No. 7,304,069). *In silico*, 9-MI demonstrated adequate physicochemical properties, acceptable toxicity, and favorable oral absorption prediction, supported by LogP, TPSA, and flexibility parameters indicative of bioavailability. *In vitro* assays demonstrated no cytotoxicity in murine macrophages, splenocytes, or human red blood cells at concentrations ranging from 2.5 to 20 μM. Within this concentration range, a significant reduction ($p < 0.05$) was observed in nitric oxide production by activated macrophages, as well as in concanavalin A–stimulated lymphoproliferation. The results show that 9-MI has a favorable safety and bioavailability profile, exerting a significant immunomodulatory effect without causing cytotoxicity, reinforcing its potential in the development of new therapies based on natural products.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Antibacterial activity of melittin against *Acinetobacter baumannii*, *Enterococcus faecium*, and *Klebsiella pneumoniae*

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Thematic axis: Immunology, Microbiology and Parasitology

Keywords: Nosocomial infections. antimicrobial peptide. Natural products. Antimicrobial resistance. Bacterial resistance.

Abstract:
Antimicrobial peptides may represent an alternative strategy to combat antibiotic- resistant bacteria. Melittin, a major component of the *Apis mellifera* bee venom, is an antimicrobial peptide with a broad spectrum of activity. The aim of this study was to evaluate the antibacterial and antibiofilm activities of melittin against *Acinetobacter baumannii*, *Enterococcus faecium*, and *Klebsiella pneumoniae*; to investigate potential synergism between melittin and antibiotics (ampicillin, ciprofloxacin, gentamicin, imipenem, and tetracycline); and to assess the cytolytic activity of melittin in Vero 81 cells. Melittin exhibited antibacterial activity against *A. baumannii*, *E. faecium*, and *K. pneumoniae*, with minimum inhibitory concentration (MIC) values of 8 µg/mL, 4 µg/mL, and 128 µg/mL, respectively. Synergism evaluation showed that for *A. baumannii*, none of the melittin-antibiotic combinations produced a synergistic effect. For *E. faecium*, combinations of melittin with ampicillin, ciprofloxacin, and imipenem showed synergism. In the case of *K. pneumoniae*, all combinations with the tested antibiotics, except for ampicillin, exhibited synergistic effects. Subinhibitory concentrations (75% of the MIC) of gentamicin and tetracycline were most effective in inhibiting biofilm formation by *A. baumannii*. For *E. faecium*, combinations of melittin with ampicillin and ciprofloxacin inhibited biofilm formation by over 80%. In *K. pneumoniae*, melittin combined with ciprofloxacin, gentamicin, and imipenem reduced biofilm formation by more than 60%. Melittin was shown to be safe for Vero 81 cells at concentrations ≤10 µg/mL, maintaining 100% cell viability. The findings of this study may contribute to the identification of novel therapeutic candidates aimed at combating antimicrobial resistance and bacterial biofilm-associated infections.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Caracterização da hematopoese extramedular perigranulomatosa hepática em camundongos Swiss webster infectados com *Schistosoma mansoni*

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Palavras-chaves: Esquistossomose. Granuloma. Hematopoese extramedular. *Schistosoma mansoni*.

Abstract:
A esquistossomose é uma doença parasitária cuja principal manifestação é a formação de granulomas, resultantes da postura de ovos do *Schistosoma mansoni* no sistema mesentérico. Os ovos migram para o fígado via sistema porta hepático, desencadeando uma reação inflamatória, caracterizada pela formação de granulomas hepáticos. Essa reação altera o microambiente hepático e medular, favorecendo a hematopoese extramedular observada ao redor dos granulomas e vasos hepáticos. Utilizando técnicas histológicas e imunofluorescência, associadas a análises em microscopia, caracterizamos as mudanças do perfil hematopoético na infecção esquistossomótica mansônica murina, 35 e 60 dias pós infecção, com especial atenção ao microambiente da hematopoese perigranulomatosa e perivascular hepática. Aos 35 dias, observamos a chegada de ovos ao fígado, casais de vermes adultos nos vasos e sinais de lesões hepáticas. Na periferia dos ovos recém-chegados e dos vasos, houve aumento da resposta inflamatória, com a presença de células mieloides migrantes imaturas. Identificamos um grande número de eosinófilos, além da presença de granulócitos do tipo neutrófilo positivos para a expressão de MMP9. Aos 60 dias, o fígado apresentava grande número de ovos formando granulomas maduros, organizados em três zonas distintas, com hematopoese extramedular estabelecida na zona periférica. Observamos um alto número de células hematopoéticas imaturas e um intenso foco de eosinopoese, além de supergranulomas (aglomerados de 3 a 5 ovos) e um aumento na expressão de MMP9, sugerindo maior degradação da matriz extracelular. Este conjunto de resultados obtidos se mostrou extremamente interessante, evidenciando que a hematopoese extramedular perigranulomatosa hepática ocorre desde os estágios iniciais da infecção e se intensifica ao longo do tempo. Isso reforça a importância de continuar a caracterização desse fenômeno e do microambiente hepático em diferentes períodos de infecção propostos.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Extracellular vesicles isolated from kidney tissue may reflect the developing time of the immune-complex glomerulonephritis in pristane-induced lupus**

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Thematic axis: Immunology, Microbiology and Parasitology.

Keywords: Extracellular vesicles. Glomerulonephritis. Lupus. Podocytes.

Abstract:
Pristane-induced lupus is an experimental model characterized by circulant autoantibodies and immune-complex glomerulonephritis. Extracellular vesicles (EVs) have been described in association with acute kidney disease, and may be isolated from the kidney (kEVs). We aimed to evaluate kEVs in pristane-induced lupus nephritis. This study was approved by the animal ethics committee (CEUA-UFF #471411022). Female BALB/c mice received a single intraperitoneal injection of pristane (0.5 mL; n=21) or saline (n=14). Kidney tissue, blood, and urine samples were collected at an early timepoint (T12 weeks) and at endpoint (T28 weeks) post-injection. We assessed kidney IgG deposition and plasma autoantibodies via indirect immunofluorescence. kEVs were obtained after tissue dissociation, isolated by differential centrifugation (500×g 5 min; 20,000×g 20 min at 4°C), and characterized by transmission electron microscopy, nanoparticle tracking analysis (NTA), and nanoscale flow cytometry (nFC, CytoFLEX S). In nFC, EVs were gated by size (Gigamix beads, 100–900 nm) and Annexin V/podoplanin positivity. kEVs were normalized to kidney weight. IgG deposition and circulating autoantibodies were observed only in the pristane group at T28. At T12, the NTA showed higher mean EV diameter in pristane (162.8 ± 11.86 nm) compared to saline (127 ± 11.47 nm, p=0.01). Total kEV count by nFC was higher in pristane at T12 (1.41E + 08 ± 2.98E+07/mL vs. 1.82E+07 ± 5.74E + 06/mL, p=0.041) and at T28 (8.39E + 05 ± 6.89E + 05/mL, p<0.0001). Podoplanin+ kEVs followed the same trend (T12: 2.12E+06 ± 3.41E+05 vs. T28: 3.83E+04 ± 3.01E+04/mL, p<0.0001). These findings demonstrate that counts of renal tissue-derived EVs are altered during the progression of experimentally- induced lupus nephritis, increasing even before the onset of glomerulonephritis.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Microbiological quality of smoked meat sold at street markets and supermarkets in a municipality in Recôncavo da Bahia**

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Thematic axis: Immunology, Microbiology, Parasitology

Keywords: Food safety. Hygienic-sanitary conditions. Smoked meat.

Abstract:
Smoked meat is a traditional product, where the know-how is passed down through generations. The process involves curing pork followed by artisanal smoking. Although widely consumed, there is a scarcity of studies on its microbiological quality. The objective of this study was to evaluate the microbiological quality of smoked meat sold in street markets and supermarkets in a municipality in the Recôncavo region of Bahia. This was a cross-sectional study, covering 12 points of sale, distributed between street markets and supermarkets, conducted from June to July 2025. Microbiological analyses included screening for *Salmonella* spp. and quantification of coagulase-positive Staphylococci, Total Coliforms, and *Escherichia coli* using the rapid Petrifilm method (3M Company), and quantification of *Clostridium perfringens* using the traditional method. The results revealed that all samples (100.0%) were in disagreement with Normative Instruction 161/2022 of the National Health Surveillance Agency, as they presented high counts of coagulase-positive Staphylococci, ranging from 5.4×10^4 to 3.0×10^8 CFU/g. In addition, 33.3% of the samples presented high counts of *Escherichia coli*, ranging from <10 to 7.5×10^4 CFU/g, and the presence of *Salmonella* spp. was detected in one sample (8.33%). All samples presented *Clostridium perfringens* counts <10 CFU/g, in compliance with current legislation. Although there is no standard in the legislation, quantification of Total Coliforms was performed and the counts ranged from <10 to 3.3×10^4 CFU/g. The results suggest that nonconformities may be related to inadequate hygiene and sanitary conditions during product production and marketing, especially those involving handling errors. Therefore, it is essential to adopt measures that ensure the sanitary quality of the product, contributing to consumer health protection and its value.

Title: **Evaluation of the therapeutic potential of mesenchymal stem cells overexpressing lif in a model of chronic chagas cardiomyopathy**

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Thematic axis: Immunology, Microbiology and Parasitology

Keywords: Chagas disease. Cardiomyopathy. Connexin 43. Mesenchymal stem cells. Cell therapy. Myocardial inflammation.

Abstract:
Chronic Chagas cardiomyopathy (CCC) is the most severe form of Chagas disease and the main cause of sudden death is cardiac arrhythmias. Disorganization of connexin 43 (Cx43), a protein essential for electrical conduction between cardiomyocytes, is associated with the chronic inflammation and fibrosis present in CCC. These alterations compromise cardiac function and contribute to electrical conduction disorders. Given the low efficacy and adverse effects of available treatments, such as benznidazole and nifurtimox, new therapeutic strategies are needed. Therefore, this project aims to evaluate the therapeutic potential of wild- type mesenchymal stem cells (MSC_WT) and those genetically modified to overexpress leukemia inhibitory factor (MSC_LIF) in an experimental model of CCC. Following respectfully the procedures of ethical standards for the use of laboratory animals (CEUA017/2023), C57BL/6 mice were infected intraperitoneally with 1,000 trypomastigotes of the Colombian strain of Trypanosoma cruzi and, four months after infection, were divided into four experimental groups: Naive, Vehicle, MSC_WT, and MSC_LIF (N=10 for each group). Treatment consisted of two intravenous administrations (at months 4 and 5 post-infection) of 1×10^6 MSC_WT or MSC_LIF cells intravenously. At month 6 post-infection, the animals underwent exercise stress testing to assess cardiac function, followed by euthanasia and tissue collection for histological and immunofluorescence analysis. The exercise stress test did not demonstrate a significant improvement in the functional capacity of animals treated with MSC_WT or MSC_LIF. However, both groups treated with MSCs showed a significant reduction in myocardial inflammation compared to the vehicle group. The percentage of fibrosis was significantly reduced in animals treated with MSC_LIF compared to all other infected groups. Immunofluorescence staining of Cx43 in the groups treated with MSC_WT and MSC_LIF revealed a predominance of the protein in the intercalated disc region, similar to that observed in the Naive group, while the vehicle group showed a diffuse pattern of the protein, such as lateralization and internalization. In conclusion, treatment with MSC_LIF was more effective in reducing fibrosis, while both MSC treatments demonstrated anti-inflammatory effects and promoted Cx43 reorganization. These findings reinforce the potential of cell therapy in the treatment of CCC.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Discovery of New Therapeutic Candidates Against Leishmaniasis: Integration of High Content Screening and Molecular Docking**

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Thematic axis: Imunologia, Microbiologia e Parasitologia

Keywords: Docking molecular. High Content Screening. *Leishmania*. Screening. Treatment.

Abstract:
Current treatments for leishmaniasis, a neglected tropical disease present in 90 countries, have serious limitations, including high cost, invasive administration, and severe side effects, highlighting the urgent need for new drugs. High Content Imaging Screening (HCS) systems optimize *in vitro* screening of anti-*Leishmania* compounds by enabling multiparametric cellular analyses. Additionally, molecular docking (MD) is a computational tool that assists in understanding interactions between compounds and molecular targets, supporting chemical optimization of promising candidates. This study aimed to identify and characterize compounds with anti-*Leishmania* activity using cellular models combined with computational tools to elucidate mechanisms of action. A library of 142 natural and synthetic compounds was screened in J774 macrophages infected with genetically modified *Leishmania amazonensis* expressing green fluorescent protein (La-GFP). After 24 h of infection, the infected cells were treated with 10 µM of each compound for 72 h, and inhibitory activity was using the Alamar Blue® assay. Compounds exhibiting ≥70% leishmanicidal activity and no cytotoxicity were further evaluated by HCS to determine IC50 values. MD analysis of selected compounds examined interactions with *Leishmania* enzymes GSK-3, DIRK-1A, Calpain, and ABC transporter. Three compounds displayed significant activity, with IC50 values of 1.21, 1.42, and 1.44 µM (compounds 1, 2 and 3, respectively). MD analyses revealed high inhibitory potential of compounds 2 and against GSK-3 (-7 and -10.3 kcal/mol), DIRK-1A (-7.1 and -11.2 kcal/mol), Calpain (-6.2 and -9.4 kcal/mol), and ABC transporter (-6.8 and -11.2 kcal/mol). These findings underscore enzyme inhibition as a central mechanism underlying the action of these compounds. Further *in vivo* studies will be conducted to validate the therapeutic potential and anti-leishmanial effects of these compounds.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Ruthenium-Based Compounds with High Trypanocidal Activity and Low Toxicity Trigger Apoptosis via Oxidative Stress**

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Thematic axis: Immunology, Microbiology and Parasitology

Keywords: Chagas Disease. *Trypanosoma cruzi.* Ruthenium complexes. Thiobenzamide.

Abstract:
The treatment of Chagas disease is limited to benznidazole and nifurtimox, which exhibit low efficacy and are associated with several adverse effects. In this context, this study evaluated the potential of novel ruthenium complexes as alternative therapeutic agents. The complexes *cis*-[RuCl(tbz)(phen)$_2$]$^+$PF$_6^-$ (FOR0212A) and *cis*-[RuCl(tbz)(bpy)$_2$]$^+$PF$_6^-$ (FOR0012A) were evaluated for cytotoxicity in mammalian cell lines (H9c2 and L929) using the AlamarBlue assay, and for anti-*Trypanosoma cruzi* activity (Y strain) in both trypomastigote and amastigote forms. The cell death mechanism was investigated by flow cytometry using Annexin V-PI, MitoSox, and TUNEL staining. Morphological alterations were assessed by transmission and scanning electron microscopy. Acute toxicity of FOR0212A was evaluated in BALB/c mice (n=5/group) treated with a single oral dose (5, 10, or 20 mg/kg) and monitored for 15 days. In vivo efficacy was assessed in a murine model of acute *T. cruzi* infection (10^4 trypomastigotes, i.p.; n=6/group), with oral treatment (5, 10, or 20 mg/kg) for five consecutive days. The study was approved by the Animal Ethics Committee (CEUA-FIOCRUZ, protocol 016/2023). FOR0012A and FOR0212A showed potent trypanocidal activity (IC_{50} for trypomastigotes: 0.13 and 0.09 µM; for amastigotes: 1.8 and 0.32 µM, respectively). Morphological analyses revealed features consistent with apoptosis-like cell death, including cell shrinkage, membrane blebbing, and severe mitochondrial and kinetoplast damage, confirmed by flow cytometry. In the murine model, FOR0212A showed no acute toxicity at any tested dose, with no behavioral or physical alterations observed. Treatment significantly reduced parasitemia by 47.1% (10 mg/kg) and 50.2% (20 mg/kg), compared to >99% reduction with benznidazole (100 mg/kg). The findings highlight FOR0212A as a promising therapeutic candidate for Chagas disease, acting through oxidative stress and induction of apoptosis-like cell death in *T. cruzi*.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Development and Characterization of a Semi-Solid Base Incorporating 17-DMAG, an Hsp90 Inhibitor, as a Promising Formulation for the Control of Infection by *Leishmania braziliensis*, *in vivo***

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Thematic axis: Imunologia, Microbiologia e Parasitologia

Keywords: 17-DMAG. Hydrogel. Hsp90. Leishmaniasis. Topical treatment.

Abstract:
Leishmaniasis, caused by *Leishmania*, affects 97 countries and current treatments have limitations, such as invasive administration and severe side effects, reinforcing the need for new treatment strategies. The Hsp90 inhibitor, 17-DMAG, previously demonstrated anti-*Leishmania* and anti-inflammatory effects *in vitro* and *in vivo*. However, prolonged intraperitoneal treatment with 17-caused systemic toxicity. To minimize toxicity, this study investigated a topical hydrogel formulation containing 17-DMAG for the treatment of *L. braziliensis* infection *in vivo*. The stability of 17-DMAG in the hydrogel was evaluated at 4°C, 25°C, and 37°C for 90 days, and its drug release profile was characterized. Healthy BALB/c mice (CEUA 007/2020) were exposed daily for 28 days with different concentrations of 17-DMAG in the hydrogel or with the control and histopathological analyses of ear, liver, spleen, and kidney tissues were performed to assess potential toxicity. The efficacy of the topical formulation was also tested in BALB/c mice infected with *L. braziliensis* (CEUA 007/2020) by measuring ear lesions and lymph node size. The topical formulation with 17-DMAG remained stable for 90 days at 4°C or 25°C, but not at 37°C. It exhibited sustained release of the drug over time. Only the highest concentrations of 17-DMAG induced mild toxicity, partially related to repeated ear manipulation. Topical treatment with 0.10 or 0.15 mg/g 17-DMAG significantly reduced lesion size comparing with the control group (0,282 ± 0,099 mm *vs* 0,284 ± 0,11 mm *vs* 0,534 ± 0,193 mm, respectively – One-way ANOVA test, * $p < 0,05$) and accelerated healing but did not affect lymph node dimensions, suggesting a localized therapeutic effect. These findings indicate that topical treatment with 17-DMAG provides partial efficacy against *L. braziliensis* infection *in vivo* and highlights the potential of combining topical and systemic therapies to optimize cutaneous leishmaniasis treatment.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Regulatory T lymphocytes ($CD4^+CD25^+FoxP3^+$) exhibit increased expression of PD-1, TGF-β and IL-10 during *Schistosoma mansoni* infection.**

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Thematic axis: Imunologia, Microbiologia e Parasitologia

Keywords: Schistosomiasis**.** *Schistosoma mansoni*. Regulatory $CD4^+$ T lymphocytes.

Abstract:
Schistosoma mansoni infections are associated with polarization of type 2 immune response. Furthermore, these helminths exploit immunoregulatory pathways as a survival mechanism. We aimed to analyze the regulatory signature mediated by T reg lymphocytes from individuals infected with *S. mansoni.* Of the 17 participants, 10 (59%) had *S. mansoni* infection and 7 (41%) had no infection. Regulatory lymphocytes were obtained from PBMC and stimulated with the *S. mansoni* egg antigen (SEA) to phenotypic and intracellular cytokine evaluation performed by flow cytometry. T reg cells were then isolated with magnetic beads for use in T reg lymphocyte-depleted cultures. In these cultures, the levels of IL-10, IL-13, Il-17 and IFN-γ were evaluated by ELISA. This study was approved by the Research Ethics Committee opinion n°3.246.578. We observed higher frequencies of Treg lymphocytes ($TCD4^+$ $CD25^+$ $FoxP3^+$), as well as higher expression of IL-10 and TGF-β by these cells. It was also observed in infected individuals a higher frequency of $CD4^+CD25^+FoxP3^+PD\text{-}1^+$ T cells, while there was no difference in the expression of CTLA-4 by these lymphocytes. Increased PD-1 and TGF-β expression were also observed in non-regulatory T lymphocyte populations ($CD4^+CD25^{Low}$FOXP3neg) suggesting that in chronic schistosomiasis some regulatory pathways may not be exclusive to T reg populations. Individuals infected with *S. mansoni* have higher levels of IL-10 and IL-13 in the PBMC supernatant cultures and lower levels of IFN-□ compared to non-infected individuals. T reg cell depletion led to a reduction of IL-10 and IL-13 levels, whereas it did not alter IFN-□ levels in the group of infected individuals. In individuals infected with *S. mansoni* the regulatory mechanisms seem to involve IL-10, TGF-β, and PD-1 pathways, but not CTLA-4. Additionally, the expression of TGF-β, PD-1, is not restricted to regulatory populations. These data contribute to increase our knowledge of the pathways explored by these parasites.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: JTE013, SPHINGOSINE-1-PHOSPHATE RECEPTOR 2, modulates the in vitro inflammation response

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Thematic axis: Imunologia, Microbiologia e Parasitologia

Keywords: Chagas disease. Chronic Chagas cardiomyopathy. JTE013. Sphingosine-1-p-hosphate.

Abstract:
Chagas disease, caused by Trypanosoma cruzi, remains a neglected parasitic zoonosis with high global morbidity and mortality, especially due to chronic Chagas cardiomyopathy (CCC), the leading non-ischemic cause of heart failure in Latin America. Current therapies are limited, toxic, and face increasing parasite resistance, highlighting the need for new drugs. Sphingosine-1-phosphate (S1P), a bioactive lipid that regulates cell survival, migration, and immune response, is emerging as a promising therapeutic target. This study evaluated the effects of JTE013, a modulator of the S1P pathway, in in vitro cell cultures. H9c2 cardiomyocytes and T. cruzi strain Y trypomastigotes were treated with JTE013 (50–0.19 µM) for cytotoxicity analysis using Alamar Blue. RAW macrophages (mouse macrophages) were stimulated with LPS (500 ng/mL) and IFN (5 ng/mL) in culture. After treatment for 4 h, the supernatant was collected for analysis of cytokine production (IL-1β, IL-6, IL-10) by ELISA. JTE013 showed a lower IC_{50} than benznidazole and a selectivity index of 4.29, indicating greater selectivity for the parasite. Furthermore, it concentration-dependently reduced (2.5, 5, and 10 µM) nitrite production and the studied cytokines in activated macrophages, when compared to the positive control. These findings reinforce the potential of this modulator as a therapeutic alternative for CCC, mitigating tissue damage and inflammation, and interfering with parasite replication.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Trypanocidal and Immunomodulatory Effect of Two Sphingosine-1-Phosphate Receptor Inhibitors *in vitro*

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Thematic axis: Immunology, Microbiology and Parasitology

Keywords: *T- cruzi*, *in vitro*, Immunomodulation, FTY720, JTE013.

Abstract:
Chronic Chagas heart disease (CCC), resulting from *Trypanosoma cruzi* infection, is characterized by persistent inflammation, myocardial fibrosis, electrical dysfunction, and cardiac hypertrophy, which can progress to heart failure. Current therapeutic options are limited to two trypanocidal drugs developed over fifty years ago, with limited efficacy and significant adverse effects, reinforcing the need for new therapeutic approaches. This study aimed to evaluate, *in vitro*, the trypanocidal and immunomodulatory potential of FTY720 and JTE013, sphingosine-1-phosphate (S1P) receptor inhibitors. Trypanocidal activity was assessed against the trypomastigote form of *T. cruzi* strain Y. Cell death was investigated using annexin V/propidium iodide flow cytometry, and the role of reactive oxygen species (ROS) as a cell death inducer was also investigated using N-acetylcysteine. The inflammatory response was evaluated in RAW 264.7 macrophages stimulated with LPS (500 ng/mL) and IFN-γ (5 ng/mL), treated with different concentrations of the compounds (2.5, 5, and 10 μM), with TNF-α and nitric oxide (NO) levels measured after 4 hours of treatment. Both compounds showed trypanocidal activity, with JTE013 being more selective, with a higher selectivity index (4.29 vs. 3.54). The induced cell death pattern was predominantly apoptotic, without the participation of ROS production. Additionally, dose-dependent inhibition of TNF-α and NO production by cultured macrophages was observed. Taken together, the results demonstrate that both inhibitors have trypanocidal action and immunomodulatory effects, with a reduction in the inflammatory response *in vitro*. These findings reinforce the potential of these compounds as candidates for new therapeutic strategies for CCC, justifying additional studies in *in vitro* and animal models to validate their efficacy and safety.

Title: **USE OF GEL WITH RSM29 IN GOLD NANOPARTICLES IN THE MODULATION OF DNCB-INDUCED DERMATITIS IN AN EXPERIMENTAL MODEL**

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Thematic axis: Imunologia, Microbiologia e Parasitologia

Keywords: Atopy. Atopic dermatitis. rSm29. Immunoregulation**.**

Abstract:
Atopic dermatitis is a chronic, inflammatory allergic-based disease that typically begins in early childhood and is associated with different clinical phenotypes. Studies have shown that helminth infections—or even helminth-derived products—have the potential to induce a regulatory immune response capable of modulating diseases characterized by an exacerbated immune response. In this context, helminth-based therapy has emerged as a promising therapeutic strategy for hyperinflammatory diseases, as seen in atopic disorders. The objective of this study was to evaluate the potential of a gel containing the recombinant Schistosoma mansoni antigen (rSm29) conjugated to gold nanoparticles as a topical treatment in a murine model of atopic dermatitis induced by dinitrochlorobenzene (DNCB). The experimental protocol, approved by the Animal Ethics Committee (CEUA - Fiocruz-IGM, protocol 11/2023), involved exposure to the inducing agent at different concentrations and time points. Animals were treated with standardized amounts of rSm29+AuNP gel, placebo (AuNP gel), or dexamethasone cream applied to the dorsal skin. At the end of the protocol, the animals were euthanized and biological samples were collected for analysis. The results showed a significant reduction in clinical severity scores, epidermal thickness, and mast cell migration ($p<0.05$) in comparison to the control and placebo groups. There was also a reduction in mast cell migration in ear biopsies from animals treated for a longer period—an anatomical site distant from the sensitization area and not directly treated ($p<0.05$). In splenocyte cultures, an increase in the levels of the regulatory cytokine IL-10 was observed following in vitro stimulation with rSm29+AuNP, compared to other stimuli ($p<0.05$). These results suggest that the rSm29+AuNP gel has the potential to be used as a topical immunomodulator in the treatment of atopic dermatitis.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **EFFECT OF THE SM29 ANTIGEN ON THE *IN VITRO* INFECTION OF MACROPHAGES BY *LEISHMANIA* EFFECT OF THE SM29 ANTIGEN ON THE *IN VITRO* INFECTION OF MACROPHAGES BY *LEISHMANIA BRAZILIENSIS BRAZILIENSIS***

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Thematic axis: Immunology, Microbiology and Parasitology

Keywords: *Leishmania braziliensis.* Macrophages. Sm29.

Abstract:
Leishmaniasis is a tropical disease caused by protozoa of the genus *Leishmania*. The effector immune response in cutaneous leishmaniasis (CL) is predominantly Th1/inflammatory, and its exacerbation is associated with pathogenesis. Conventional therapy is often associated with treatment failures and adverse side effects, highlighting the need for alternative therapeutic strategies. In this context, helminth antigens, such as Sm29, have been investigated for their immunoregulatory potential. The aim of this study was to evaluate the immunological effects of the nanocomposite Sm29/Au in the regulation of macrophages and peripheral blood mononuclear cells (PBMCs) infected with *L. braziliensis in vitro*. The study was approved by the UFMG Ethics Committee (approval number 3.002.786). PBMCs and monocyte-derived macrophages from healthy individuals were isolated and infected with *L. braziliensis* promastigotes (5:1), then stimulated for 24 hours with Sm29 antigen encapsulated in gold nanorods (Sm29/Au) and isolated Sm29 antigen. Levels of IL-10, IFN-γ, and IL-1β were measured by ELISA; nitric oxide (NO) production was assessed using the Griess method; macrophage infectivity was evaluated by light microscopy; and expression of arginase, iNOS, and TGF-β was analyzed by RT-PCR. Stimulation with Sm29/Au and Sm29 increased IL-10 production in PBMC and macrophage supernatants. There was no change in IFN-γ levels in PBMCs. Stimulation with Sm29 did not induce significant changes in infectivity, expression of arginase, iNOS, and TGF-β, or in NO production, suggesting that despite its immunoregulatory potential, this antigen did not alter the leishmanicidal mechanisms of effectorcells.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: *Balantidium coli* found in a practical class: a warning case

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Thematic axis: Immunology, Microbiology and Parasitology

Keywords: Diagnosis. *B. coli* Infection. Students.

Abstract:
Balantidium coli is an opportunistic protozoan with subclinical and underdiagnosed parasitosis in humans infected directly or indirectly with the feces of parasitized pigs. This study, approved by the Human Research Ethics Committee (CAAE: 40542314.5.0000.0056), presents a clinical case of B. coli found in a university student in 2024. Parasitological analysis of feces was performed using the Spontaneous Sedimentation technique in a practical class for health courses. Considering the parasite found in one of the students, we have: A.S., a 20-year-old female, from the urban area of Vitória da Conquista, residing in the urban area of Santo Antônio de Jesus, both municipalities in Bahia, Brazil, presented three fecal samples positive for *Balantidium coli* in analyses performed at the university. The student eats seven meals a day with a diet of protein, carbohydrates, fruits, and vegetables. She practices regular physical activity and is sexually active with only one partner. She lives in the rural areas of the Bahian municipalities of São Gonçalo dos Campos and Mirante. Regarding her clinical complaints, she reported that ten months before this parasitological result, she sought emergency care at a private hospital with diarrhea, vomiting, pallor, low blood pressure, and weakness. She returned seven months later with severe abdominal pain, accompanied by vomiting, diarrhea, fatigue, headache, followed by severe abdominal pain, and bloody stools. The requested blood count showed no changes in laboratory parameters, and medications related to gastrointestinal motility disorders, gastroesophageal reflux, nausea and vomiting, as well as analgesics were prescribed, without a diagnosis of the parasite. Considering the symptoms presented, which co- occur with the symptomatology presented for balantidiosis, it is important to include screening for this disease in the differential diagnosis of persistent diarrhea in communities where there is close contact with swine.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: PROGNOSTIC VALUE OF PRE-THERAPEUTIC IMMUNO HEMATOLOGICAL MARKERS IN PATIENTS WITH SQUAMOUS CELL CARCINOMA OF THE LARYNX

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Thematic axis: *Immunology, Microbiology, and Parasitology*

Keywords: *Biomarkers. Immunohematology. Laryngeal cancer. Prognosis. Tumor microenvironment.*

Abstract:
Laryngeal squamous cell carcinoma (LSCC) presents significant clinical challenges due to its aggressive nature and the lack of accessible prognostic tools in routine practice. Identifying low-cost biomarkers capable of supporting risk stratification and guiding therapeutic decisions is crucial. This study aims to evaluate the prognostic value of pre-treatment immuno- hematological markers namely the neutrophil-to-lymphocyte ratio (NLR), platelet-to- lymphocyte ratio (PLR), and lymphocyte-to-monocyte ratio (LMR), in patients with LSCC. The research protocol encompasses a systematic literature review across major databases (PubMed/MEDLINE, Embase, Scopus, Web of Science, Cochrane Library, LILACS/BVS, and ClinicalTrials.gov), as well as a retrospective cohort study involving patients treated at Hospital Aristides Maltez, a public cancer referral center in Salvador, Bahia, Brazil. The cohort study will involve the analysis of baseline complete blood counts obtained prior to surgical treatment, and the calculated indices will be correlated with clinical outcomes, including recurrence, overall survival, and disease progression. Based on current evidence in the literature, elevated NLR and PLR appear to be associated with worse prognosis, whereas high LMR may correlate with favorable clinical outcomes. The study was approved by the Research Ethics Committee Artur Ventura de Matos of Liga Bahiana Contra o Câncer/Hospital Aristides Maltez (CEP/LBCC- HAM), under opinion number 2.720.313, registered in Plataforma Brasil.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **ACONITASE AND GLYCEROL KINASE EXPRESSION INCREASES IN *Ricinus communis L.* SEEDS SUBJECTED TO DIFFERENT TEMPERATURES DURING GERMINATION AND SEEDLING PRODUCTION.**

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Thematic axis: Ecologia e Meio Ambiente

Keywords: Castor bean. Krebs Cycle. Temperature stress

Abstract:
Enzymes play different roles in metabolic pathways. Among the most important metabolic pathways is the Krebs Cycle, which is related to producing bioenergetic molecules. One of its enzymes is aconitase (EC 4.2.1.3), which catalyzes the conversion of citrate to isocitrate. The glycerol metabolism that produces photosynthetic intermediates and has glycerol kinase (GK - EC 2.7.1.30) as responsible for forming glycerol-3-phosphate. Ricinus communis L. is an oil plant cultivated in northeast Brazil with socioeconomic relevance and is exposed to stressful conditions that produce oxygen-reactive species responsible for cellular damage. The work aimed to evaluate aconitase and GK expression in castor oil seeds exposed to abiotic temperature stress. Castor oil seeds were submitted to different temperatures (25, 30, and 35°C) during seed germination and seedling growth. RNA extraction and cDNA production used MiniKit RNA Purelink and GoScript Reverse Transcription System. The efficiency of the primers of the two enzymes was obtained with the cDNA produced. Primer efficiency ranged from 108,5% to 117,5%, beyond the ideal range. Aconitase O1 (AcoO1) was not expressed in the parts and conditions analyzed in this study. Aconitase O2 in seedlings was most expressed at 30°C and least expressed at 25°C, while in seeds it was most expressed at 35°C and least expressed at 30°C. GK was more expressed in seedlings at 35 ºC and less expressed When growing at 25 ºC. GK presented lower CQ at 35 ºC and 30 ºC, respectively. Conclusions: Both enzymes show altered gene expressions under different temperature conditions and at diferente stages of plant development. Enzymatic activity studies are necessary to analyze whether amplified gene expression is reflected in increased enzymatic activity of these enzymes, whether in their primary or secondary functions.

Title: Remodeling of Collagen Fibers after Use of 1,210 nm Laser in Abdominoplasties

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Thematic axis: Nanotecnologia, Biotecnologia, Biociências Nucleares e Terapias Avançadas

Keywords: Abdominoplasty. Histological analysis. Collagen.

Abstract:
Abdominoplasty is a surgery that removes excess fat and skin. With medical advances, laser-assisted techniques have been increasingly associated to improve outcomes. Among these technologies, the 1,210 nm laser stands out for its association with lower morbidity. This study analyzed the immediate effects of this laser on type I and III collagen fibers in skin flaps from ten adult volunteers undergoing abdominal dermolipectomy, following criteria such as age >18 years and signed informed consent. Individuals with previous abdominal surgery, bariatric surgery, dermatological/systemic diseases, and antiretroviral users were excluded. Four skin samples were collected from each participant, divided into: A) no intervention; B) liposuction without laser; C) 1,210 nm laser at low power (harvest mode); D) 1,210 nm laser at high power (tightening mode). The project was approved by the Research Ethics Committee, registered under CAAE nº 60852022.2.0000.5544, with opinion nº 5.812.894. After fixation, paraffin embedding, microtomy, and Picrosirius Red staining, slides were analyzed by microscopy and quantified using Image-Pro Plus®. Data were evaluated with statistical tests (D'Agostino-Pearson, one-way ANOVA, Tukey, Kruskal-Wallis, and Dunn's tests, $p<0.05$). The group D showed higher expression of type I collagen, followed by group B. For type III collagen, groups C and D presented higher values, with significant differences compared to group B. These findings reinforce the selective action of the 1,210 nm laser on lipids, promoting connective tissue denaturation and collagen deposition. The heat generated contracts collagen fibers and stimulates neocollagenesis, favoring flap contraction and improved postoperative outcomes. It is concluded that the 1,210 nm laser at high power, when used in abdominal dermolipectomy, enhances tissue remodeling and aesthetic results of the surgery.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Effects on the Histoarchitecture of Human Skin After Use of 1,210 nm Laser in Abdominal Dermolipectomy**

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Thematic axis: Nanotecnologia, Biotecnologia, Biociências Nucleares e Terapias Avançadas

Keywords: Abdominoplasty. Histology. Diode Laser.

Abstract:
The increase in abdominoplasty surgeries is accompanied by a growing possibility of complications. Thus, the 1,210 nm wavelength laser has demonstrated improved scar appearance, supporting an early effect of laser treatment. The objective of this study was to analyze the immediate effects of the 1,210 nm laser on the histological architecture of skin flaps from 10 volunteers undergoing abdominal surgery in Salvador, Bahia, aged over 18 years, and who signed the informed consent form. Exclusion criteria included previous abdominal wall surgeries, bariatric surgery, dermatological/systemic diseases with manifestations on the skin or abdominal subcutaneous tissue, and users of antiretroviral medications. Four samples were collected from each volunteer and subjected to different interventions: A) no intervention; B) liposuction without laser; C) use of the 1,210 nm laser in harvest mode (lower power); D) use of the 1,210 nm laser in tightening mode (higher power). Twenty measurements per sample were performed for the dermis, epidermis, and hypodermis using Image Pro Plus 3.0.1. The project was approved by the Research Ethics Committee, registered under CAAE nº 60852022.2.0000.5544, with opinion nº 5.812.894. All tests were performed using GraphPad Prism software. Changes in the epidermis showed no statistically significant differences ($p>0.05$). In the dermis, group B showed the lowest thickness, followed by group D when compared to groups A and C ($p<0.05$). In the hypodermis, groups B, C, and D presented a significant decrease in thickness compared to group A ($p<0.05$). Group D showed the lowest thickness compared to group B ($p<0.05$). Thus, the 1,210 nm laser preserves the dermis and produces a greater reduction of the hypodermis compared to the liposuction-only group. Although the higher-power laser presented a statistically significant reduction in dermis thickness compared to group C, it expressed the lowest hypodermis thickness.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Therapeutic Potential of Secretome and Extracellular Vesicles from Mesenchymal Stem Cells in Experimental Trigeminal Neuropathy**

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Thematic axis: Nanotechnology, Biotechnology, Nuclear Biosciences, and Advanced Therapies.

Keywords: Cell-free therapy. Extracellular vesicles. Mesenchymal stem cells. Secretome. Trigeminal neuralgia.

Abstract:
Trigeminal neuralgia (TN) is the most prevalent form of craniofacial neuropathic pain, characterized by severe, recurrent and unilateral facial pain due to trigeminal nerve dysfunction or compression. Currently, there is no effective treatment for TN. The potential of mesenchymal stem cells (MSC) and MSC-derived cell-free products in neuropathic syndromes has been demonstrated. This study aimed to assess the therapeutic potential of secretome (Sc) and extracellular vesicles (EV) derived from MSC in experimental TN. MSC were obtained from the bone marrow of C57Bl/6 mice, and characterized by flow cytometry and in vitro differentiation. Sc was obtained from the MSC culture supernatant. EV were isolated by ultracentrifugation and characterized by nanoparticle tracking analysis and transmission electron microscopy. Mice were subjected to partial infraorbital nerve ligation surgery, and nociceptive thresholds were assessed for 30 days by Hargreaves and von Frey tests (FIOCRUZ-BA 025/2011; 020/2022). MSC showed expression of typical markers (SCA-1, CD44, CD90), and the expected differentiation capacity adipogenic, chondrogenic and osteogenic lineages. EV had a mean size of 205 nm and typical spherical morphology. Infraorbital ligation surgery induced allodynia and hyperalgesia ($p<0.001$), confirming trigeminal sensory neuropathy. A single intravenous injection of MSC ($1x10^6$), EV (isolated from 100 µL of Sc) or Sc (100 µL), on day 5 post-surgery, induced antinociception that was not reversed throughout the experimental period ($p<0.05$). Carbamazepine (30 mg/kg), the reference drug, was administered intraperitoneally every 12 hours and produced transient antinociception ($p<0.05$), which was no longer observed after 12 hours. The antinociception induced by Sc and EV was similar to that of MSC. These findings reinforce the potential of cell-free products as efficient substitutes for stem cell transplants, and as promising alternatives for the treatment of trigeminal neuralgia.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: IL-10-enriched extracellular vesicles from mesenchymal stem cells attenuate TNF-α production by macrophages *in vitro*

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Thematic axis: Nanotechnology, Biotechnology, Nuclear Biosciences and Advanced Therapies

Keywords: Extracellular vesicles. IL-10. Immunomodulation.

Abstract:
Excessive inflammatory responses underlie the pathogenesis of several immune-mediated conditions, highlighting the need for effective immunomodulatory strategies. Extracellular vesicles (EVs) derived from mesenchymal stem cells (MSCs), particularly those engineered to overexpress IL-10, have emerged as promising candidates due to their stability, low immunogenicity, and ability to modulate inflammatory pathways. This study aimed to evaluate the immunomodulatory effects of EVs derived from MSCs overexpressing IL-10 (EV-IL10) *in vitro*. MSCs were isolated from C57BL/6 mice and genetically modified to overexpress IL-10. The multipotency of engineered MSCs was assessed by chondrogenic and osteogenic differentiation assays, evidenced by specific matrix staining. IL-10 production was measured by ELISA. EVs were isolated from conditioned media by differential ultracentrifugation and characterized by transmission electron microscopy and nanoparticle tracking analysis (NTA). Macrophages of the J774 cell line were treated with EV-IL10 at concentrations of 10^7, 10^6, and 10^5 particles/mL. Cytotoxicity was assessed by the AlamarBlue assay, and TNF-α levels in culture supernatants were measured by ELISA. MSCs overexpressing IL-10 maintained their multipotency and secreted significantly higher IL-10 levels compared to wild-type controls ($p < 0.05$). EVs exhibited uniform morphology, average size consistent with exosomes, and high particle concentration as revealed by NTA and electron microscopy. No cytotoxicity was observed in macrophages at any EV concentration. Treatment with EV-IL10 resulted in a concentration-dependent reduction in TNF-α production, with the greatest inhibition at 10^7 particles/mL ($p < 0.05$). These findings demonstrate that EVs derived from MSCs overexpressing IL-10 exert potent anti-inflammatory effects *in vitro* without compromising cell viability, supporting their potential as a novel, cell-free immunomodulatory strategy.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Extracellular vesicles from LIF-engineered mesenchymal stromal cells attenuate macrophage inflammatory responses *in vitro***

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Thematic axis: Nanotechnology, Biotechnology, Nuclear Biosciences and Advanced Therapies

Keywords: Extracellular vesicles. Leukemia inhibitory factor. Sepsis.

Abstract:
Dysregulated systemic inflammation underlies the pathogenesis of several critical conditions, highlighting the need for innovative, cell-free immunomodulatory approaches. Extracellular vesicles (EVs) derived from mesenchymal stromal cells (MSCs) have emerged as promising candidates, especially when obtained from MSCs engineered to overexpress leukemia inhibitory factor (LIF), which enhances their pro-angiogenic and regenerative properties. This study aimed to evaluate the therapeutic potential of EVs derived from wild- type MSCs (WT-MSCs) and MSCs overexpressing LIF (LIF-MSCs) in vitro. The multipotency of LIF-MSCs was confirmed by a differentiation assay. LIF-MSCs maintained a capacity to differentiate into adipocytes, chondrocytes, and osteocytes, as demonstrated by cell-type-specific oil red, alcian blue, and alizarin red staining, respectively. LIF levels were quantified by ELISA, sustained LIF overproduction was maintained over 24h, 48h, and 72h, with levels significantly higher than WT-MSCs ($p < 0.05$). EVs were isolated by differential ultracentrifugation and NTA characteristics, which revealed a relatively homogeneous distribution, with a predominance of small particles, whose sizes are compatible with exosomes (30–150 nm) and smaller microvesicles. Macrophages (J774) were activated and treated with EVs-LIF or WT-MSCs (10^7, 10^6, and 10^5 particles/mL). The evaluation was assessed with AlamarBlue and TNF-α production by ELISA. LIF-MSCs showed no cytotoxicity at any concentration and significantly reduced TNF-α at doses of 10^7 and 10^6 particles/mL ($p < 0.05$), with no effect at a lower dose. These findings demonstrate that LIF- MSCs-derived EVs exert anti-inflammatory effects in vitro without compromising cellular targets, supporting their potential as a cell-free therapeutic alternative for the control of exacerbated inflammation. Future studies are needed to elucidate the mechanisms involved and advance their translational application.

Title: Genetically modified mesenchymal stromal cells expressing interleukin-10 present higher anti-inflammatory effects in an LPS-induced endotoxic shock model

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Thematic axis: Biotechnology and Advanced Therapies

Keywords: Cell therapy. Genetic engineering. IL-10. Mesenchymal stem cells. Sepsis.

Abstract:
Sepsis continues to be a major global health challenge and is marked by an excessive and dysregulated inflammatory response to infection. Mesenchymal stromal/stem cells (MSCs) possess notable immunoregulatory capabilities, and their therapeutic potential can be enhanced through genetic engineering to produce anti-inflammatory cytokines. In this work, MSCs were genetically modified to constitutively express interleukin-10 (IL-10), resulting in a stable IL-10-secreting cell line (MSC-IL-10). These modified cells retained their mesenchymal identity and multipotency while demonstrating elevated IL-10 production. Compared to unmodified MSCs (MSC-WT), MSC-IL-10 exhibited superior anti-inflammatory effects. *In vitro* assays revealed that MSC-IL-10 cells significantly suppressed the expression of the pro- inflammatory cytokines TNF-α, IL-1β, and IL-6, as well as NOS2, in co-cultures with macrophages activated by LPS and IFN-γ. *In vivo*, administration of MSC-IL-10 markedly increased survival rates in a murine model of LPS-induced endotoxic shock (CEUA 018-2022, IGM Fiocruz-BA). Animals treated with MSC-IL-10 showed lower systemic inflammation by attenuating leukopenia (higher white blood cell counts), reduced migration of activated $CD11b^+$ immune cells, decreased serum cytokine concentrations, and less tissue injury, as evidenced by histopathological evaluation. These findings highlight the therapeutic promise of IL-10-expressing MSCs for sepsis and other inflammatory diseases.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Evaluation of the effect of nanoparticles containing phenolic compound extract from Cantaloupe melon on food intake and zoometric parameters in zebrafish with diet-induced obesity

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Thematic axis: Nanotechnology, Biotechnology, Nuclear Biosciences and Advanced Therapies

Keywords: Animal model. Bioactive compounds. *Cucumis melo*. Dietary intake. Nanotechnology.

Abstract:
Obesity is characterized by excessive accumulation of adipose tissue, chronic inflammation and other complications. Phenolic compounds are bioactives with anti-obesity properties, commonly found in plant sources such as Cantaloupe melon, but are unstable to environmental factors, which compromises their functionality. Therefore, nanoencapsulation emerges as a strategy to preserve and enhance the effects of these compounds. Zebrafish stand out in obesity studies due to their genetic and physiological similarity to humans. This study aimed to evaluate the impact of free (CE) and nanoencapsulated (EPWC) Cantaloupe melon phenolic compound on food intake and zoometric parameters in zebrafish with diet-induced obesity (DIO). CE was nanoencapsulated by acetone nanoprecipitation using whey protein concentrate and Tween 80. The research received ethics committee approval under protocol no. 035/2022 (CEUA/UFRN). The animals (n = 48/group) were gradually overfed with *Artemia salina* (60- 120 mg/fish/day) for 8 weeks, and subsequently treated for 14 days with: normocaloric diet (DIO+NOD; 30 mg artemia/day), CE (DIO+CE; 50 mg/L) or EPWC (DIO+EPWC; 50 mg/L). Fish subjected to a DIO (DIO) or normocaloric diet (NOD) without treatments were used as controls. It was observed that DIO+EPWC reduced food consumption by ~45% and DIO+CE by ~18% compared to DIO, with DIO+EPWC being significantly lower than the others ($p<0.05$). Only the DIO+NOD group showed a significant weight reduction ($\Delta = -0.06$ g; $p < 0.05$), whereas the DIO+CE group showed an increase ($\Delta = +0.10$ g; $p < 0.001$). Length increased in DIO ($\Delta = +0.12$cm; $p<0.05$) and DIO+EPWC ($\Delta = +0.10$cm; $p<0.05$) than the other groups. Regarding BMI, DIO+CE showed an increase ($\Delta = +0.003$; $p<0.05$) and DIO+EPWC showed a significant reduction ($\Delta = -0.004$; $p<0.001$). Therefore, treatment with EPWC resulted in a decrease in BMI and food intake without compromising growth, suggesting that the effects of CE were potentiated through nanoencapsulation.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Enhancing Molecular Diagnostics: A LAMP-CRISPR Approach to Detecting Pathogens

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Thematic axis: Nanotecnologia, Biotecnologia, Biociências Nucleares e Terapias Avançadas

Keywords: Biosensor. Biotechnology. Isothermal amplification. Molecular diagnostic. Point-of-care test.

Abstract:
The rise of infectious diseases as a major global health concern, exacerbated by globalization and increasing population mobility, has made the development of rapid and accurate diagnostic tools essential for effective epidemiological surveillance. Among current molecular methods, loop-mediated isothermal amplification (LAMP) has gained attention not only for its similarities to the well-established polymerase chain reaction (PCR) but also for its portability, which makes it especially suitable for point-of-care testing (PoCT). However, LAMP has historically faced challenges due to a high rate of false positives. To overcome this limitation, LAMP has been increasingly combined with sequence-specific detection systems, such as CRISPR/Cas, which significantly improve diagnostic specificity. This study aimed to develop a flexible platform for the detection of multiple pathogens by integrating LAMP with the CRISPR-Cas12 system. Primers were designed using the NEB LAMP Primer Design Tool, and corresponding guide RNAs (gRNAs) were generated with the CRISPick online tool. In parallel, various fluorescent probes were synthesized to enhance signal detection. Trans-cleavage assays were conducted by assembling a complex of magnetic beads and biotin-FAM-labeled probes (PolyA and PolyC), which was then incubated with a Cas12a-gRNA ribonucleoprotein complex. Following amplification, LAMP products served as the input for the CRISPR reaction, and fluorescence in the supernatant was measured. This adaptable platform demonstrated robust performance: detection of a model target (Target A) produced a fluorescence signal nearly ten times higher than that of negative controls. Additionally, colorimetric readouts will allow for easy visual distinction between positive (yellow) and negative (blue) samples. In summary, the integration of CRISPR with LAMP in a single diagnostic platform offers a promising, accurate, and field-deployable solution for next-generation PoCT diagnostics.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Investigation of the Therapeutic Potential of Mesenchymal Stem Cell-Derived Extracellular Vesicles in a 3D Model of Liver Fibrosis

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Thematic axis: Nanotechnology, Biotechnology, Nuclear Biosciences and Advanced Therapies.

Keywords: 3D culture. Extracellular Vesicles. Hepatic fibrosis. Mesenchymal stem cell.

Abstract:
Chronic liver diseases represent a serious public health issue, accounting for approximately 4% of global annual deaths. Hepatic fibrosis is the liver's scarring response to chronic injury and is mainly characterized by the accumulation of extracellular matrix produced by hepatic stellate cells (HSCs), the key cells in liver fibrogenesis. The progression of hepatic fibrosis to advanced stages increases the risk of cirrhosis and hepatocellular carcinoma, potentially leading to chronic liver failure. Currently, the only available therapy is liver transplantation, which is often unfeasible due to donor scarcity and the risk of rejection. Mesenchymal stem cell (MSC) therapy has shown therapeutic effects in liver fibrosis due to their self-renewal capacity, multilineage differentiation, and immunomodulatory activity through the secretion of cytokines, growth factors, and extracellular vesicles (EVs). Furthermore, genetic modification of these cells has been investigated as a strategy to enhance their therapeutic potential. This study aims to evaluate the therapeutic potential of extracellular vesicles derived from mesenchymal stem cells genetically modified to overexpress the growth factor G-CSF in a 3D model of liver fibrosis. Spheroids were generated by co-culturing hepatocyte like cells (HepG2) and hepatic stellate cells (LX2) at different initial densities and ratios. Spheroids were assessed for size, morphology, and cell viability. Immunostaining was performed for α-smooth muscle actin (α-SMA), the main activation marker in HSCs, along with phalloidin and nuclear staining. Expression of GCSF in MSCs was evaluated by RT-qPCR and immunofluorescence. EVs from wild-type MSCs (MSC-EVs) and G-CSF-overexpressing MSCs (GCSF-EVs) were isolated by ultracentrifugation and characterized by nanoparticle tracking analysis (NTA), transmission electron microscopy (TEM) and dot blot. Spheroids plated at initial densities of 2,000 and 3,000 cells/well with 15% LX2 showed stable morphology and cell viability over 10 days of culture. Immunostaining for α-SMA and phalloidin was unevenly distributed, with greater intensity at the outer regions of the spheroids. RT-qPCR and immunofluorescence staining confirmed that the genetically modified MSCs maintained both GCSF gene and protein expression. MSC-EVs and GCSF-EVs showed concentrations of $7.2\times10^{7} \pm 1.675\times10^{6}$ particles/mL and $5.34\times10^{9} \pm 2.09\times10^{5}$ particles/mL, with mean sizes of 166.2 ± 11.5 nm and 118.7 ± 4.6 nm, respectively. MSC derived EVs exhibited a classical round bilayer membrane structure and dot blot analysis showed that the EVs expressed exosome-positive markers CD63, CD81, and CD90. To date, spheroids composed of 3,000 cells/well with 15% LX2 showed stable morphology and viability, providing a suitable in vitro model for this study. Characterization of EVs revealed sizes, morphology and markers consistent with International Society for Extracellular Vesicles (ISEV) standards. Future steps include stimulation of the spheroids with TGF-β to induce fibrotic activation, followed by treatment with the extracellular vesicles. The treatment effects will be evaluated through cell viability analysis using the Alamar Blue assay, assessment of albumin production, uptake of EVs by the spheroids, and expression analysis of α-SMA, collagen, and TGF-β by immunofluorescence and RT-qPCR.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Can hydrodistillation and solid-state fermentation be used for the utilization of jackfruit peels and the production of volatile compounds?

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Thematic axis: Nanotechnology, Biotechnology, Nuclear Biosciences and Advanced Therapies

Keywords: Agro-industrial Residue. Gas Chromatography. Hydrosols. Terpenes.

Abstract:
Jackfruit is a tropical fruit from regions with high temperatures and humidity, and its global market is growing — the fruit's production is estimated at 360 million dollars in 2026. Studies indicate that 70–80% of jackfruit components are non-edible, with 60% corresponding to the peel, perianth, and core, which are usually discarded. Hydrosols, like essential oils, are obtained by hydrodistillation but consist mainly of condensation water with small amounts of essential oil. This research aimed to obtain hydrosols from raw jackfruit peel and peel subjected to Solid-State Fermentation (SSF), focusing on residue utilization and comparison of the main volatile compounds. To produce the hydrosols, 100 grams of jackfruit peel (raw or fermented) were placed in a round-bottom flask with deionized water and subjected to hydrodistillation for two hours using a Clevenger apparatus. The hydrosols were collected and stored frozen until analysis. For organic compound extraction, a 250 µL aliquot was mixed with 200 µL dichloromethane. After extraction, samples were analyzed by gas chromatography coupled with mass spectrometry, injecting 1 µL of the solution. Results showed distinct volatile compounds between raw and fermented peels, suggesting that fermentation favored the formation of secondary metabolites or the transformation of pre- existing compounds. In raw jackfruit peel, the main compounds detected were linalool and limonene, whereas in fermented peel, 1-octen-3-ol and 1-phenyl-2-propanone predominated. These differences may be associated with the enzymatic activity of microorganisms during fermentation, especially lipases and oxygenases, which degrade the lipid fraction and convert terpenic precursors into oxygenated derivatives. This chemical shift opens perspectives for applications in fragrances, cosmetics, food flavorings, and natural repellents. Thus, hydrodistillation of raw jackfruit peel is viable for obtaining terpenes, SSF is a relevant bioprocess for transforming these compounds, and both processes allow valorization of the fruit residue.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Influence of Different Processing Methods of Lemon and Orange Residues for the Production of Proteases by Solid-State Fermentation

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Thematic axis: Nanotechnology, Biotechnology, Nuclear Biosciences e Advanced Therapies

Keywords: Enzymes. Citric Residues. Fungi. Clevenger.

Abstract:
Agro-industrial residues, generated in the order of Mt during agricultural and industrial fruit processing, generally correspond to organic compounds with high potential for valorization and utilization due to their macro- and micronutrient content. In addition to being used as a direct source of biomolecules, Solid-State Fermentation (SSF) enables these residues, subjected to different processing methods, to serve as substrates for fungal growth and, consequently, for the production of compounds of interest. The present study aimed to evaluate the influence of different processing methods of *frit* (outer peel layer) from orange and lemon as SSF substrates using *Aspergillus* species (*A. flavipes, A. niger* and *A. oryzae*) for protease production. Orange and lemon frit were ground to reduce particle size, constituting treatment 1 (T1), referred to as LaT1 and LiT1, respectively. In addition, the residues, besides being ground, were also subjected to 2 h hydrodistillation in a Clevenger apparatus, constituting treatment 2 (T2), referred to as LaT2 and LiT2, respectively. SSF was performed in sterile sample containers with residues exposed to UV light and in Erlenmeyer flasks with autoclaved residues – these processes were referred to as UV and AC, respectively. Protease activity was determined using azocasein as the reaction substrate. Higher protease production was observed in LiT1 AC with *A. niger*, LiT1 UV with *A. niger*, and LiT1 AC with *A. oryzae* (743.4; 711.4; and 620.8 mg/g, respectively), with no statistical difference. The latter showed the same protease activity as LiT1 UV *A. oryzae*, LiT1 UV *A. flavipes*, and LiT1 AC *A. flavipes*. The results demonstrate that minimally processed lemon residues (T1) exhibit greater potential as substrates for protease production in SSF with the tested fungi. Both UV exposure and autoclaving of residues proved effective for the intended purpose, independent of the *Aspergillus* species used. These findings reinforce the relevance of citrus residue utilization, under different treatment approaches, as a sustainable alternative for obtaining proteases with broad applications in the food and medical-pharmaceutical sectors.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Determinação da solubilidade do ácido p-cumárico (p-CA) em dicaprilil carbonato, polisorbato 80 e polisorbato 20 para produção de sistemas nanoestruturados.

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Thematic axis: Nanotecnologia, Biotecnologia, Biociências Nucleares e Terapias Avançadas

Keywords: Polissorbato 20. Polissorbato 80. Carbonato de dicaprilila. Ácido p-cumárico. Solubilidade.

Abstract:
O ácido p-cumárico (p-CA), um composto fenólico natural com reconhecidas propriedades antioxidante, anti-inflamatória, anticancerígena e antimicrobiana, apresenta limitações na aplicação clínica devido à baixa solubilidade em água e reduzida biodisponibilidade; a nanotecnologia surge como solução ao permitir sua encapsulação em nanopartículas, promovendo maior estabilidade e direcionamento. O presente estudo teve por objetivo validar analiticamente um método espectrofotométrico para quantificar a solubilidade do p-CA em sistemas contendo tensoativos polissorbato 80, polissorbato 20 e o lipofílico carbonato de dicaprilila. A metodologia incluiu a determinação do λmax a 310 nm, preparo de soluções-padrão para garantir a linearidade de absorbância segundo Beer-Lambert e análise quantitativa das amostras em contato com os excipientes sob agitação por 72 h, com cálculo das concentrações dissolvidas a partir da absortividade molar (ε). Os resultados indicaram maior capacidade de solubilização no polissorbato 80 (2,80 mg/g), seguido do polissorbato 20 (2,33 mg/g) e do carbonato de dicaprilila (0,88 mg/g). Os desvios padrões relativos mostraram Tween 80 (0,55 %), Tween 20 (1,39 %) e carbonato de dicaprilila (0,02 mg/g), sugerindo que, além de mais eficiente, o Tween 80 apresentou melhor consistência. Assim, a metodologia demonstrou-se robusta e eficaz, oferecendo um caminho válido para otimizar formulações de p-CA com maior segurança e eficácia terapêutica.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Effects of Lauric Acid (LA) on body weight and satiety behavioral sequence in offspring submitted to the overfeeding model.**

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Thematic axis: Ciências de Animais de Laboratório e Modelos Alternativos.

Keywords: Fatty acids. Eating behavior. Obesity.

Abstract:
Obesity is a chronic disease with high prevalence worldwide. Environmental influences in early life represent a determining factor for its development. Therefore, special attention should be given to critical periods for development. One of the therapeutic investigations studied to mitigate the risk of obesity is lauric acid (LA). This study aims to investigate the effects of LA administration during gestation and lactation on body weight and the satiety behavioral sequence (SCS) in rat offspring subjected to overfeeding. Wistar rats were divided into three experimental groups (n= 12 animals/group): Control (C), Overfed (SA) and Overfed+LA (SAAL). LA was administered orally (100mg/kg) to the SAAL group nursing mother and filtered water at the same dose for the C and SA groups, during gestation and lactation. Overfeeding was induced by the litter reduction model (3 offspring/nursing mother). The project was approved by CEUA/UFPE (process 0097/2024). Body mass and feeding behavior were evaluated. Body mass was lower in the SAAL group compared to the SA group at the 21st (SAAL=52.94±3.41 vs SA=58.85±4.09; p=0.04) and 30th postnatal day (SAAL=93.51±7.51 vs SA=108.9±5.27; p=0.0005). There was an anticipation of the satiety point in the SCS of the SA group compared to the C and SAAL groups. Total food consumption was higher in the SAAL group than in the SA (SAAL=4.11±0.61 vs SA=3.2±0.8; p=0.0293). The latency to start feeding was shorter in the SAAL group than in the SA (SAAL=30±19 vs SA=61±25; p=0.0071). Feeding frequency was lower in the SA group than in the C (SA=14.5±4.5 vs C=23±5; p=0.0313) and SAAL (SAAL=26±9 vs SA=14.5±4.5; p=0.0033) groups. AL was associated with reduced body mass in offspring. However, there was greater food consumption, greater and earlier search for food, as well as no anticipation of satiety in the SAAL group. Suggesting that AL promotes better efficiency in response to hunger and modulating effect on body mass accumulation in overfed rats.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **IMPACTS OF NEONATAL TREATMENT WITH CURCUMIN ON EMOTIONAL BEHAVIOR IN A MODEL OF CEREBRAL PALSY ASSOCIATED WITH MALNUTRITION**

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Thematic axis: Laboratory Animal Science and Alternative Models.

Keywords: Anxiety. Curcumin. Malnutrition. Cerebral palsy. Polyphenols.

Abstract:
In the beginning of life, the organism is highly sensitive to environmental influences, in order that adverse exposures can contribute to the development of disorders such as cerebral palsy (CP). Malnutrition, a common condition in CP, aggravates the patients' state through neural and endocrine alterations that influence emotional behavior. Therefore, there is a higher prevalence of anxiety among children with CP. Nevertheless, studies indicate that curcumin can attenuate some of these endocrine changes associated with emotional behavior. This study evaluated the effects of neonatal treatment with curcumin on anxiety-like behavior in sixty-four rats with CP subjected to hypoprotein malnutrition, with eight rats in each experimental group. The project was approved by the Ethics Committee on Animal Use (CEUA) of UFPE. Eight experimental groups were defined based on the diet (low-protein or normal), CP model induction, and treatment (curcumin or vehicle substance, P3–P21). The pups remained with their mother during lactation, and weaning occurred on P25. The CP model combines perinatal anoxia (P0–P1) and sensory-motor restriction of the hind limbs (P2–P28). Body weight was recorded daily from P0 to P38, and anxiety-like behavior was assessed in the Elevated Plus Maze on P33. The curcumin treatment reduced weight loss in malnourished animals ($p = 0.0006$), although did not attenuate weight loss in CP rats ($p < 0.0001$). The low-protein diet ($p < 0.0001$) and the CP model ($p < 0.0001$) were associated with increased anxiety. The curcumin treatment had an anxiolytic effect both on the low-protein diet group, (<0.0001), and on CP group (<0.0001). The CP-induced with low-protein diet group showed less anxious behavior when treated with the curcumin (<0.0001). These results suggest that curcumin has therapeutic potential in the treatment of anxiety in cases of cerebral palsy and malnutrition, even when both conditions are associated.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Anti-inflammatory profile of dexamethasone in an alternative inflammation model induced by carrageenan in *Zophobas morio.***

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Thematic axis: Laboratory Animal Sciences and Alternative Models

Keywords: Inflammation. *Zophobas morio*. Alternative models.

Abstract:
Vertebrate animals, such as mice and rabbits, have traditionally been the primary preclinical models employed in pharmacological research. However, growing ethical concerns regarding the use of vertebrates in experimental studies have intensified efforts to identify alternative, more humane approaches. Within this context, invertebrate models, particularly *Zophobas morio* larvae, have emerged as a promising and effective substitute. These arthropods possess an innate immune system that exhibits functional similarities to that of mammals, rendering them suitable for pharmacodynamic and toxicological evaluations of bioactive compounds. Furthermore, their use circumvents the need for approval by animal ethics committees, substantially reduces experimental costs, and supports scientific advancement in accordance with the "3Rs" principles: Reduction, Replacement, and Refinement. This study aimed to evaluate the inflammatory potential of carrageenan and the anti-inflammatory response to dexamethasone in *Z. morio* larvae. Eighteen groups (n = 18) were treated with 10 µL of 0.5% carrageenan, 25 µg/mL dexamethasone, or 0.9% saline at the following time points: 30 min, 60 min, 120 min, 24 h, 48 h, and 72 h. Hemolymph was extracted and analyzed under optical microscopy to quantify hemocytes, which were used as markers of inflammatory response. Carrageenan-treated groups showed a progressive increase in hemocyte count, reaching 20,808 ± 9571 hemocytes/mL at 72 h, 14.3 times higher than the dexamethasone group and 7.5 times higher than the saline group. The most pronounced increases occurred after 24 h of exposure, with mean values of 7292 ± 152 hemocytes/mL, followed by 8125 ± 1426 at 48 h, indicating a consistent upward trend in inflammatory response. In contrast, dexamethasone-treated groups demonstrated a marked suppression in hemocyte count, with the lowest mean value observed at 48 h (617 ± 76 hemocytes/mL), reinforcing the time-dependent anti- inflammatory efficacy of the corticosteroid. The saline groups maintained relatively stable hemocyte levels across all time points, with no significant fluctuations, confirming its role as a neutral control. Two- way ANOVA revealed a statistically significant interaction between treatment and time ($p < 0.0001$). The results confirm carrageenan as an effective inflammatory agent in invertebrates, possibly acting through mechanisms similar to those seen in mammals, such as Toll-like receptor activation. The anti- inflammatory action of dexamethasone was also confirmed, and immune system recovery after drug metabolism suggests the occurrence of immune priming. In conclusion, *Z. morio* larvae constitute a viable and efficient model for evaluating inflammatory responses, representing an ethical and functional alternative to the use of vertebrates in the preliminary screening of new substances.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Effects of Curcumin on the Development of Rats with Cerebral Palsy Associated or Not with Malnutrition**

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Thematic axis: Laboratory Animal Science and Alternative Models.

Keywords: Neurodevelopment. Cerebral palsy. Curcumin. Malnutrition.

Abstract:
Cerebral palsy (CP) is the leading cause of childhood motor disability, associated with movement, tone, posture impairments, and nutritional and growth deficits. Malnutrition, common in CP, worsens motor and functional development, compromising quality of life. Early-life nutrition affects phenotypic plasticity and neuromotor development. Curcumin, a natural antioxidant and anti-inflammatory properties, shows therapeutic potential in neurological diseases. This study investigated the effects of neonatal curcumin treatment on body growth, physical maturation, and muscle strength in a CP model associated with perinatal malnutrition. Pregnant Wistar rats received either a normal (17% protein) or low-protein (8% protein) diet. Male offspring were assigned to eight subgroups (n=12) based on nutrition, CP model, and curcumin treatment (20 mg/kg/day, i.p., from P3 to P21). CP was induced by neonatal anoxia (P0 and P1) and hind limb sensorimotor restriction (P2–P28). Evaluations included weight gain, physical maturation, and forelimb strength (GRIP test at P22 and P28). The study followed CEUA/UFPE ethics (0063/2023). Malnourished animals showed lower weight from P7 ($p<0.05$). Curcumin administration attenuated weight loss from P21 in the N: PCC (well-nourished-CP-curcumin) group ($p<0.05$) and from P28 in the M:CC (malnourished-control-curcumin) and M: PCC (malnourished-CP-curcumin) groups ($p<0.001$). Physical maturation was delayed in all malnourished groups ($p<0.05$). Muscle strength was reduced in well- nourished CP groups but improved with curcumin ($p<0.05$). In M:CC group, curcumin also mitigated strength loss ($p<0.05$). CP associated with perinatal malnutrition led to reduced body weight, delayed physical maturation, and decreased muscle strength. Curcumin attenuated these deficits, suggesting therapeutic potential in modulating functional outcomes under conditions of brain injury and nutritional restriction during neurodevelopment.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Effects of epicatechin on food consumption and glucose tolerance in Wistar rats exposed to the maternal high-fat diet during pregnancy and lactation

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Thematic axis: Laboratory Animal Sciences and Alternative Models

Keywords: High-fat diet. Phenotypic plasticity. Polyphenols**.**

Abstract:
A high-fat diet during pregnancy and lactation may have adverse short- and long-term effects on the physiological and metabolic health of offspring, possibly via mechanisms associated with phenotypic plasticity. This highlights the importance of investigating the potential role of bioactive compounds in modulating these conditions. The present study therefore aimed to evaluate the effects of epicatechin on food consumption and glucose tolerance in rats exposed to a high-fat maternal diet. The study was approved by the Animal Use Ethics Committee (117/2024). Forty male Wistar rats were evaluated from birth to 35 days of age, some of which were exposed to a high-fat maternal diet (HF, n=20), while others were not (C, n=20). Of these, 10 rats from each group received 1.5 mg/kg of intraperitoneal epicatechin daily from birth to weaning, comprising the C, C + EPI, HF and HF + EPI groups (n=10). Food consumption was assessed from day 25 to day 31, and glucose tolerance was assessed on day 32 postnatal. Statistical analysis was performed using GraphPad Prism software. The HF+EPI group showed lower food consumption than the C+EPI group (HF+EPI: 17.82±1.4; C+EPI: 19.70±1.2, n=10; p=0.02), suggesting that the bioactive compound has an effect in the presence of nutritional insult during the perinatal period. Following the administration of 50% glucose after 30 minutes, animals receiving epicatechin had lower blood glucose levels, particularly in the HF+EPI group (C: 306±47; C+EPI: 275±34; HF: 346±80; HF+EPI: 269±53, n=10, $p<0.05$). However, at follow-up times of 60, 90, and 120 minutes, there were no significant differences between the groups ($p>0.05$). Together, these results demonstrate that administering epicatechin during the first 21 days of life reduces food consumption and serum glucose in pups exposed to a high-fat maternal diet. Epicatechin could be a potential adjuvant strategy for mitigating the damage caused by maternal malnutrition during the perinatal period.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Effect of epicatechin on the somatic development of rats exposed to a maternal high-fat diet

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Thematic axis: Laboratory Animal Science and Alternative Models.

Keywords: High-fat diet. Polyphenols. Somatic development.

Abstract:
The perinatal period, which comprises the phases of gestation, birth, and lactation, is considered a critical stage for growth and development, due to their high susceptibility to environmental changes. This period represents one of the fundamental moments in life, characterized by significant biochemical, structural, and physiological transformations of the organism. The Developmental Origins of Health and Disease (DOHaD) concept highlights how environmental factors during early development such as nutrition or stress exposure can have long-term effects on an individual's health and disease risk later in life, reinforcing the importance of the perinatal period in shaping future physiological outcomes. The aim of the present study was to evaluate the effects of epicatechin on the somatic development of rats exposed to a maternal high- fat diet. The project was approved by CEUA nº 117/2024. During the lactation period, 48 offspring from mothers fed a high-fat diet or control diet received epicatechin 1.5 mg/kg.bw or vehicle solution intraperitoneally from the 1st to the 21st postnatal day (PND). The offspring' body weight was assessed daily until PND21, and the longitudinal axis, tail length, and cranial axes were assessed at PND1, PND8, PND14, PND17 and PND21. Data were expressed as mean ± SD. Tukey's post-test demonstrated that the HL-EPI group presented a significant reduction in body weight compared to the HL-V group (PND11: n=12; HL-V= 24.34 ± 3.68; HL-EPI= 21.16 ± 1.98, $p<0.05$; PND21: HL-V= 49.89 ± 3.81; HL-EPI= 44.66 ± 3.22, $p<0.0001$). Regarding the longitudinal axis, on days 14 and 17, the HL-EPI group were larger than the C-EPI group (PND14: n=12; C-EPI= 89.71 ± 4.37; HL-EPI= 91.49 ± 4.21, $p<0.01$; PND17: C-EPI = 92.80 ± 4.64; HL-EPI= 105.61 ± 4.54, $p<0.0001$). No differences were found in the other parameters evaluated. These results demonstrate that epicatechin administration was effective in mitigating body weight gain induced by the maternal high-fat diet.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Dietary supplementation of pregnant rats in a breeding vivarium

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Thematic axis: Laboratory Animal Sciences and Alternative Models

Keywords: Nutrition. Reproduction. Rodents. Vivarium.

Abstract:

The laboratory rat (*Rattus norvegicus*) is a widely used experimental model in physiology, pharmacology, and related fields, largely owing to its high reproductive potential. Females are polyestrous and produce large litters; nonetheless, environmental conditions, health status, and nutrition influence reproductive and sexual performance. Nutritional requirements vary with physiological stage and age, increasing substantially during gestation and lactation due to the elevated demands for energy, amino acids, minerals, and vitamins. Despite this, the availability of phase-specific diets is limited in Brazil. This study hypothesized that amino acid, vitamin, and mineral supplementation during gestation and lactation would enhance both maternal reproductive performance and offspring development, registered by number CEUA 7360120424 of the Institute of Health Sciences of the Federal University of Bahia. The objective was to test the hypothesis by monitoring breeding rats subjected to nutritional supplementation and their offspring. Twelve female rats were randomly assigned to either a control group (n=6), which received standard irradiated NUVILAB CR-1 feed and 0.9% NaCl (200 µL/day), or a supplemented group (n=6), which were given the same diet plus an oral daily dose of Glicopan Pet® (200 µL/day) throughout gestation and lactation. Maternal body weight and serum glucose levels were monitored, while offspring were assessed weekly for weight, length, and developmental milestones. Data were analyzed using ANOVA. Results indicated an earlier ear detachment in pups from supplemented dams, suggesting enhanced maturation; however, no significant differences were observed in other maternal or offspring parameters. Although dietary supplementation is frequently used in laboratory settings, often without scientific validation, the findings of this preliminary study do not support routine supplementation under the tested conditions. The standard feed provided appears sufficient to meet the nutritional demands of pregnant and lactating rats, likely owing to its already enriched formulation.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Neutrophil Gelatinase-Associated Lipocalin as a Potential Biomarker of Incomplete Renal Repair After Rhabdomyolysis-Induced Acute Kidney Injury.**

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Thematic axis: Urinary System

Keywords: Acute kidney injury. Chronic kidney disease Neutrophil gelatinase-associated lipocalin.

Abstract:
Acute Kidney Injury (AKI) is a clinical condition associated with a high risk of developing Chronic Kidney Disease (CKD). The incomplete renal recovery after AKI involves some pathophysiological mechanisms that include inflammation, oxidative stress, capillary rarefaction, and renal fibrosis. Given the limitations of conventional biomarkers in detecting the AKI to CKD progression, alternative biomarkers such as Neutrophil Gelatinase-Associated Lipocalin (NGAL) and Kidney Injury Molecule-1 (KIM-1) have been investigated. The main aim of this study was to assess the effectiveness of NGAL and KIM-1 in detecting the progression from rhabdomyolysis-induced AKI to CKD. Twelve 10-week-old Wistar rats were assigned to receive intramuscular injections of either saline (Control group, n = 5) or 50% glycerol (8 mL/kg, Glycerol group, n = 7). Serum creatinine and urea levels were measured at 3, 15, 30, and 45 days post-injury. On day 45, the animals were euthanized, and the kidneys were collected for analysis of inflammation, oxidative stress, capillary density, and fibrosis. Additionally, NGAL and KIM-1 levels were quantified in serum and urine. (Ethics approval: CEUA-ICS – 7198260319). In the acute phase, the Glycerol group showed a significant increase in serum creatinine and urea levels compared to the control group. Although these parameters returned to baseline values at day 45, Glycerol animals exhibited sustained renal alterations, including macrophage and lymphocyte infiltration, oxidative stress, capillary rarefaction, and fibrosis. Notably, serum and urinary NGAL levels remained significantly elevated 45 days post-AKI in the Glycerol group, while urinary KIM-1 levels were elevated at 3, 15, and 30 days post-AKI. These findings suggest that rhabdomyolysis-induced AKI can lead to incomplete renal repair and progressive kidney damage despite apparent functional recovery. Moreover, NGAL emerges as a promising biomarker for detecting the transition from AKI to CKD.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: The Potential of Social Media as a Tool for Teaching, Learning, and Scientific Dissemination in Cardiovascular Physiology and Pharmacology

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Thematic axis: Education and Knowledge Dissemination in Biomedical Sciences

Keywords: Scientific dissemination. Digital education. Pharmacology. Social media. Cardiovascular system.

Abstract:
According to data from Meta's advertising platform, Instagram reached approximately 134.6 million users in Brazil at the beginning of 2024. This scenario highlights the growing integration of society with social media, making these platforms strategic channels for communication and knowledge dissemination. In this context, the use of social media for scientific dissemination emerges as a valuable approach to narrowing the gap between academic research and clinical practice. By broadening access to scientific content and promoting dialogue between different domains of knowledge and the general public, these platforms contribute to the democratization of science and the translation of evidence into practice. This study reports a scientific dissemination experience carried out between April 2024 and July 2025 through the official Instagram profile of the Laboratory of Endocrine and Cardiovascular Physiology and Pharmacology (LAFFEC). The content addressed cardiovascular physiology and pharmacology, especially the relationship between gut microbiota and the cardiovascular system, using accessible language and practical applications. Posts were created in carousel format by the authors of this study, under the supervision of the professors. They were based on scientific articles from the literature and designed with digital tools such as Canva. Each post required about 20 hours for preparation, including article study, group discussions, and visual design. The material combined attractive visuals with lay-friendly texts while maintaining scientific accuracy. Performance was monitored through platform metrics, such as reach, interactions, and views, as well as user profile analysis distinguishing followers from non-followers. In total, 11 posts were published, reaching 8,160 accounts and generating 672 interactions, including likes, shares, comments, and saves, totaling 13,528 views. After the reformulation of content presentation, an increase in views from non-followers was observed, indicating that the material is reaching beyond the already engaged community. The results demonstrate the potential of social media to broaden access to scientific knowledge, serving as an important tool for connecting universities and society.

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XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Validation and Educational Applicability of a Game on Cell Death Mechanisms**

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Thematic axis: Education and Knowledge Dissemination in Biomedical Science

Keywords: Apoptosis. Autophagy. Game-based learning. Necrosis. Pyroptosis.

Abstract:
Introduction: The mechanisms of cell death, such as apoptosis, necrosis, autophagy, and pyroptosis, are fundamental pillars for understanding physiological and pathological processes. However, they often represent abstract and highly complex topics for undergraduate health students. Recent literature highlights that active learning methodologies and gamification have demonstrated significant benefits in terms of knowledge acquisition and student engagement in health education. **Objective:** To evaluate the pedagogical applicability of an educational game on cell death mechanisms for higher education students. **Methods:** This study was designed as a pedagogical intervention with a qualitative approach, conducted within the discipline *Mechanisms of Cell Death* of the Graduate Program in Pharmaceutical Sciences (PPGFARMA), UNEB. The intervention involved the design and validation of a card game addressing cell death mechanisms, grounded in the scientific literature and aimed at both undergraduate and graduate students. **Results:** The developed game provides a challenging and engaging approach to introducing the topic of cell death into a competitive learning context, requiring a solid understanding of the main mechanisms involved. Its usability is straightforward, as it is based on the rules of *KEMPS*, a partnership game in which players must form sets of cards from the same group and signal victory. In line with Vygotsky's postulates on human cognition, one of the greatest contributions lies in the "school" environment, where collective interactions promote the complexity of knowledge, diversity of norms, and values, thereby supporting effective learning. **Conclusion:** The applicability of the game on cell death highlights its potential as an effective tool to support the teaching of complex content in health education. Its curricular adoption could complement traditional lectures, particularly by fostering engagement, knowledge retention, and reasoning skills.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Wollastonite/β-TCP Scaffold Implants for Bone Regeneration in Critical-Size Calvarial Defects

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Thematic axis: Bioengenharia Tecidual

Keywords: Bone regeneration Biomaterials. Calcium phosphates. Calcium silicate. Rat calvaria.

Abstract:
In order to provide favorable conditions for bone regeneration, a lot of biomaterials have been developed and evaluated, worldwide. Composite biomaterials have gained notoriety, as they combine desirable properties of each isolated material. Thus, in this research, bone repair capacity of three developed formulations of ceramic scaffolds were evaluated histomorphometrically, after implantation. Scaffolds were based on wollastonite (W) and β-tricalcium phosphate (β-TCP) composites in three different ratios (wt.%). Prior to the surgical procedures, this study was approved by the Animal Ethics Committee of the Health Sciences Institute at the Federal University of Bahia, Brazil, under protocol no. 129/2017. Thirty Wistar rats were randomly assigned to three experimental groups: W-20 (20W/80β-TCP wt.%), W-60 (60W/40β-TCP wt.%), and W-80 (80W/20β-TCP wt.%), evaluated by optical microscopy at biological tests after 15 and 45 days of implantation. Throughout the study, the histological results evidenced that the scaffolds remained at the implantation site, were biocompatible and presented osteogenic potential. The percentage of neoformed mineralized tissue was more evident in the W-20 group (51%), at 45 days. The composite of the W-80 group showed more evident biodegradation than the biomaterials of the W-20 and W-60 groups. Thus, it is concluded that the scaffold containing 20W/80β-TCP (wt.%) promoted more evident boné formation, but all composites evaluated in this study showed notorious bioactivity and promising characteristics for clinical application.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Morphological Study of the Effect of Sculptra® Poly-L-Lactic Acid Particle Implantation in Different Tissue Layers of the Orofacial Region and in the Dorsal Subcutaneous Tissue of Rats**

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Thematic axis: Tissue Engineering

Keywords: Aging. Dermal fillers. Poly-L-lactic acid. Subcutaneous tissue.

Abstract:
Poly-L-lactic acid (PLLA) is a synthetic and biodegradable biopolymer used in facial and cervical aesthetic treatments to correct volume loss, wrinkles, and sagging. Despite its benefits, adverse effects such as bruising and fibrous nodules may occur. The application of PLLA in the subcutaneous and supraperiosteal layers of the face still lacks evidence regarding its biocompatibility and collagen induction potential. This experimental in vivo morphological study aims to evaluate the effects of PLLA implantation in different tissue layers of the orofacial region using a new experimental model in Wistar rats. The animals will be divided into six groups to receive 50 µL of saline solution or PLLA (Sculptra®): ShamMSub and SculptMSub (subcutaneous injection in the right masseter); ShamMSupra and SculptMSupra (supraperiosteal injection in the left mandibular branch); ShamD and SculptD (bilateral subcutaneous injection in the dorsal region). The animals will be euthanized at 3, 7, 60, and 90 days after the intervention. The implanted areas will be dissected, fixed in 4% formaldehyde buffered in 0.1 M sodium phosphate (pH 7.4) for 24 hours, and processed for optical microscopy. Histological sections (5 µm) will be stained with hematoxylin-eosin and picrosirius for analysis of the variables inflammation, fibrosis, edema, hemorrhage, vascularization, and collagen fiber deposition. The research was approved by the UFBA Animal Ethics Committee (Protocol No. 7573120624) and is linked to an ongoing Master's thesis. It is expected to understand the biological effects of PLLA and propose a new model for analyzing the biocompatibility of these fillers.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Osteogenic potential of silica-substituted hydroxyapatite *scaffold* for critical-sized bone defect repair

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Thematic axis: Tissue Bioengineering

Keywords: Biomaterials. Bone regeneration. Calcium silicate. Ceramics. Silica.

Abstract:
Bone tissue has regenerative capacity, but extensive losses require interventions to restore both function and aesthetics. Hydroxyapatite (HA) and silicon (Si) are widely used in the development of biomaterials for bone repair. HA is a ceramic material that allows ionic substitutions in its crystalline structure, enhancing its bioactivity. Silicon, essential for bone metabolism, forms silica (SiO_2) when combined with oxygen and can generate various types of silicates when associated with other chemical elements. The substitution of silicate anions in the HA structure improves its biological performance by increasing biocompatibility, osteoconductivity, and bioactivity. This study evaluated the biological behavior and osteogenic potential of silica-substituted hydroxyapatite (SiHA) in critical-sized bone defects. Twenty-four animals were randomly assigned into two experimental groups, with twelve animals in each group, evaluated at 15 and 45 days. The GHA group received scaffolds of pure HA, while the GSiHA group received HA with a 5% silica concentration. Histological analysis revealed bone neoformation in both groups, more evident in GSiHA. The scaffolds fully filled the defects, with distinct connective tissue formation: GHA showed loose connective tissue with slight edema, while GSiHA exhibited thinner tissue with disorganized collagen fibers. Chronic granulomatous inflammation was observed at both time points, decreasing over time, along with angiogenesis. Both biomaterials demonstrated biocompatibility, osteoconductivity, and bioactivity, with a more pronounced osteogenic response in the SiHA group. This study was approved by the Ethics Committee on Animal Use (CEUA/ICS.UFBA), under protocol number 2419171122 (ID 000243).

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Experimental protocol for evaluation of biomaterials in silicone implant coverage in vivo**

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Thematic axis: Tissue bioengineering.

Key-words: Biomaterials. Breast implant. Experimental Model. Rats.

Abstract
This study aimed to describe an experimental surgical model in rats for the *in vivo* evaluation of biomaterials used in silicone implant coverage. The study was approved by the Animal Use Ethics Committee (CEUA) of the Institute of Health Sciences at the Federal University of Bahia (ICS-UFBA), under protocol numbers 115 (2017) and 4715160421 (2021). All procedures complied with current regulations on animal experimentation and were in accordance with ISO 10993-6 (2010) – Biological evaluation of medical devices – Part 6: Tests for local effects after implantation. The surgical procedure involved implanting a mini textured silicone prosthesis in the submuscular plane of the panniculus carnosus (PC) on both sides of each animal's back. On the left side (experimental group – EG), an acellular bovine pericardium (ABP) membrane was superimposed, while the right side (control group – CG) received no biomaterial. At predetermined time points (biological points) —1, 2, 4, 12, and 26 weeks—tissue specimens were collected, fixed in buffered formalin, and stained with hematoxylin-eosin (H&E) and picrosirius red. Macroscopically, no postoperative complications were observed throughout the study. Histological analysis revealed the progression of the inflammatory response, tissue repair, and fibrous capsule formation at each biological point. The experimental model described in this study proved to be appropriate for evaluating the biomaterial used in the coverage of silicone breast implants.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Biocompatibility and potential use of acellularized bovine pericardium in the coating of silicone implants**

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Thematic axis: Tissue bioengineering.

Key-words: Animal model. Breast reconstruction. Pericardium. Silicone implant.

Abstract:
This study aimed to evaluate the biocompatibility of acellular bovine pericardium (ABP) and its potential use in silicone implant coverage in rats. Twenty-four animals were divided into two groups, with eight animals evaluated at each biological time point (4, 12, and 26 weeks): an experimental group (EG), in which a mini mammary prosthesis (MP) was overlapped with ABP, and a control group (CG), in which a mini prosthesis was implanted without ABP coverage. The study approved by the Ethics Committee on the Use of Animals (CEUA) of the Institute of Health Sciences at the Federal University of Bahia (ICS-UFBA), under protocol number 4715160421 (2021). All procedures adhered to current regulations on animal experimentation and conformed to ISO 10993-6 (2010) – Biological evaluation of medical devices – Part 6: Tests for local effects after implantation. At the end of the experimental periods, 48 specimens were collected—24 from each group. No macroscopic postoperative complications such as hematoma, seroma, prosthesis or ABP extrusion, infection, suture dehiscence, or capsular contracture were observed in any of the groups throughout the study. Histological analysis in both groups revealed a chronic granulomatous inflammatory response that was initially moderate and regressed over time. Vascular formation was more prominent in the EG at 12 weeks and in the CG at 4 weeks. Notably, the EG showed the formation of a thinner fibrous capsule and more evident initial biointegration into host tissue compared to the CG. ABP demonstrated safety and potential as a biomaterial for covering silicone breast implants, supported by the absence of postoperative complications and capsular contracture, as well as evidence of angiogenesis and early biointegration at the evaluated time points.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Initial Bone Repair Analysis Using Nanostructured Hydroxyapatite–Alginate Composites in Critical-Size Defects**

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Thematic axis: Bioengenharia Tecidual

Keywords: Composites. Hydroxyapatite. Polymers. Microspheres. Granules.

Abstract:
The objective of this study was to evaluate the influence of the shape and composition of novel composite biomaterials composed of nanostructured hydroxyapatite (HA) associated with alginate on the early phase of bone repair in an 8-mm critical-size calvarial defect in rats. Prior to the surgical procedures, this study was approved by the Animal Ethics Committee of the Health Sciences Institute at the Federal University of Bahia, Brazil, under protocol no. 038/2012. For this purpose, a sample of 15 rats was used, distributed into three experimental groups with five animals each, and evaluated at the biological time point of 15 days postoperatively: GHAMi – bone defect filled with hydroxyapatite-alginate microspheres; GHAGr – bone defect filled with hydroxyapatite-alginate granules; DC – bone defect filled with a blood clot. The analysis of the newly formed bone tissue was performed through histological and histomorphometric evaluation. In the GHAMi group, bone neoformation was observed inside some microspheres at the margins of the defect, along with mild granulomatous chronic inflammation surrounding the others. In the GHAGr group, most of the particles remained intact, and a marked granulomatous chronic inflammatory response was present among the granules. In the DC group, bone neoformation was limited to the edges of the defect, with connective tissue filling the entire extent of the defect, exhibiting reduced thickness compared to the surrounding bone margins. Based on these findings, it can be concluded that the shape of the composites was a determining factor in the tissue response to the biomaterials during this early phase.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Optical Sensing Applied to the Bioengineering of Decellularized Livers**

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Thematic axis: Tissue Bioengineering

Keywords: Extracellular matrix. Liver decellularization. Real-time monitoring. Optical sensing. Tissue engineering**.**

Abstract:
The global prevalence of liver diseases and the shortage of organs for transplantation drive the search for therapeutic alternatives, highlighting tissue engineering as a promising solution. In this context, the decellularization and recellularization of hepatic extracellular matrices (ECM) emerge as viable strategies for creating functional bioartificial organs. However, ensuring the quality and integrity of the decellularized ECM is crucial for clinical success, requiring efficient and non-invasive monitoring methods. The objective here was to adapt and validate an optical system to monitor in real time the decellularization process of mouse livers, seeking to correlate optical patterns with process efficiency and ECM preservation. Livers were subjected to a perfusion-based decellularization protocol, approved by the Animal Use Ethics Committee (CEUA) under opinion no. 57/2019. The optical system, originally developed for cardiac monitoring, was enhanced by incorporating an optical condenser and constructing a new dark chamber made of MDF. The results demonstrated that the insertion of the condenser and the optimization of the dark chamber significantly improved the system's stability and sensitivity, allowing the detection of subtle variations in tissue transparency during the decellularization process. The methodology proved to be technically feasible for the continuous recording of optical changes. Although a definitive correlation between the generated graphical patterns and decellularization efficiency, as well as ECM preservation, still requires validation through complementary analyses, this study lays the foundation for the development of a non-destructive, real-time method for quality control in hepatic bioengineering. Future perspectives include the quantification of residual DNA, histological analysis, comparative assays between optical data and biochemical/morphological analyses, and the training of a predictive model for process efficiency.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: STRONTIUM-SUBSTITUTED NANOSTRUCTURED HYDROXYAPATITE: ORAL THERAPY OF BONE REGENERATION.

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Thematicaxis: Bioengenharia Tecidual

Keywords: Bone regeneration. Hydroxyapatite. Oral administration. Strontium.

Abstract:
The development of strategies for the regeneration of extensive bone lesions is a continuous challenge in regenerative medicine. In this context, the oral administration of nanostructured hydroxyapatite (nHA) microspheres, which act as a strontium (Sr) carrier, emerges as an alternative to the local application of scaffolds. This study aimed to analyze the effect of oral Sr administration, carried out using nHA, on the regeneration of critical-sized bone defects in rats. For this purpose, 20 Wistar rats were randomly divided into two groups: GSr (critical-sized bone defect with oral Sr administration) and GC (control group, critical-sized bone defect without oral Sr administration). Plasma levels of Sr and calcium (Ca) were measured, and histomorphological and histomorphometric analyses of the calvaria (the defect area) were performed on days 15 and 60 post-surgery. This study was approved by the Ethics Committee on Animal Use (CEUA) of the Health Science Institute (ICS) of the Federal University of Bahia (UFBA), protocol n. 063/2014. Biochemical analyses confirmed that plasma Sr^{2+} concentrations were significantly higher in the GSr group, demonstrating ion absorption. However, histomorphological analysis revealed that new bone formation was restricted to the edges of the defect, and the residual area was filled with fibrous connective tissue. Histomorphometric evaluation showed a modest increase in osteoid matrix formation in the GSr group, without a significant impact on the total bone regeneration of the defect. Based on these results, it can be concluded that the oral administration of Sr carried by nHA microspheres did not promote a significant effect on osteoid matrix formation. This may be related to the dose, the plasma concentration and the absence of a three-dimensional framework at the defect site.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **HISTOMORPHOMETRIC EVALUATION OF CRITICAL BONE DEFECT REPAIR AFTER IMPLANTATION OF NANOSTRUCTURED STRONTIUM-SUBSTITUTED HYDROXYAPATITE.**

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Thematicaxis: Bioengenharia Tecidual.

Keywords: Biomaterials. Bone regeneration. Critical bone defect. Hydroxyapatite. Strontium.

Abstract:
In the field of bone tissue bioengineering, the development of biomaterials with high osteogenic potential for the repair of critical bone defects is a continuous focus of research. In this scenario, hydroxyapatite (HA), widely recognized for its biocompatibility and similarity to the inorganic bone matrix, gains even greater potential when combined with strontium (Sr). This mineral is known for its properties of stimulating bone formation and inhibiting bone resorption. Thus, the objective of this study was to analyze the biological and osteogenic behavior of nanostructured HA microspheres substituted with Sr (nHASr), implanted in critical bone defects in the calvaria of rats. Twenty Wistar rats were randomly divided into two groups: GnHASr (critical defect filled with nHASr microspheres) and GC (control, critical defect without biomaterial implantation). This study was approved by the Ethics Committee on Animal Use (CEUA) of the Health Science Institute (ICS) of the UFBA, protocol n. 063/2014. At 30 and 60 days, specimens were collected and processed for histomorphological analysis, using hematoxylin-eosin and Masson-Goldner trichrome staining, and for histomorphometric analysis of the percentage of newly formed osteoid matrix (OM). In both groups, reparative OM deposition was observed near the bone edges, along with a discrete chronic inflammatory response, connective tissue formation and neovascularization. In the GnHASr group, OM was noted both around and inside the microspheres. At 60 days, the GnHASr group showed 7.54% OM relative to the total defect area, while the GC reached 6.80%.Based on these results, it was concluded that nHASr microspheres are biocompatible, biodegradable, bioreabsorbable, bioactive and osteoconductive, which demonstrates their potential for use as a filling material. However, the formation of neomineralized tissue was limited in both groups, indicating that the Sr concentration used did not confer a superior osteogenic potential to the biomaterial.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Impact of Different Storage Conditions on the Biological Activity Profile of Alginate–Gelatin Aerogels Produced Via an Integrated High-Pressure and Supercritical CO_2**

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Thematic axis: Biomaterials and Nanomaterials (or Nanotechnology)

Keywords: Alginate-gelatin. Biopolymeric aerogels. Shelf-life. Storage conditions. Supercritical CO_2.

Abstract:
The production of biopolymeric aerogels for biomedical applications has gained increasing attention, although studies on their shelf life remain scarce. This study investigated the impact of four different storage conditions, varying temperature, humidity and light exposure, on the biological activity of alginate-gelatin aerogels. Aerogels produced by an integrated high-pressure and supercritical CO_2 process, were stored for 3 or 6 months under the following conditions: (C1) Mild storage conditions (25 ºC, 60 % relative humidity, no light in opaque packaging); (C2) Accelerated storage conditions (40 ºC, 75 % relative humidity, no light in opaque packaging); (C3) Light exposure at mild storage conditions (25 ºC, 60 % relative humidity, with light exposure); (C4) Light exposure at accelerated storage conditions (40 ºC, 75 % relative humidity, with light exposure). The cytotoxicity of aerogels for L929 fibroblasts was evaluated using the Alamar Blue assay, after 48 hours of incubation of the aerogels in cell cultures. The biological activity of the aerogels was evaluated in the fibroblast scratch assay, a test of wound healing potential, by measuring cell migration after 24 and 48 hours of incubation with the aerogels. Aerogels stored for 3 and 6 months, regardless of storage conditions, maintained cell viability above 90%, indicating that storage did not affect their cytotoxicity profile. After 3 months, aerogels stored under C1 significantly stimulated fibroblast migration at both 24 and 48 hours, resulting in greater "wound" closure compared to the negative control. After 6 months, this effect was no longer significant. Cell migration decreased under conditions C2, C3 and C4 at both time points, indicating that the wound-healing potential declined under these storage conditions. These findings suggest that alginate–gelatin aerogels stored under C1 conditions are promising candidates for the development of technological products with a shelf life of up to 3 months.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Repair of non-critical bone defect after implantation of wollastonite and β-tricalcium phosphate composite: an experimental study

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Thematic axis: Biomaterials and Nanomaterials (or Nanotechnology)

Keywords: Beta-tricalcium phosphate. Biomaterials. Bone regeneration. Calcium silicate.

Abstract:
Composite biomaterials produced from wollastonite (W) and beta-tricalcium phosphate (β-TCP) have been studied due to their biocompatible, bioactive, osteoconductive, and biodegradable properties, which make them suitable for bone regeneration. Therefore, this study aimed to evaluate, in vivo, the osteogenic potential of a composite based on W and β-TCP, in two different proportions, after implantation in non- critical bone defects. Thirty-six male Wistar rats were divided into three experimental groups: 60W/40T – defect filled with W/β-TCP granules in a 60%/40% proportion; 80W/20T – defect filled with granules in an 80%/20% proportion; and CG – control, defect without biomaterial implantation. The animals were evaluated at biological time points of 45 and 120 days. The histological sections were evaluated histomorphologically and histomorphometrically for new bone formation, inflammatory response, biomaterial disposition, angiogenesis, and connective tissue (CT) formation. The results showed that, at 45 days, the groups in which biomaterials were implanted presented discrete new bone formation, while the CG showed more evident bone formation, although with reduced thickness when compared to the defect edges. At the 120-day biological point, new bone formation was more evident in the 80W/20T (46%) and CG (49%) groups, while in the 60W/40T group, the percentage was 22%. In both periods, the granules remained distributed throughout the defect, surrounded by richly vascularized connective tissue, with a chronic granulomatous inflammatory infiltrate and the presence of multinucleated giant cells. In the CG, CT formation was observed in the residual area, without inflammatory infiltrate, at the end of the study. It is concluded that the biomaterials were biocompatible, bioactive and osteoconductive and presented better osteogenic potential at 80W/20T proportion.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Antarctica as a natural laboratory: Physical adaptations induced by Antarctic expeditions remain 18 days after the end of fieldwork.**

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Thematic axis: Saúde em ambientes extremos

Keywords: Antarctica. physical exercise. Extreme. ICE and Health.

Abstract:
Recently our research group showed that staying in a camp in Antarctica results in increased aerobic physical performance (VO_{2MAX}) for individuals with lower physical fitness. However, it is not yet known whether this increase in VO_{2MAX} persists until individuals return to their home country, several weeks later. The aim of the present study was to evaluate whether the increase in VO_{2MAX} after fieldwork in Antarctica would still be observed 18 days after the campers return. Seven Brazilian volunteers (5 women and 2 men) who participated in a 32- day camp were evaluated at two time points: before and after the Antarctic expedition (Ethics approval: UFMG protocol no.19092819.8.0000.5149). During the pre-expedition data collection and post-Antarctica, the volunteers performed an incremental treadmill exercise test in a temperate environment (23±1 °C and 50% RH). Maximal oxygen consumption was measured by direct spirometry. Data were analyzed using the Wilcoxon Signed Rank Test. Cohen's d effect size (ES) was also calculated as a complementary analysis to aid in the interpretation of our findings, with significance set at $p<0.05$. No statistical differences were observed in body mass ($p=0.48$; ES=0.35), fat-free mass ($p=0.46$; ES=0.31) between experimental situations. Post-Antarctica, we observed an increase in total exercise time on the treadmill test ($p<0.01$; ES=0.89) and total work performed ($p=0.02$; ES=0.89). However, no differences were found in VO_{2MAX} ($p=0.93$; ES=0.06). Additionally, when volunteers were grouped into lower (n=5) and higher (n=2) VO_{2MAX} categories (>or<50 $ml \cdot kg^{-1} \cdot min^{-1}$), we found a moderate increase in VO_{2MAX} for the less fit group ($p=0.56$; ES=0.61) and a moderate reduction for the more trained group ($p=0.32$; ES=0.53). The present study reinforces that fieldwork in Antarctica improves physical performance in less fit individuals and shows that this effect is maintained even after 18 days of return travel to Brazil. We acknowledge the support of the following funding agencies: CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico), MCTI (Ministério da Ciência, Tecnologia e Inovação), FNDCT (Fundo Nacional de Desenvolvimento Científico e Tecnológico), and PROANTAR (Programa Antártico Brasileiro) [Grants No. 440932/2023-8; 408740/2023-0; 404878/2024-5]. We also acknowledge the logistical and institutional support provided by the Brazilian Navy (Marinha do Brasil) and Petrobras.

Title: **Sleep quality and melatonin levels of military during a Antarctic expedition in ship**

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Thematic axis: Saúde em ambientes extremos

Keywords: Antarctic. Melatonin levels. Ship. Sleep quality.

Abstract:
The Antarctic continent, located at the South Pole of the Earth, has key characteristics that are incomparable to other regions due to its extensive ice cover. For those working at sea, the amount of light and the dark environment stimulate melatonin secretion, signaling the onset of nighttime, promoting sleep, and helping the body regulate its circadian rhythm. Therefore, the objective of this study is to investigate sleep quality and melatonin levels in Brazilian Navy personnel who were part of the crew of a polar ship during an Antarctic expedition. This study was approved by the UFMG Research Ethics Committee (19092819.8.0000.5149), and all participants signed the informed consent form. This is a prospective cohort study with a sample of 18 volunteers from the Brazilian Navy. The research lasted 24 weeks, during which three data collections were carried out: 1. Embarq (week 1); 2. Pos1 (week 6); and Pos2 (week 24). The PSQI was used to analyze sleep quality, and self- collected, unstimulated saliva samples from 10 PM. were used to determine melatonin levels. The normality of both variables was verified using descriptive statistics and the Shapiro-Wilk normality test. A 95% confidence interval was adopted, and the Friedman test was performed to compare the ranks of the numerical variables between the three time points. Therefore, it was found that there was no statistically significant difference in both sleep quality and melatonin levels ($p=0.105$ and $p=0.607$, respectively). In other words, the null hypothesis was assumed, in which there was no difference between the values of the variables compared between the collection times. Therefore, it is concluded that the military sailors participating in the study did not experience significant changes in self-reported sleep quality or changes in melatonin excretion during the Antarctic summer expedition.

Title: Mood changes during naval confinement in Antarctica

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Thematic axis: Saúde em ambientes extremos

Keywords: Confined environments. Expeditionary stress. Psychological well-being.

Abstract:
Since the earliest polar expeditions, Antarctic missions—described by some authors with the acronym ICE (Isolated, Confined, and Extreme)—have advanced in transportation, nutrition, and thermal comfort. However, sea voyages remain challenging for humans due to low light exposure, prolonged confinement, constant vessel motion, noise, and vibration. These factors may negatively impact mental health, induce mood disturbances, and impair psychological well-being. This prospective cohort study aimed to assess mood changes in 18 military personnel during an Antarctic expedition aboard the Polar Vessel Almirante Maximiano (H-41). The study was approved by the UFMG Research Ethics Committee (CAAE: 19092819.8.0000.5149), and all participants provided informed consent. Data were collected at three time points: embarkation (week 1), mid-expedition (week 6), and post-expedition (week 24), enabling a longitudinal assessment of mood states under extreme environmental conditions. At each stage, participants underwent medical history intake, anthropometric evaluation, and completed the BRUMS scale—a validated tool derived from the Profile of Mood States (POMS), which measures six mood dimensions: tension, depression, anger, vigor, fatigue, and confusion. Data were analyzed using the Friedman test for repeated measures ($p < 0.05$). Significant increases were observed in tension ($p < 0.001$), depression ($p = 0.002$), anger ($p = 0.001$), and in negative dimensions ($p = 0.039$), which were calculated using the arithmetic mean of the five BRUMS negative subscales: (tension + depression + anger + fatigue + confusion) ÷ 5. A significant decrease in vigor ($p = 0.010$) was also noted across time points. Although fatigue and confusion did not show significant changes, upward trends suggest possible progressive emotional overload. These findings highlight the adverse impact of prolonged naval confinement on mood, especially when combined with geographic isolation, sensory deprivation, and limited social interaction.

Title: CHANGES IN BODY MASS, FAT PERCENTAGE, AND PHYSICAL ACTIVITY OF MILITARY PERSONNEL DURING ANTARCTIC SUMMER AND WINTER

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Thematic axis: Saúde em ambientes extremos

Keywords: Antarctica. Extreme Conditions Body Mass Physical Activity.

Abstract:
Antarctica is one of the most challenging environments on Earth due to isolation, confinement, and extreme conditions (ICE). These conditions can cause physiological and lifestyle changes that affect health. This study compared body mass (BM), fat percentage (%F), muscle mass (%MM), and physical activity of Brazilian Navy personnel during Antarctic summer (January) and winter (August). Ten participants (2021–2022) took part (UFMG Ethics protocol nº 19092819.8.0000.5149). Body composition was measured by tetrapolar bioimpedance (BC601, Tanita, Japan), including BM, %F, and %MM, with tests in the morning after overnight fasting and bladder emptying. Physical activity was recorded by wrist actigraph (ActTrust, Condor Instruments, Brazil) for five consecutive days. Data were analyzed with ActStudio software (v.1.0.24), focusing on M10 (mean activity during the 10 most active hours) and M10 Start Time. Normality was tested by Shapiro-Wilk, and paired t-tests and Pearson correlations were applied. After winter, BM (89.6±11.4 vs. 91.7±12.0 kg; p=0.04) and %F (23.2±6.8 vs. 25.3±7.3%; p=0.002) increased significantly, while physical activity decreased (M10: 4129.7±1095.0 vs. 3004.2 ±1588.0 AU; p=0.02). No significant correlations were found. We conclude that Antarctic ICE exposure increased body fat and reduced physical activity, without direct association.
We acknowledge the support of the following funding agencies: CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico), MCTI (Ministério da Ciência, Tecnologia e Inovação), FNDCT (Fundo Nacional de Desenvolvimento Científico e Tecnológico), and PROANTAR (Programa Antártico Brasileiro) [Grants No. 440932/2023-8; 408740/2023-0; 404878/2024-5]. We also acknowledge the logistical and institutional support provided by the Brazilian Navy (Marinha do Brasil) and Petrobras.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Sleep pattern during long-term isolation at the comandante ferraz antarctic station**

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Thematic axis: Saúde em ambientes extremos.

Keywords: Antarctica. Sleep. Sleep quality.

Abstract:
Sleep is a determining factor for human well-being. Controlled by the Circadian rhythm, it is directly influenced by exposure to light (main "zeitgeber"), since melatonin (sleep hormone) reaches its peak production during the night. However, it has other synchronizers, such as physical activity, diet and work routines. Thus, staying in extreme environments with significant changes in the light-dark cycle, such as Antarctica, can negatively impact sleep quality. Therefore, we investigated sleep patterns during long-term isolation in Antarctica. Eleven military personnel participated in this study, remaining isolated for one year at the Comandante Ferraz Antarctic Station, and were evaluated at three different times: January (summer), May and August (winter). (Ethical Approval: UFMG Protocol No. 19092819.8.0000.5149). Volunteers wore a wristwatch (actigraph - (ActTrust, Condor Instruments, SP, Brazil) for 5 days to record the following data: Bedtime, Wake-up time, Time in bed, total sleep time, Latency, Efficiency, Time awake after sleep onset and awakenings. Data were analyzed using the Shapiro Wilk normality test and one-way analysis of variance for repeated measures, with Tukey's post hoc. Cohen's d effect size (ES) was also calculated as a complementary analysis to our findings, with significance set at $p < 0.05$. A delay over time in Time to Wake ($p = 0.002$; ES = 0.89 for May and 0.95 for August), as well as an increase in Time in Bed ($p < 0.001$; ES = 0.67 for May and 0.60 for August) and Total Sleep Time ($p = 0.004$; ES = 0.60 for May and 0.48 for August), were observed during the winter months when compared to January, with no significant change in Efficiency ($p = 0.135$). The prolonged stay at the Comandante Ferraz Antarctic Station led to an increase in sleep duration and a delay in waking time during winter, compared to summer, with sleep quality remaining stable, indicating a greater need for sleep time for recovery.

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XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: **Impact of Antarctic expedition on anxiety and depression levels among military personnel**

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Thematic axis: Saúde em ambientes extremos

Keywords: Antarctic. Anxiety. Quality of Life. Sleep quality.

Abstract:
Research in polar regions has gained attention due to the physiological and psychological challenges of the ICE (Isolated, Confined, Extreme) environment. Antarctic expeditions involve confinement, harsh weather, circadian disruption, and limited social contact, which can impact mental health, triggering anxiety and depression. Therefore, the objective of this research is to investigate the effects of staying on a ship on patterns of anxiety and depression. This study was approved by the Research Ethics Committee of UFMG (19092819.8.0000.5149), and all participants signed an informed consent form. This is a prospective cohort study with a sample of 23 participants from the Brazilian Navy, members of the crew of a Brazilian polar ship. The research lasted 24 weeks, during which three data collections were performed: 1. Embarkation (week 1); 2. Week 6 (Pos1); and Week 24 (Pos2). Anxiety scores (Beck Anxiety Inventory) and depression scores (Beck Depression Inventory) were assessed. The normality of the variables was verified using descriptive statistics and the Shapiro-Wilk normality test. The Friedman test was performed to compare the rankings of numerical variables between the three moments, in addition to the Spearman correlation to correlate anxiety and depression indices. Therefore, it was found that there was a significant reduction between the moments of anxiety from boarding to Pos2 ($p=0.046$), however, for the depression indices, it was not possible to observe ($p=0.384$), The correlation showed a positive correlation between anxiety and depression levels at the time of embarkation ($p<0.001$, $R=0.635$) and Post 1 ($p<0.001$, $R=0.828$), while at Post 2 there was no correlation ($p=0.637$). Therefore, for navy members, the Antarctic expedition significantly increased anxiety but not depression. Anxiety and depression were positively correlated at embarkation and mid-mission, but not at the end, suggesting psychosocial adaptation.

XIX FeSBE REGIONAL
De Josué de Castro à IA: Você tem fome de quê?
Ciência, Saúde e Equilíbrio Ambiental

Title: Mood states in Antarctic missions: longitudinal analysis in an ICE environment

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Thematic axis: Health in extreme environments

Keywords: Antarctica. Extreme. Ice. Mood states. Health.

Abstract
Antarctica provides a unique natural model to investigate the effects of confinement, social isolation, and extreme environmental stressors on emotional regulation. These contexts are defined as Isolated, Confined, and Extreme (ICE) environments, characterized by limited social interactions, restricted mobility, and adverse environmental conditions. This study aimed to evaluate the effects of mood patterns in an ICE environment at the Comandante Ferraz Antarctic Station (EACF), considering seasonal variations. A repeated-measures design was applied with 16 participants (mean age: 38.7 ± 6.3 years; BMI: 26.6 ± 2.7 kg/m²), assessed at six time points (January, March, May, June, September, and November), covering both Antarctic summer and winter. Mood states were measured using the Brunel Mood Scale (BRUMS), and Total Mood Disturbance (TMD) was calculated. Data were analyzed with IBM SPSS Statistics 22, including descriptive statistics. Normality of anthropometric variables was assessed using the Shapiro-Wilk test, while mood dimensions across months were analyzed with the Friedman test. Results indicated consistently high vigor and no significant variation in negative mood dimensions or TMD, suggesting emotional stability despite photoperiod changes, isolation, and operational stress. This stability may be associated not only with operational training, psychophysical robustness, and group cohesion, but also with the strong infrastructure and support of the Comandante Ferraz Antarctic Station, which provides adequate conditions for long-term permanence in extreme environments. The study was approved by the Research Ethics Committee (Approval nº 21/2018) and is linked to CNPq/MCTI/FNDCT Call nº 08/2023 (Process 440932/2023-8). Acknowledgments: This work was supported by CNPq, MCTI, FNDCT, and PROANTAR, with logistical support from the Brazilian Navy and Petrobras.