



CONGRESSO
BRASILEIRO DE 
COSMETOLOGIA

**36° Congresso Brasileiro de
Cosmetologia**

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**CONGRESSO
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POSTER ABSTRACTS

P01

Title	Selection of resin for including hair fibres with aim to obtain cross-cut images with better resolutions
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Abstract	<p>Among the various methods of hair analysis, scanning electron microscopes stand out due to the ease of visualization of structures, which, when evaluated with software, allow the quantification of damage to hair exposed to different stressors, contributing significantly to numerous studies. The inclusion of hair strands for histological cuts presents challenges as it is essential to obtain good cuts that do not damage the internal structure of the strand. The choice of high-profile resins and razors, along with the inclusion process, are crucial in this context. In this work, the influence of the type of inclusion resin on the quality of transversal hair cuts was evaluated. (natural and discolored) were included in different Epoxy resins; Histroresin polyester and O.C.T compound. The cuts were made with a high-profile knife and in thicknesses of 10, 8 and 6 μm. The results obtained demonstrated that the polyester resin did not present characteristics suitable for histological cuts, as when the cuts were made, they became tangled, preventing their use; The epoxy resin, when cut, did not show good adhesion with the glass and in the cuts, when taken to the optical microscope, empty spaces were observed indicating that some hairs were removed during the microtomy (little adhesion between the resin and the hair); Furthermore, the hairs that were observed presented "fractures" in the cross section, preventing the visualization of the internal structures of the hair. On the other hand, the historesin inclusions were easier to cut, with good adhesion to the glass slide and the hair, however, again resulting in images with "fractures" in both types of hair. Finally, the inclusion of the O.C.T compound generated cuts with a regular and uniform surface, with a total absence of "fractures" in natural hair and few regions with fragments in bleached hair.</p>



P02

Title	Ex vivo quantification of Natural Moisturizing Factors (NMFs) of the stratum corneum by HPLC in function of phototype and age
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Abstract	<p>Cutaneous hydration is partly maintained by components of the Natural Moisturizing Factor (NMF), which originates from the degradation of filaggrin. These components include pyrrolidone carboxylic acid (PCA), urocanic acid (UCA) and its isomers, and histidine (His), all of which are found in the stratum corneum (SC).</p> <p>This research aimed to use high performance liquid chromatography (HPLC) to determine the levels of PCA, UCA, and His in the stratum corneum of participants obtained by tape stripping, with consideration of their phototype and age. Participants, aged over 18 and of both genders, were selected with skin phototypes between I and VI, according to the Fitzpatrick classification.</p> <p>SC samples were collected from the volar forearm by tape stripping and then artificially irradiated. HPLC effectively separated and quantified His, PCA, and the UCA isomers (trans UCA and cis UCA) in the participants' SC.</p> <p>The method was selective, free from interference, and suitable for quantification in line with the investigation's objectives. In phototype I, His levels were lower compared to other phototypes, with no significant difference between age groups. Following sample artificial irradiation, His levels increased in all phototypes. PCA levels decreased after irradiation across all phototypes, while PCA concentrations were higher in the 46 to 55 age group.</p> <p>After UV irradiation, the concentration levels of the cis UCA isomer were higher in participants with phototype III, whereas the trans UCA isomer levels decreased after the irradiation stress, proportional to the formation of cis UCA in all phototypes.</p>



P03

Title	Rheology modifiers as SPF enhancers: an in vitro and in vivo comparative study
Authors	Claudio Ribeiro ¹ , Elisa Souza ¹ , Karin Baroni ¹ , Taylor Lagler ² , Denise Rafferty ²
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Abstract	<p>Restrictions on some UV filters have heightened formulators' interest in cosmetic ingredients that help increase Sunscreen Protection Factor (SPF). This study aimed to evaluate the contribution to SPF of synthetic rheological modifiers (RM) acrylates/C10-30 alkyl acrylate crosspolymer, acrylates copolymer, and carbomer, and the mixture of natural RM microcrystalline cellulose/ Sphingomonas ferment extract/ cellulose gum. SPF 30 was theoretically defined through DSM Sunscreen Optimizer™ and the RM concentration was adjusted to obtain viscosity in the range of 6000 ± 2000 cPs for this investigation. 4-week stability screening was carried out at temperatures of 25°C and 50°C. Centrifugation, freezing and thawing cycles, optical microscopy were performed as complementary tests. SPF was first determined in vitro using FDA (2019) and ISO 24443 (2012) methodologies, with two different substrates, PMMA SB6 and PMMA HD6. The SPF values obtained on the two substrates showed considerable differences, with higher values for SB6 and lower for HD6. The averaged SPF values for each sample on SB6 and HD6 resulted in intermediate SPF values, which were closer to the theoretical SPF calculated through DSM Sunscreen Optimizer™. The acrylate copolymer showed a significant reduction in SPF when tested on SB6. This differed from the in vivo result. For the natural RM blend, the SPF was higher for SB6 substrate, reduced for HD6 substrate, and practically neutral for the SPF average; however, there was no significant difference comparing against the other RM. No significant difference was observed by using FDA or ISO methodology. When comparing in vitro SPF findings against in vivo screening, the SPF for samples containing RM was increased by 11.9-20.5%, although there was no statistical difference. The in vivo and in vitro SPF were more closely aligned when the SB6 substrate was used compared to the HD6 substrate. To conclude, although the rheological modifiers in this study did not significantly boost SPF, they provided some SPF enhancement and are key to providing stability, viscosity, and texture to sunscreen formulations.</p>



P05

Title	Impact on human and environmental safety of the cosmetic products use for hand care in the post-pandemic period
Authors	Caroline Inácio Bianchi ^{1*} & Patrícia M. B. G. Maia Campos ¹
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Abstract	<p>The pandemic caused by the new coronavirus has provided a collective awareness of the importance of personal hygiene, with emphasis on hand care and, consequently, greater human and environmental exposure to cosmetic products aimed at sanitizing and moisturizing a particular region of the skin [1].</p> <p>Due to this fact, there is a focus on that region of the body, causing a change in the mindset and in the needs of consumers, as well as an increase in the use of products for hands [2]. Consequently, there is a greater exposure to the components of the formulations. In view of this scenario, the objective of this project was to evaluate the impact caused by the pandemic to human and environmental health.</p> <p>In this context, the objective of this project was to evaluate the impact caused by the use of cosmetics after the pandemic to human and environmental health. For this, the study was divided into two parts.</p> <p>A priori, the needs of consumers will be mapped regarding conscious beauty formulations of liquid soap and hand moisturizing through an online questionnaire that will be applied in 3 countries.</p> <p>The questionnaire was approved by Ethical Committee and now (part 2), a detailed analysis of the conscious beauty concept is being mapped to choose the ideal ingredients that meet both the wishes of consumers and safety issues will be selected. With the partial results is possible to see how the pandemic impact in the hands personal hygiene because there was an increase in the consumption of Liquid soap and Hand creams. In parallel, most of consumers have an idea about what “Conscious beauty” means. According to the results of the questionnaire, it would be possible to carry out a theoretical-practical assessment of human and environmental security, and to measure the real impact of the cosmetics use nowadays.</p>



P06

Title	The whitening potential of pineapple crown and peel extracts
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Abstract	<p>Skin perfection, free from blemishes and evenly toned, is an increasingly sought-after goal in the cosmetics market, resulting in a significant increase in the consumption of products to whiten the skin. In the same trend, there is also a search for alternative sources of active ingredients and, with their growing natural appeal, fruits are attracting attention, especially their residues, which are rich in bioactive components. Among the many foods present in the industry, pineapple stands out, as it has many applications in the food, cosmetics, and pharmaceutical industries. Pineapple is rich in various bioactive components, such as bromelain, ferulic acid, ethanol, and various phenolic antioxidants. Since this fruit generates a considerable amount of by-products, it has become interesting to expand the application and consequently the use of these residues such as the crown and peel. The fresh pineapple crown and peel were freeze-dried, followed by low-temperature alcohol extraction. Once the respective extracts had been obtained, they were dried and resuspended at seven different concentrations. Finally, they were added to the previously standardized tyrosinase enzyme reaction and, by reading the absorbance on a microplate, it was possible to verify the interaction and influence of the extracts on enzyme activity. There was a noticeable reduction in the absorbance values when compared to the control reaction, indicating a certain attenuation of activity, which was more evident in the reactions exposed to the bark extract when compared to the results from the crown extract. As only one extraction method was evaluated, future analysis of other more suitable methods for extracting compounds with better tyrosinase inhibition performance is possible. Food waste as a source of bioactive compounds applicable to the cosmetics industry is gaining prominence on the path towards an increasingly sustainable industry.</p>



P07

Title	Agricultural sustainability of coffee adds nanotechnology: exploring the antioxidant and photoprotective potential of Carbon Dots
Authors	Caio Rui Chiabai ¹ , Gustavo Teixeira Machado ¹ , Mariana Santos Pinheiro ² , Claudinéia Aparecida Sales de Oliveira Pinto ³ , Paulo Eduardo Narcizo de Souza ⁴ , André Rolim Baby ³ , George Ricardo Santana Andrade ⁵ , Fabiana Vieira Lima Solino Pessoa ¹
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Abstract	It is estimated that about 30% of agricultural products are wasted before reaching the market, causing environmental pressures. An alternative for agricultural waste utilization is the production of high-value-added carbonaceous nanomaterials, known as carbon dots (Cdots). Cdots are a class of carbon nanomaterials of multidisciplinary interest due to their luminescent properties, ease of synthesis, low cost, biocompatibility, biodegradability, and high-water solubility. One of the methods used in production is microwave carbonization, an environmentally friendly, easy, and low-cost method. This study aims to synthesize and evaluate the antioxidant potential of Cdots obtained from coffee plantation waste. For sample preparation, aqueous leaf extracts were heated in a household microwave (720W) until complete solvent evaporation, followed by purification using ultracentrifugation. The Cdots were characterized by TEM, UV-vis, and FTIR. Total antioxidant capacity was assessed using the cupric ion reducing (CUPRAC) method and free radical scavenging (DPPH) through Electron Paramagnetic Resonance (EPR). A photoprotective formulation containing Cdots (0.9%) along with ethylhexyl methoxycinnamate (EHMC) and butyl methoxydibenzoylmethane (BMDBM) was evaluated for in vitro sun protection factor (SPF) using diffuse reflectance spectroscopy with integrating sphere. TEM, UV-vis, and FTIR analyses indicated the formation of Cdots with approximately spherical morphology and sizes in the order of 3.3 nm, a bandgap of 4.16 eV, and a surface with carboxyl, hydroxyl, and amine groups. In the antioxidant potential evaluation, Cdots showed, at an isolated concentration of 10 µg/mL, 24.62% copper reducing activity equivalent to Trolox. Furthermore, a concentration of 42.1 µg/mL of Cdots was able to inhibit (IC 50%) the EPR signal from the DPPH radical solution. The SPF obtained with the addition of Cdots to the formulation showed an increase of 95.65% (not significant). Cdots from coffee agricultural waste were obtained through an environmentally friendly, practical, and low-cost method, the obtained nanomaterial was characterized and demonstrated strong antioxidant and photoprotective potential, indicating the importance of advancing further research to explore its use as an adjuvant in photoprotection."



P09

Title	Cutaneous attributes of chlorogenic acid and naringenin established by HPLC-TBARS-EVSC protocol and laser Doppler flowmetry
Authors	Nadia Ruscinc ¹ , Ricardo A. M. Serafim ² , Cíntia Almeida ³ , Catarina Rosado ³ , André R. Baby ¹
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Abstract	<p>The integumentary system, a vital organ for organisms, constitutes a multifaceted barrier against pathogens and environmental factors, crucial for maintaining the regulations of skin homeostasis. Skin, composed of epidermis, dermis, and hypodermis, plays a pivotal role in preserving life. Intrinsic and extrinsic factors can accelerate skin aging and compromise its homeostatic functions. Solar radiation, particularly ultraviolet (UV) radiation poses a significant risk for skin cancer and accelerates photoaging. Polyphenols are molecules that donate hydrogen or electrons, preventing the oxidation of substances, such as lipids, or the formation of inflammatory mediators by cyclooxygenase enzymes. This study explored the in vitro safety by HET-CAM (Hen's egg test – chorioallantoic membrane) and protective effects of polyphenols (chlorogenic acid and naringenin) against stratum corneum (SC) UV-induced lipid peroxidation using innovative method, including HPLC-TBARS-EVSC (high-performance liquid- chromatography thiobarbituric acid reactive substances – ex vivo stratum corneum), and laser Doppler flowmetry to establish in vivo the samples' topical anti-inflammatory ability. An aqueous gel composed of ammonium acryloyldimethyltaurate/VP copolymer and containing 0.1% w/w of each polyphenol was formulated. Through the utilization of the HET-CAM assay for in vitro safety assessment, chlorogenic acid and naringenin were classified as non-irritating active ingredients. The HET-CAM assay confirmed non-irritating profiles for the polyphenols. This classification was based on their lack of adverse reactions within the vascularization of the chorioallantoic membrane. To assess the protective capabilities of chlorogenic acid and naringenin against lipid peroxidation in the SC, a comprehensive analysis was conducted using the HPLC-TBARS-EVSC protocol which revealed that only naringenin exhibited a significant reduction in epidermal lipoperoxidation, indicating superior anti-radical potential. Conversely, chlorogenic acid displayed a pro-oxidant profile under the specified test conditions. Laser Doppler flowmetry demonstrated anti-inflammatory potential, with naringenin displaying superior efficacy in reducing inflammatory response induced by methyl nicotinate solution, involving all parameters quantified (area under the curve, angular coefficient, and tonset) when compared to the gel lacking an active ingredient and the untreated area. This comprehensive investigation underscores the diverse protective roles of polyphenols in skin health, emphasizing naringenin's notable anti-radical and anti-inflammatory properties.</p>



P10

<i>Title</i>	Evaluation of the compatibility and stability of encapsulated retinol in cosmetics
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<i>Abstract</i>	<p>Lipid nanoparticles are submicrometric systems composed of an oily core covered by a layer of solid lipids. These are systems capable of encapsulating lipophilic active ingredients and allowing their incorporation into various types of cosmetic bases, such as gels and emulsions. Retinol has been successfully encapsulated using this strategy. The product obtained was an aqueous suspension that must be incorporated into final products, maintaining the stability of the encapsulated active ingredient.</p> <p>To evaluate the compatibility of encapsulated retinol with different cosmetic ingredients, the nanoparticle suspension was diluted to 3% in water and raw materials for cosmetic use were added to evaluate the stability of the system. Each raw material was added individually. For the evaluation, appearance, particle size and dosage tests were carried out. For formulation tests, different percentages of oily load in the formula and different pH values were evaluated.</p> <p>The evaluation of the compatibility of raw materials with encapsulated retinol demonstrated that some raw materials such as dimethyl isosorbide, ethoxydiglycol, phenoxyethanol, propanediol and polysorbate 20,60 and 80 can be used in usual concentrations. Other raw materials such as hexanediol and sorbitan oleate interfere with the structure of the lipid capsule and should not be used in final products containing encapsulated retinol. For stability testing in formulations, the ideal pH was in the range of 6 to 8 and the ideal oily phase was above 13%.</p> <p>This study demonstrated the feasibility of incorporating encapsulated retinol into cosmetic final products with success and stability. The compatibility of these delivery systems must be checked with the ingredients to obtain products that can keep the encapsulated active ingredient stable until use.</p>



P12

Title	Development of pickering emulsion containing green clay for acne-prone skin
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Abstract	<p>Stabilized emulsions known as “pickering emulsions” present several benefits compared to traditional emulsions, promote the biocompatibility of organic particles and also promote the delivery of active ingredients. These types of emulsions replace emulsifiers traditionally with solid particles, such as organic clays and silica, for example.</p> <p>Thus, an interface is created between water and oil so that stabilized droplets are formed, in addition to having lower toxicity, being compatible with market needs regarding the use of natural ingredients for the development of cosmetics. Furthermore, clays are non-polluting, have low cost, promote the adsorption of their particles in oil and have drying properties, important for use on acne-prone skin. Objective: Therefore, the objective of the work was to develop an emulsion without surfactant, called pickering, with moisturizing action and containing green clay as a stabilizer and drying agent. Methods: The developed formulation contains 3.0% green clay, 5.0% glycerin, 5.0% Dexpanthenol, 2.0% Simmondsia chinensis seed oil, 3.0% silica, 1.0 % Hyaluronic Acid, 2.0% Carboxymethylcellulose, 1.0% starch, 0.5% phenoxyethanol and 67.5% ultra-pure water.</p> <p>The mixture containing water and starch was first heated to 90°C and, after slightly cooling, the other components were added and manually homogenized until the formation of an emulsion, which was subjected to the stability test. Results: The pickering emulsion presented moisturizing characteristics, dry touch, green color, characteristic odor, desirable viscosity and was stable after the centrifugation test and in the other parameters used to evaluate stability after 90 days of analysis. Conclusion: Given this, the pickering emulsion becomes a viable alternative to be used as a formulation for skin care without the use of surfactants.</p>



P13

Title	Black Skin: A comprehensive analysis of physiological characteristics and their influence on the ideal selection of cosmetics
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Abstract	<p>Black skin, with its distinct characteristics, requires specialized care and suitable cosmetics. It has natural UV protection and a lower risk of skin cancer but faces challenges like discolorations that affect appearance and self-esteem. This study aimed to understand the challenges in cosmetology related to black skin and explore cosmetic strategies. A search was conducted in the Pubmed database for articles between 2018 and 2023, using the keywords “black skin”, “black skin physiology”, “ethnic cosmetics”, “discromia”, and “ethnic differences”. Subsequently, 29 scientific articles were selected for discussion in this study. As a result, the need for a specific strategy for black skin care was revealed. The choice of topical products should be careful, prioritizing safe actives that help regulate melanin production and improve skin color uniformity, like kojic acid, alpha-hydroxy acids, and vitamin C. Xerosis can be addressed with specific moisturizers containing natural extracts, like jojoba oil. Protection against the effects of the sun, including UVA, visible light, and infrared, is crucial. Black skin has natural UVB protection but is more susceptible to damage by visible light and UVA. Patient education about the importance of using colored UVA/UVB photoprotector is essential. As for aesthetic strategies, the focus should be on gentle procedures to minimize risks. The application of non-ablative lasers can be an option, as they are safe for black skin in aesthetic improvement. Black skin, with more dermal papillae and active fibroblasts, produces more collagen, resulting in a youthful appearance. However, excessive fibroblast activity can lead to keloid formation. Therefore, skin care should be personalized for each ethnicity, considering genetic, biological, and social factors. This study aimed to describe key information for the development and appropriate prescription of cosmetics for black skin consumers, a topic that has been little explored.</p>



P14

Title	Development and benefit of a capillary formulation containing extract of the cajá fruit (<i>Spondias mombin</i> L.)
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Abstract	<p>The cajá (<i>Spondias mombin</i> L.) is a fruit found in the Atlantic Forest, Amazon and Cerrado biomes of Brazil. It has many applications in the food industry, in pulps, juices, popsicles, jellies and ice cream. However, there is still no information in the literature on the application of this fruit in hair products. In view of this, this study aims to evaluate the action of cajá fruit extract (<i>Spondias mombin</i> L.) as an active ingredient in cosmetic formulations, analyzing shine, combability, rod strength and softness using specific equipment. According to the literature, cajá fruits (<i>Spondias mombin</i> L.) are rich in carotenoids and vitamin C. Analysis of the chemical composition found predominantly carbohydrates (21.05%), proteins (1.32%), lipids (0.37%) and vitamin C (8.2%). The antioxidant activity measured by the 1,1-diphenyl-2-picrylhydrazyl (DPPH) method was analyzed. The value obtained was (10.15±0.38 g DPPH/Kg) indicating that the extract of the cajá fruit has antioxidant activity. Shampoo and conditioner formulations were prepared with the extract of the cajá fruit (<i>Spondias mombin</i> L.) in four concentrations: 0.5; 1.5; 3.0% and no extract. They were studied and analyzed in terms of combability, tension and shine using specific equipment. The stability study of the formulations was observed over four weeks in different temperature conditions where no instability was observed in the formulations. In addition to the mechanical and physical tests, a sensory analysis was carried out with participants, who were able to observe the improvement in hair combability, increased shine and softness. The tests carried out on specific equipment showed a positive response to the samples containing the active ingredient, increasing shine, improving the resistance of the hair and making it easier to comb the hair that had been treated with the extract compared to the hair without the extract. It can therefore be said that the extract of the cajá fruit (<i>Spondias mombin</i> L.) has potential as a hair active ingredient to be applied in the cosmetics industry.</p>



P15

Title	The new methodology approach development to cutaneous sensitization evaluation: dermocosmetics and dermatologic products applications
Authors	Camila Alessandra Mini ¹ , Bruna Constante Fonseca ¹ , Giulia Ballestero, Nayara Albuquerque, Franciane Marquete-Oliveira ¹
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Abstract	<p>Sensitization assessment has been for a long time essentially an animal testing. However, technological advancement and growing ethical awareness have driven the development of New Methodological Approaches (NAMs). In this context, Reconstructed Human Epidermis (RHE) can be a valuable and ethical alternative for in vitro skin sensitization tests. Based on this approach, this study's main objective is to demonstrate the efficiency of an in-house developed NAM that uses ES®-RHE as a biological model in detecting the sensitizing effect of substances or mixtures, considering the key point 2-activation of keratinocytes, of Adverse Effect Pathway. Initially, in the standardization phase, the ES®-RHE models were challenged with sensitizing and non-sensitizing compounds, and subsequently exposed to the application of cosmetic products that interact directly with the skin, being based on/containing Clay (P1), azelaic acid (P2) and essential oil (P3). After application, the models were exposed for 24 hours, followed by quantification of IL-8 in the culture medium, morphological evaluation and evaluation of tissue cell viability. The cellular viability of the tissues was evaluated with MTT, IL-8 was quantified by ELISA kit and the stimulation index (SI) was calculated, with a cut-off value established at 2. For morphological evaluation, the tissues were embedded in paraffin, cut and stained with hematoxylin/eosin and evaluated under an optical microscope. Among the products tested, it was observed that P1 did not drastically affect viability (78%) nor did it cause an increase in EI (0.38 ± 0.05), indicating that it does not have sensitizing potential for this pathway. P2 reduced cell viability (42%) causing significant morphological changes, in addition to presenting EI (1.73 ± 0.32) indicative of sensitizing potential according to the literature. P3, despite not causing changes in viability (97%), demonstrated IE with a value bordering on Cut off (1.81 ± 0.18), suggesting a warning regarding the occurrence of adverse effects. In this context, the results obtained demonstrate the possibility of using ES®-RHE as a promising tool in evaluating the sensitizing potential, especially for complex substances and mixtures, considering the activation of keratinocytes, in real conditions of use of the products, where the interaction and absorption capacity through the epidermis may be relevant.</p>



P16

Title	Optimization of children shampoo formulation using mixture design
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Abstract	<p>Children shampoos are intended for gentle cleansing and should not be irritating upon contact with skin, eyes, and hair. Typically, they are formulated from surfactant substances with detergent, emulsifying, and foaming properties due to their amphiphilic structure, besides conferring thickening and potentially causing eye irritability.</p> <p>Mixture Design (MD) comprises a set of techniques that provide a structured method for planning, executing, and analyzing experiments, leading to significant reductions in work time and costs in formulation development and enabling the attainment of robust and reliable results.</p> <p>Objective. This work involved the optimization of a children's shampoo formulation by altering the proportion of surfactants following MD.</p> <p>Material and Methods. All formulations were standardized with 15% w/w of surfactant in their composition.</p> <p>Through MD (Minitab), 10 formulations were obtained by varying the proportion of three surfactants [Sodium Cocoyl Glutamate (SCG), Lauryl Glucoside (LG), and Disodium Coco amphodiacetate (DC)].</p> <p>Evaluation methods included: detergency, foam formation, viscosity, and equivalent protein loss in albumin. Results. Values for detergency, foam formation, viscosity, and protein loss were obtained in the ranges: 46-63%, 39-60mL, 920-2948cPs, and 60-235µg of albumin/g of hair, respectively. In order to obtain the D optimal formulation through MD, lower and upper limits of 45-55% (detergency), 45-55mL (foam formation), 1000-2000cPs (viscosity), and 80-140µg of albumin/g of hair (protein loss) were chosen.</p> <p>Conclusion. It was found that the Mixture Design (MD) applied to the 10 developed children's shampoo formulations involving the association of surfactants was suitable, and the D optimal formulation meeting the predetermined parameters was the proportion: SCG 0.28; LG 0.06; DC 0.66.</p>



P17

Title	New challenges in attracting and retaining personal care and cosmetics consumers in the face of the COVID-19 scenario
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Abstract	The present study aimed to identify communication strategies in the face of the new challenges in attracting and retaining consumers of personal hygiene and cosmetics according to the COVID-19 scenario, due to new consumption habits and rapid changes in behavior driven by the pandemic. The research had an exploratory and descriptive approach, and the study went through theoretical references based on the personal hygiene and cosmetics market, brand positioning, and marketing. The analysis took into account subjective aspects with 105 respondents and image attributes, evidenced during the research period. We were interested in knowing how brands of personal care products and cosmetics positioned their products during the pandemic, under the challenge of attracting and retaining consumers. The results identified the need for a clearer and more assertive communication for better positioning of personal care products and cosmetics, to meet the desires and needs of consumers, in order to establish a direct connection and reinforce their main objectives, in the strategy of increasing the conversion rate of new sales to their user market.



P21

Title	Evaluation of infrared spectroscopy and thermogravimetric analysis techniques in the study of hair fiber degradation induced by ultraviolet radiation
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Abstract	<p>The sensory and structural characteristics of hair can be modified by chemical and physical treatments, such as dyeing, brushing, temperature and solar radiation. However, there is a lack of more user-friendly and low-cost methodologies for assessing the impact of chemical and physical treatments on the hair fiber. Some of the techniques cited in this area are optical and electron microscopy, mechanical resistance measurement, spectroscopic techniques, among others, each with different degrees of complexity of use and information produced.</p> <p>The aim of this prospective study was to evaluate the use of infrared spectroscopy (FTIR) in the mid-infrared region (MIR) and thermogravimetric analysis (TG) in the physicochemical evaluation of hair fibers subjected to artificial ultraviolet radiation. Samples of black and blond Caucasian hair were irradiated with a dose of UV radiation quantified at 500 mJ/cm², under different conditions: without protection and with the action of cosmetics containing commercial UV protection and the extract of the <i>Tocoyena brasiliensis</i> plant under the same exposure time. The study showed, through analysis of the TG/DTG curves, a difference between the thermal stability of the strands under the different conditions investigated.</p> <p>Comparison of the infrared vibrational spectra of the samples led to the conclusion that there were many affinities between them, differing mainly in the absorption bands relating to the UV protectants used.</p> <p>Based on the results obtained, it was concluded that infrared spectrometric and thermal analysis techniques are suitable for studying the chemical and physical properties of hair fibers, as well as for studying the efficacy of active protective ingredients. However, advances in the use of data processing techniques are necessary, and this is the aim of continuing this work.</p>



P22

Title	Evaluation of the chemical, antioxidant and antimicrobial profile of <i>Humulus lupulus</i> L. teamaker variety extract for cosmetic ingredient use
Authors	Maurycio Côgo Pereira ¹ , Sophia Carvalho Souza ¹ , Herllon Karlos Athaydes Kerr ¹ , Rodrigo do Nascimento Borreti ¹ , Karla Lirio Soares ² , André Assis Pires ¹ , Glória Maria de Farias Viegas Aquije ¹ , Juliano Ribeiro Souza ¹ , Quézia Moura da Silva ¹ , Heitor Pinheiro de Souza Coutinho ¹ , Júlia Vieira Moreira ¹ , Patrícia Dutra Venâncio Lima ¹ , Juliana Ferreira Gois ¹ , Caroline Rosa dos Santos ¹ , Marcella Leite Porto ^{1,2*}
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Abstract	Hop extracts harbor a diversity of molecules, such as polyphenols, α -acids, β -acids, and hydrocarbons, which play a crucial role in the medicinal properties of the plant. These substances are associated with a range of beneficial activities, including antimicrobial, antioxidant, and anti-inflammatory action. Although hops (<i>Humulus lupulus</i> L.) are widely known as an essential ingredient in brewing, recent research has revealed additional beneficial effects. Notable antibacterial, antifungal, and antioxidant properties stand out, holding promising potential for application in the cosmetics industry. Large amounts of phenolic compounds are concentrated in hop flowers. Despite some interesting compounds being identified in the literature, the complete phytochemical profile and biological and pharmacological properties still lack investigation. The teamaker variety is still little known and studied; however, due to the peculiarity in the composition of its soft resins, it becomes promising for uses beyond the brewing market. In this context, the present study aims to evaluate the chemical and antioxidant profile of the Teamaker variety, cultivated in Brazil, aiming at its potential as a cosmetic ingredient. The chemical profile of the cones of this variety obtained by HPLC-UV and CG/MS identified a low quantity of α -acids (humulones class) 0.8% (w/w) and a high content of β -acids (lupulones) 12.50% (w/w). In vitro antioxidant evaluation was performed by different methodologies (DPPH, ABTS, and FRAP) and evidenced the high antioxidant potential of hops. The antioxidant activity of hops can be modulated by the presence of phenolic compounds such as xanthohumol, quercetin, catechin, and other polyphenols in its composition. Additionally, an inhibitory effect on the growth of gram-positive strains was observed, enabling its adjunct use as a preservative. Based on the results obtained, it is possible to predict the potential use of Brazilian Teamaker hops as a cosmetic raw material for many uses in final products.



P23

Title	Lipase production by bioprocess for application in cosmetic formulations: preliminary stability assay and in vitro skin release
Authors	Jamile Vitória Alves Freire ¹ ; Isadora Costa Lima ¹ ; Pollyana Cristina de Azevedo Macedo ¹ ; Millena Cristiane de Medeiros Bezerra Jácome ¹ ; Cristiane Fernandes de Assis ¹ ; Elissa Arantes Ostrosky ^{1*}
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Abstract	<p>The cosmetics market has seen evident technological advances in recent years. Natural ingredients, as well as products developed with sustainable technology, are a rising trend in the cosmetics industry.</p> <p>Biotechnology has been essential in the development of new assets and products, reducing production costs and environmental pollution.</p> <p>Enzymes are widely used in industrial processes, with emphasis on lipases, which hydrolyze long-chain acylglycerols and have broad potential for application in cosmetic products. The main lipases attainment sources for industrial application have been microorganisms, especially filamentous fungi. Considering the sustainability of enzyme production and given the potential for its application in the cosmetics industry, this work aims to obtain lipase through a bioprocess of fermentation in a solid medium using <i>Aspergillus terreus</i> (NRRL 269) fungus and coconut bran residues provided by local family farming producers. Hydroxyethylcellulose and Acrylates/Steareth-20 Methacrylate Crosspolymer gel formulations were developed with addition of the enzyme.</p> <p>A preliminary stability study was previously carried out for 30 days to choose the formulation with the best performance, which was then conducted to the release study in Franz diffusion cells.</p> <p>The enzymatic activity of the aliquots, taken at predetermined time intervals, was determined using a titrimetric method where the lipolytic unit was defined as the amount of enzyme that releases 1 μmol of fatty acids per minute. According to the experimental parameters evaluated, the formulations containing lipase show potential stability, as demonstrated by the pH values, which remained in the appropriate range for topical application. Samples kept at room temperature showed better performance regarding enzymatic activity. In the release assay, the formulation under study showed enzymatic activity, with its greater performance, 10 $\mu\text{mol}/\text{min}$, in between 3 and 7 hours of experiment. The initial studies were conducted with the crude enzymatic aqueous extract, and new studies are planned with the application of the purified lipase, aiming at obtaining a cosmetic formulation containing a biotechnological active ingredient, which is safe, effective and sustainable.</p>



P24

Title	Black soldier fly larvae oil as a sustainable alternative for traditional oils in hair care formulations
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Affiliations	¹ School of Pharmaceutical Sciences of Ribeirão Preto – USP, São Paulo, Brazil
Abstract	<p>Oils are widely used in hair care products as they can improve the appearance of the hair and its integrity. However, most oils have an extraction that generates organic residues that are harmful to the environment. Therefore, solvent-free extractions, such as the process in Black Soldier Fly (<i>Hermetia illucens</i> L.) larvae oil, present themselves as a sustainable alternative to traditional oils.</p> <p>In that context, the objective of this study is to develop and evaluate the efficacy of hair care formulations containing black soldier fly larvae oil. For that, a hair mask formulation containing or not (vehicle - F1) 5% of black soldier fly larvae oil (F2) was developed. Its efficacy was evaluated on standardized hair tresses. That way, three tresses were used, a control tress (T1), a tress treated with F1 (T2) and a tress treated with F2 (T3).</p> <p>The hair was evaluated for its combability, softness and tensile strength through the texturometer AnalyzeTA.XPlus® and for its gloss in the Skin Glossometer GL200®. Besides that, a sensorial evaluation of the tresses was carried out. The participants evaluated the tresses' softness, brightness, combability, hydration, and appearance. The treatment with the formulation containing black soldier fly oil led to a significant ($p < 0,05$) increase in the softness, gloss and tensile strength of the hair, a behavior that was not observed in the vehicle formulation.</p> <p>As for the combability, both of the formulations were able to significantly ($p < 0,05$) decrease the necessary force to comb the tress due to the antistatic agents in the formulation, which condition the hair, reducing the combing force.</p> <p>The sensorial evaluation corroborated the obtained results. The parameters softness, hydration, combability, and brightness had a better evaluation in the tress treated with the oil, being evaluated mostly as very good. In conclusion, the addition of black soldier fly larvae oil to the formulation improved the mechanical properties of the hair, its gloss and softness, and altered the sensorial perception of the treated hair.</p>



P25

Title	Hair color enhancement evaluation utilizing the combination of specular reflection and hair fiber colorimetry techniques
Authors	Alzira Xavier Pinto Dini ¹ , Nathana Cindy Barros Silva Ramos ¹ , Adriano Pinheiro ¹ , Caroline Vieira Herculino ¹ , Victoria Pinheiro Gonçalves ¹ , Jussarah Viana da Silva ¹ , David Santos Azevedo ¹ , Wanderson Andenberg de Lima ¹
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Abstract	<p>Some visual attributes such as hair shine and color, are primordial for the efficiency of cosmetic products formulation.</p> <p>Keeping that in mind, this study aimed to evaluate the color enhancement effect of hair subjected to treatment with cosmetic products using the combination of specular reflection techniques on the surface of the hair fiber (Gloss) and Color Spectrometry or Colorimetry of the hair fiber.</p> <p>For this purpose, three types of hair tresses were evaluated: natural Caucasian, double bleached and dyed strands subjected to 30 washes. The Specular reflection and color spectrometry were measured at baseline and after two different types of treatment with cosmetic products: complete line (shampoo, conditioner and mask) and leave-in products (styling cream and oil).</p> <p>For color measurements, the Byk-Gardner Spectro-Guide Sphere Gloss spectrophotometer and CIE-L*a*b* (CIE94) color system were used, and for gloss measurements, the Glossmeter equipment (BYK Gardner®) was used with a fixed angle of incidence of 85°.</p> <p>After statistical analysis of the Baseline and Final shine values, the hair color Enhancement Factor was calculated through the interpolation of the average shine values and the color parameter C* (chroma), to prove the improvement provided by the application of cosmetic treatments.</p> <p>The higher the value obtained for the Hair Color Enhancement Factor, the more radiant/intense the hair color after cosmetic treatment. A significant increase in these attributes indicates an intensification of color and brightness, making them more aesthetically pleasing.</p>



P26

Title	Evaluation and applicability of phytoingredient from Brazilian biodiversity as raw material for cosmetic use
Authors	Samara Vitória F. de Araújo ¹ ; Stella Maria A. G. Barreto ¹ ; Edilane R. D. de Araújo ¹ ; Christovam G. Maia-Neto ¹ ; Arthur Thomaz C. de Moura ¹ ; Rafaela C. F. da Silva ¹ ; Marcielle Sayuri K. Comin ¹ ; Silvana Maria Zucolotto ¹ ; Márcio Ferrari ^{1*}
Affiliations	1Federal University of Rio Grande do Norte – UFRN, Natal, Brazil.
Abstract	<p>Naturalized in Brazil and widely distributed throughout the country, <i>Bryophyllum pinnatum</i> (Lam) Oken, more commonly known as <i>saião</i> and <i>coirama</i>, contains metabolites that are attractive to the cosmetic industry, these include sugars, polyphenols and flavonoids.</p> <p>The delivery of these phytoingredients in nanoemulsion systems creates multifunctional formulations with greater bioavailability of active ingredients.</p> <p>The objectives of this work were to obtain the <i>B. pinnatum</i> extract and characterize it chemically, evaluate the <i>in vitro</i> antioxidant and antityrosinase activities, and develop nanoemulsions with the extract for use as a product to prevent signs of skin aging. Turboextraction was carried out with a plant (fresh leaves): solvent (distilled water) ratio of 1:1 (w/v). The extract obtained was quantitatively characterized regarding the concentration of sugars, phenolic compounds and total flavonoids. The <i>in vitro</i> antioxidant capacity was measured using the following methodologies: 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging; scavenging of 2,2'-Azino-bis (3-ethylbenzothiazoline-6-sulfonic acid (ABTS.+)) radicals; total antioxidant capacity; reducing power of the sample; and chelation of metal ions Cu^{2+} and Fe^{2+} in addition to scavenging of hydroxyl radicals ($\text{OH}\cdot$) and superoxide ($\text{O}_2\cdot^-$).</p> <p>Antityrosinase activity was evaluated <i>in vitro</i> using enzyme inhibition. Nanoemulsions were obtained from the study of the hydrophilic-lipophilic balance, using methodologies that use low and high emulsification energy, and characterized in terms of droplet size, polydispersity and zeta potential.</p> <p>The developed formulations were evaluated for their preliminary stability in an oven at 45°C for 5 days and accelerated for 30 days at different temperature conditions (4°C, 25°C and 45°C).</p> <p>The characterization results demonstrated that the extract has 96.63% total sugars, 14.94% phenolic compounds and 6.82 μg Eq/mg of total flavonoids.</p> <p>Given the <i>in vitro</i> antioxidant activity, the extract acted on different stages of the oxidative cascade. After 30 days of storage at different temperature conditions, the systems obtained by both methods were considered stable. The results demonstrate that <i>B. pinnatum</i> extract presents antioxidant and antityrosinase activity, and thus shows promise as a cosmetic ingredient in multifunctional formulations to prevent signs of aging.</p>



P27

Title	Preclinical protective effects of a sun care product against oxidative stress, pollution and infrared-A radiation
Authors	Sheila Gomes da Silva ¹ , Kleber Roberto Malaquias ¹ , Ketterly Inaisder de Lima ¹ , Layane Melody da Silva Reis Cavalcante ¹ , Barbara de Freitas Carli ² , Gustavo Facchini ² , Ana Lucia Tabarini Alves Pinheiro ¹ , Samara Eberlin ²
Affiliations	1Mantecorp Skin Care, Hynova, Alphaville/SP – Brazil; 2Kosmoscience Group, Valinhos/SP – Brazil.
Abstract	<p>Skin aging represents a multifactorial process whose primary mechanism is the excessive production of free radicals, characterizing an environment of oxidative stress after exposing the skin to various external aggressors. The objective of this study was to evaluate the effects of a sun care product (DC-23017-65C) on protection against damage caused by infrared radiation-A (IR-A) through the quantification of matrix metalloproteinase-1 (MMP-1), the anti-pollution action by quantifying the aryl hydrocarbon receptor (AhR) and in reducing the production of reactive oxygen species (ROS) induced by UV radiation, using an experimental model of human cell and skin culture. DC-23017-65C was applied to ex vivo human skin culture, for subsequent exposure to UV radiation and cigarette smoke, and quantification of ROS and AhR, respectively. To evaluate the production of MMP-1, the product was applied to fibroblast cultures and exposed to infrared radiation-A (IR-A). The results indicate that DC-23017-65C exerts a prophylactic effect against the increase in MMP-1 synthesis induced by IR-A radiation, preserving the structure of the extracellular matrix, particularly collagen and attenuating the skin aging process. Furthermore, a significant reduction in the nuclear translocation of the AhR receptor was observed, thereby controlling the transcription of genes involved in oxidative stress, inflammation, immunosuppression, pigmentation, among others. This result suggests a protective role against the adverse effects of xenobiotic pollutants, which gives the product an effective anti-pollution function. Additionally, there was a decrease in oxidative stress in cultures pre-treated with DC-23017-65C, demonstrating its protective effect against the excessive increase in ROS synthesis, induced by UV radiation. These findings indicate that DC-23017-65C exerts a comprehensive effect, mitigating the effects of exposure to different extrinsic agents, such as UV radiation, IR-A and pollution. Therefore, in addition to the physical and chemical protection provided by the photoprotector, the product mitigates the excessive production of biomarkers that culminate in increased tissue susceptibility and highlight the unsightly changes associated with skin aging.</p>



P28

Title	Preclinical evaluation of a cosmetic formulation for skin barrier protection
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Abstract	<p>Skin reacts daily to contain the damage induced by exposure to extrinsic factors that culminate in increased fragility and susceptibility. Among the skin reactions, we emphasize the nuclear signaling of the aryl hydrocarbon receptor (AhR), which, once activated, leads to oxidative and inflammatory responses with important unsightly consequences, such as hyperpigmentation and loss of firmness. A second skin response involves the production of antimicrobial peptides, such as defensins and cathelicidins, which contribute to the innate immunity of the epithelial barrier. The skin also has an epidermal regeneration mechanism that can be triggered through increased cell proliferation indicated by the Ki67 protein. The objective of this work was to evaluate the protective efficacy of a cosmetic formulation for daily facial cleansing (DC-20068-7) by measuring β-defensin 2 (hBD-2), Ki67 and AhR. DC-20068-7 was applied to human skin culture, originating from elective plastic surgery, at a proportion of 25-30 mg/cm² for subsequent protein quantification of the cell proliferation marker Ki67, using an immunoenzymatic assay (Elisa). To evaluate AhR receptor activation, human skin fragments were treated with DC-20068-7 and exposed to cigarette smoke to measure AhR cytoplasmic availability by Elisa. Furthermore, skin fragments pretreated with DC-20068-7 and exposed to <i>Staphylococcus aureus</i> lipopolysaccharide (LPS) were evaluated for the production of the antimicrobial peptide hBD-2 (Elisa). Our results indicate that the cosmetic formulation DC-20068-7 stimulates the synthesis of Ki67, a protein associated with the proliferation of keratinocytes, suggesting potential for renewal and, consequently, skin rejuvenation. Furthermore, DC-20068-7 was observed to reduce the nuclear translocation of the AhR receptor, indicating an anti-pollution action in protecting against xenobiotic pollutants produced by cigarette smoke. We also found that the product DC-20068-7 has an anti-inflammatory action, due to its ability to reduce exacerbated levels of hBD-2, produced as a result of incubation with LPS. The results obtained in this study suggest that the product DC-20068-7 has a global action in preserving skin barrier, acting in protection against the effects of pollution and inflammatory stress, and stimulating cell proliferation, thus maintaining a healthy and renewed epidermis.</p>



P29

Title	Oils and alkaline aqueous extracts from <i>Bixa orellana</i> L.: extraction, characterization and in vitro evaluation of the antioxidant effect
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Abstract	<p><i>Bixa orellana</i> L., commonly known as annatto or achiote, is a plant native to the Tropical America, belonging to the botanical family Bixaceae. Previous research has revealed that this plant contains compounds such as flavonoids, carotenoids, gallic acid, among others, imparting it with various properties, including antioxidant activity. The aim of this study was to evaluate the antioxidant activity specifically present in annatto seeds. Initially, alkaline aqueous extracts were obtained from whole (A1) and ground (A2) annatto seeds, which were subsequently lyophilized. Subsequently, oil extraction from ground seeds (OE) was carried out using the method described in the Brazilian Pharmacopoeia 6th edition for fixed oil extraction. Finally, commercial annatto seed oil (OC) was acquired for comparative purposes. To evaluate the antioxidant activity, three in vitro antioxidant activity assays were employed: the DPPH• (2,2-diphenyl-1-picrylhydrazyl) assay with a maximum concentration of 200 µg/mL, the ABTS•+ [2,2'-azino-bis (3 ethylbenzothiazoline-6-sulfonic acid)] assay with a maximum concentration of 100 µg/mL, and the cupric ion reducing antioxidant capacity (CUPRAC) method with a maximum concentration of 200 µg/mL. From the DPPH• and ABTS•+ results, the IC₅₀ was calculated, for the four tested samples, IC₅₀ is defined as the amount of antioxidant necessary to reduce the initial concentration of radicals by 50%. The results obtained by CUPRAC were compared to the Trolox equivalents, and it was demonstrated, in increasing order of reducing potential, the following sequence: OC, A2, OE, and A1. The in vitro evaluations of antioxidant activity, using the three employed methodologies, showed that OC exhibited lower antioxidant activity, and extract A2 had lower antioxidant activity compared to OE and extract A1. Thus, it is concluded that OE and extract A1 have demonstrated promising potential for use as antioxidant cosmetic actives.</p>



P30

Title	Studies on the benefits of capillary compositions containing seriguela fruit extract (Spondias purpurea L.)
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Abstract	<p>Originally from tropical America, <i>Spondias purpurea</i> L., known as seriguela, is a fruit from a plant in the Anacardiaceae family. In Brazil, the seriguela tree is most widely distributed in the Northeast, and the fruit is appreciated in the region for its organoleptic properties and potential for processing into various products. In this context, the application of seriguela fruit extract (<i>Spondias purpurea</i> L.) in the cosmetics industry is promising in a scenario where there is a growing demand for products with natural components. Therefore, this research sought to evaluate the activity of seriguela fruit extract, in concentrations of 0.5%, 1.5% and 3.0%, as an active ingredient in solid state shampoo and conditioner formulations and in a leave-in cream. In this way, it will be possible to evaluate its benefits on type 1a and 3b hair, and also when exposed to seawater and ultraviolet (UV) light. A physicochemical characterization of the seriguela fruit extract was carried out, which showed favourable amounts of sugars, protein, vitamin C and Brix^o for its application in cosmetic formulations. Phytochemical screening also showed the presence of flavonoids, favoring the antioxidant action of the seriguela fruit extract. The formulations produced were tested on the hair, using specific equipment to assess combability, hair tension and shine in the usual washing situation, washing after contact with seawater and after exposure to UV light. It was observed that the seriguela fruit extract (<i>Spondias purpurea</i> L.), in increasing order of concentration, led to an increase in shine, hair resistance and combability compared to the control strand. We can therefore consider that seriguela fruit extract is a promising active ingredient for treating hair.</p>



P31

Title	Development of gel for radiofrequency with cosmetic actives
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Abstract	Radiofrequency is a technique used in aesthetic clinics to treat signs of skin aging, such as sagging, by heating the tissue with alternating current. This study aimed to develop gels for use in radiofrequency procedures for skin treatment. Initially, formulations with different concentrations of the chosen polymer, xanthan gum, were tested, along with glycerin and other excipients, aiming to obtain a stable gel that would allow the addition of cosmetic actives and enhance the effects of radiofrequency. However, the initial attempts resulted in overheating and evaporation of the gel during the procedure. Several modifications were made to the formulations, including adjustments to polymer concentrations, addition of propylene glycol, and a switch to the polymer Amigel (Sclerotium Gum). After experimentation, a formulation with 3% Amigel and appropriate concentrations of propylene glycol and glycerin was considered ideal, presenting good viscosity, balanced temperature, and spreadability. Tests with and without actives showed similar characteristics in the final gels. These experiments aimed to create a stable gel that would allow effective radiofrequency treatment associated with actives for cosmetic skin treatment.



P32

Title	Evaluation of the hydrating effects of a cosmetic formulation containing niacinamide and ascorbic acid, associated with 5 MHz ultrasound
Authors	Luiz E. Fabbri Filho*.; Mariane M.Santos Vergílio; Gislaïne R. Leonardi
Affiliations	Universidade Estadual de Campinas – UNICAMP, Campinas/SP, Brasil.
Abstract	<p>The 5MHz ultrasound is one of the aesthetic strategies that can be associated with cosmetic formulations to improve signs of skin aging such as flaccidity and hyperchromia.</p> <p>Objectives: The aim of this study was to evaluate the parameter of water content in the stratum corneum after the application of a cosmetic formulation containing niacinamide and ascorbic acid, associated with non-focused therapeutic ultrasound of 5 MHz. Methodology: After submission and approval by the Research Ethics Committee, ten women with localized hyperchromias on their hands and forearms were recruited.</p> <p>A cosmetic formulation containing water, glycerin, hydroxyethylcellulose, preservative, and the actives - niacinamide and ascorbic acid - was developed and applied to one hand or forearm, while a placebo formulation, without the actives, was applied to the other hand/forearm, along with 10 sessions of continuous therapeutic ultrasound protocol of 5 MHz and intensity of 3W/cm², on the dorsal region of the hands or forearms, for 10 weeks, in sessions of 4 to 6 minutes. The result was evaluated through the measurement of water content in the stratum corneum before (t₀) and after the intervention of the clinical study (t₁). Results and discussion:</p> <p>Within the evaluated period, there was no significant variation (Friedman test followed by Dunn's multiple comparison test) for the parameter of water content, indicating that there were no changes in skin hydration for control and formulation regions.</p> <p>This may have occurred because the weekly application (only 1x per week) of the formulation is insufficient to positively impact skin hydration. Previous studies that used the formulation daily associated with ultrasound had more promising results.</p> <p>Conclusion: It is necessary to investigate the efficacy of aesthetic devices associated with cosmetic formulations in order to validate efficacy protocols.</p> <p>The sporadic use of the cosmetic formulation was not able to impact skin hydration. Therefore, the need for daily use of the cosmetic formulation within an aesthetic protocol with association of 5 MHz ultrasound is evidenced.</p>



P33

Title	Sensory and texture properties of multifunctional sunscreens containing jaboticaba extract
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Abstract	<p>Multifunctional sunscreens have been presented as an alternative to slow down the photo-aging process of the skin, in addition to protecting against damage caused by the exposome. However, due to the great miscegenation characteristic of Brazil, there are different skin types with specific needs that are not always compatible with the products available in the market. Thus, the sensory properties of sunscreen formulations represent a challenge to consolidate the habit of photoprotection in the Brazilian population.</p> <p>In this context, and in the search for sunscreens formulations that can better meet the needs of the Brazilian skin and also value the Brazilian biodiversity, the objective of the present study was to develop and evaluate the texture profile and sensory properties of sunscreens formulations containing Jaboticaba extract (<i>Plinia cauliflora</i>). To this end, a sunscreen formulation was developed with or without the addition (vehicle - P1) of 4% glycolic extract of Jaboticaba (P2), a typical fruit of the Brazilian flora rich in tannins, polyphenols and anthocyanins.</p> <p>The texture and spreadability profile was evaluated using a texturometer - TextureAnalyzeTA.XPlus®. For the sensory evaluation, 40 research participants, men and women between 18 and 26 years old, were recruited (CAAE:66403822.7.0000.5403) and answered a questionnaire on spreadability, touch and hydration parameters.</p> <p>The results obtained in the instrumental measurements showed that the formulation supplemented with Jaboticaba extract showed a significant reduction ($p < 0.05$) in the parameters of firmness, consistency and shear work, indicating a better spreadability of the formulation. There was also a reduction in the cohesiveness parameter, a parameter related to the stickiness of the formulation.</p> <p>The results of the sensory analysis corroborated the study of the texture profile, where the subjects rated the P2 formulation containing the in terms of touch, hydration and spreadability.</p> <p>Therefore, the addition of Jaboticaba extract to the sunscreen formulation improved the sensorial properties, which may affect the adherence to the use of the product. Finally, the proposed formulation presented sensory properties compatible with the proposed purposes and can be suggested for the development of multifunctional sunscreens due to the antioxidant properties of jaboticaba extract.</p>



P36

Title	Awareness campaign on photoprotection for athletes: an extension project of the academic league of cosmetology at UNICAMP
Authors	Maria Eduarda E. Martins ^{1*} ; Daniele A. Pereira ¹ ; Ana Beatriz C. Piovan ¹ ; Evelyn L. C. Pereira ¹ ; Gislaine R. Leonardi ¹
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Abstract	<p>Brazil is located in a region that receives a strong intensity of solar radiation, which favors the incidence of skin cancer, with excessively high rates. UVA and UVB rays are the main culprits for skin photodamage, as cellular structures acquire resistance to apoptosis and promote long-term DNA alterations. Thus, the use of sunscreen is justified as essential for skin protection since it minimizes the risk of melanoma, reinforcing the need to raise awareness in the community about the effects of sun exposure.</p> <p>This influence and guidance on the use of proper protection serve as alternatives to disease prevention, consequently promoting health and self-esteem. Formed by undergraduate students of the Pharmacy course at UNICAMP, the Academic League of Cosmetology aims to educate and raise awareness among the Brazilian population, particularly understanding the impact of the pharmacist's role in society as a health-transforming agent.</p> <p>In this current project, athletes who train weekly on open courts and under intense sun exposure were chosen as the target audience.</p> <p>A quiz was developed with questions, considering the main doubts about photoprotection, to briefly guide them on types of radiation, the mechanism of action of sunscreens through the absorption or reflection of UV radiation, the application time of the product before sun exposure, some inorganic filters present in formulations responsible for broad-spectrum protection, as well as emphasizing the importance of hydration as an ally to photoprotection.</p> <p>The participants showed great interest in the topic by interacting and asking questions during the discussions, validating the importance of extension projects as a means of scientific dissemination to the population.</p>



P37

Title	Application of vegetable oils from Brazilian biodiversity for curly hair
Authors	Sarah Daniele M. Lima ¹ ; Letícia Kakuda ¹ ; Patricia M. B. G. Maia Campos ¹
Affiliations	¹ School of Pharmaceutical Sciences of Ribeirão Preto – USP, São Paulo, Brazil.
Abstract	<p>Studies have shown that in the hair care segment Brazil is the second largest in the world and that around 70% of Brazilians have wavy, curly or frizzy hair. These are factors that increasingly drive the industry to research and develop innovative and sustainable products to meet the demands and needs of consumers in a conscious and personalized way. The aim of this study was to develop and evaluate hair oil formulations using vegetable oils from Brazilian biodiversity in a specific blend for curly hair.</p> <p>Thus, this blend was developed containing Pequi oil (Caryocar Brasiliense Fruit Oil), Buriti oil (Mauritia Flexuosa Fruit Oil), and Babaçu oil (Attalea speciosa Oil) and the oils were applied separately to standardized curly locks of hair to analyse their effectiveness. In the study, five strands were evaluated before and after treatment: a control tress (M1), a tress treated with pequi oil (M2), a tress treated with buriti oil (M3), a tress treated with babassu oil (M4) and a tress treated with the blend of biodiversity vegetable oils (M5). The measurements were made in relation to gloss, softness, combability and tensile strength.</p> <p>The results showed that there was a significant increase ($p < 0.05$) in the shine of the tresses treated with the oils alone or in combination. In relation to the same tresses, there was a significant reduction ($p < 0.05$) in the force needed to comb the hair. As for the tensile strength, there was a significant increase ($p < 0.05$) in strands M2, M3 and M5. Finally, there was no significant change in softness.</p> <p>It can therefore be concluded that the isolated vegetable oils showed similar results to the blend of oils in improving the physical and mechanical properties of curly hair. Finally, the application of oils from Brazilian biodiversity aims to value and serve this public, since each oil has a specific composition and benefit and the association of these oils in a blend can bring better results and a product customized to the specific needs of curly hair.</p>



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Title	Development of liotropic liquid crystals containing α-bisabolol with healing activity
Authors	Giovanna Oliveira Santos Gonçalves ¹ ; Odeanny Vitória Azevedo Lima ¹ ; Jileno Ferreira ² ; Cristiane Bani Correa ² ; Ana Amélia Moreira Lira ¹
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Abstract	<p>α-Bisabolol is a sesquiterpene alcohol that has anti-inflammatory, antimicrobial, antioxidant and healing properties. However, α-bisabolol is volatile and unstable, and it is important to use it in formulations capable of promoting its stability and improving its penetration into the skin. Lyotropic liquid crystals are intermediate mesophases between the solid and liquid states, capable of promoting sustained release and a permeation-enhancing effect of various molecules. Liquid crystals are also easy to obtain, low cost, high stability and easy to scale. Thus, the objective of this study was to develop liquid crystalline systems containing α-bisabolol with healing properties and low cytotoxicity. Initially, the cytotoxicity of several surfactants was assessed. Next, liquid crystals containing α-bisabolol were obtained using surfactants with lower cytotoxicity using a pseudoternary phase diagram. The selected systems were characterized by polarized light microscopy (MLP), rheological profile analysis and small-angle X-ray scattering (SAXs). The formulations were also evaluated through cytotoxicity and fibroblast migration assays. As results, 2 viscous transparent systems were selected. From the characterization by MLP and SAXs, sample 1 showed anisotropic behavior and a characteristic profile of a hexagonal mesophase and sample 2 showed isotropic behavior and a characteristic profile of a cubic mesophase. From the results obtained by the rheological profile analysis, it was noted that the formulations have a similar viscoelasticity profile, but with different magnitudes. The relationship between storage modulus values and the type of formulation evaluated was compatible with expected results, with G' values in cubic mesophase > hexagonal mesophase. The formulations also showed low cytotoxicity and healing activity in fibroblast migration assays. Therefore, it is concluded that liquid crystals with low cytotoxicity were successfully obtained and were capable of carrying α-bisabolol without altering the structural organization of the mesophases.</p>



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Title	Experience report: Inove Cereus, an immersion into cosmetics development
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Abstract	<p>Inove Cereus is an extension action promoted by the Academic League of Cosmetics and Sanitizers (Cereus) of the Federal University of Sergipe (UFS), aimed at students of Chemical Engineering, Pharmacy, Industrial Chemistry and Bachelor's Chemistry with the purpose of offering students an experience immersive research, development and innovation of cosmetic products. Thus, the Inove Cereus experience provides students with the chance to actively participate and understand the production cycle, training them for future integration into the cosmetology job market.</p> <p>Goals: Report the technical-scientific experience carried out by 32 UFS students during the extension action.</p> <p>Methods:</p> <p>To carry out Inove Cereus, extension workers received training on cosmetic ingredients and pharmaceutical forms, then were divided into groups and received a formulation proposal. In the first stage, they carried out preliminary research, benchmark analysis and current regulations, developed the formulations, defined the packaging and cost. Afterwards, they hold a briefing with a panel of evaluators. At the end, the groups returned to bench tests to correct the formulation and carried out sensory evaluation of the products.</p> <p>Results:</p> <p>The extensionists were able to develop seven cosmetic formulations, including: facial dermocosmetics, solid hair products and body formulations. Furthermore, they developed theoretical knowledge regarding regulations, quality control and marketing.</p> <p>Conclusions: Living at Inove Cereus provided a unique and enriching experience. In qualitative terms, the extension met the objective of encouragement, professional training and expansion of knowledge in cosmetology, above all, by standing out as a practical laboratory activity.</p>



P40

Title	Application of açai (<i>Euterpe oleracea</i>) glycolic extract in the treatment of acne in the dorsal region
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Abstract	<p>Acne is an inflammatory disease that affects the self-esteem of Brazilians and can manifest in different regions of the body, such as the back.</p> <p>In this context, açai (<i>Euterpe oleracea</i>) glycolic extract has the potential to be applied in cosmetic products to meet the needs of oily and acneic skin, as it contains a large amount of secondary metabolites with astringent and antioxidant properties. In this context, the present study aimed to evaluate the clinical efficacy of a tonic lotion added with açai glycolic extract for the treatment of acne in the dorsal region. For this purpose, an aqueous tonic formulation was developed with or without (TV - vehicle) 5% of açai glycolic extract (TA). Clinical efficacy was evaluated after approval by the Research Ethics Committee involving human subjects of FCFRP/USP with 20 participants aged between 19 and 28 years.</p> <p>The measurements were taken at the beginning of the study (baseline measurements - T0) and after 21 days of daily use of the formulation (T21), in terms of transepidermal water loss (TEWL), sebum content and porphyrin count. In addition, after the test period, the participants answered a questionnaire regarding the perceived efficacy and sensory properties of the formulations.</p> <p>The results showed that after the study period, no significant difference ($p > 0.05$) was observed in TEWL in both groups, showing that the use of the formulations did not compromise the skin barrier. However, sebum content decreased and porphyrin size decreased significantly ($p < 0.05$) for participants who used the TA formulation. This result can be associated with the presence of açai extract, as it has a high concentration of tannins in its composition. Tannins are secondary metabolites with astringent properties, which act to reduce oiliness on the skin.</p> <p>In terms of efficacy perception and sensory analysis, the participants reported that the TA formulation has a pleasant texture, easy application, and indicated a reduction in the acne.</p> <p>Finally, the results showed the potential of açai extract for application in cosmetics for the treatment of acne in the dorsal region.</p>



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Title	Development and efficacy of a cosmetic formulation containing ascorbyl tetraisopalmitate on the mechanical properties of bleached hair tresses
Authors	Ana Júlia F. Garcia ^{1*} ; Letícia Kakuda ¹ ; Patricia M. B. G. Maia Campos ^{1**}
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Abstract	<p>Hair bleaching is a very common cosmetic procedure in Brazil that aims to permanently lighten the natural color of the hair through reactions that oxidize the melanin present in the hair cortex. These reactions weaken the hair fiber and increase porosity, damaging the texture of the hair. The use of rinse-off conditioners has the ability to condition the hair, reducing the tension on the hair during combing. In addition, active antioxidants can minimize the damage caused by the bleaching process.</p> <p>In this context, the aim of this study was to develop and evaluate the efficacy of a leave-in cosmetic formulation added with ascorbyl tetraisopalmitate (ATIP) for the treatment of hair damage due to the discolouration process.</p> <p>To this end, a cosmetic formulation added with 3% ATIP (F2) or not (F1 - vehicle) was developed and evaluated in terms of rheological behavior and textural profile. Mechanical strength, combability and softness tests were carried out before and after application of the formulations to standardized hair tresses, in addition to a control tress which was not treated.</p> <p>The results showed that the addition of the active ingredient did not alter the rheological behavior of the formulations. On the other hand, there was a significant increase ($p < 0.05$) in the firmness, cohesiveness and consistency parameters of the formulation, suggesting a structural rearrangement induced by the oily ATIP filler. The efficacy test showed that after application of the leave-in, there was a significant improvement ($p < 0.05$) in the combability parameter only for the tress treated with F2, as well as an improvement in hair softness.</p> <p>However, there was no significant change ($p > 0.05$) in the mechanical strength of the hair for the formulations studied. Finally, it can be concluded that ATIP is effective in improving the softness and combability of damaged hair when used in leave-in cosmetic formulations, as it reduces the shear stress during mechanical processes, thus minimizing the damage caused by bleaching.</p>



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Title	Development of a cosmetic formulation containing Brazilian berry extract for oily skin care
Authors	Alexandre Luna ¹ & Patrícia M. B. G. Maia Campos ¹
Affiliations	¹ School of Pharmaceutical Sciences of Ribeirão Preto – USP, São Paulo, Brazil
Abstract	<p>Oily skin, characterized by the excessive production of sebum, needs treatment with specific cosmetic formulations to control and prevent the oiliness. The development of innovative cosmetics with astringent and antioxidant properties that presents efficacy and stability are still a challenge to the cosmetic field. In this context, the extract of Brazilian berry (<i>Plinia cauliflora</i>), SisGen (AE821C2), rich in anthocyanins and phenolic compounds like tannins, presents potential to apply in cosmetic formulations to control the oiliness skin, due to your astringent and antioxidant properties. Thus, the objective of this study was to develop and evaluate the sensory properties and the clinical efficacy of cosmetic formulations containing Brazilian berry extract, in control of skin oiliness by biophysical and skin imaging analysis. For this, a formulation added or not (vehicle, F2) with 4% of Brazilian berry extract (F1) was developed. For the clinical study, healthy female participants, 20 to 30 years old were enrolled. Instrumental measurements were carried out in terms of stratum corneum water content, transepidermal water loss (TEWL), skin microrelief and sebum content before (T0) and after 7 days (T7) of daily application of the formulations in the frontal region of the face. The results obtained showed that after 7 days of the F1 formulation application there was a significant reduction ($p < 0,05$) of sebum content when compared to baseline values (T0). There wasn't significant alteration in TEWL values and stratum corneum water content. Regarding to skin microrelief, there was an increase in SEsm parameter, related to skin softness, after the application of F1 formulation, which had the Brazilian berry extract. These results corroborate with the efficacy perception of the study participants, which preferred the F1 formulation to hydration and skin oiliness control. Furthermore, the F1 formulation was better evaluated than F2 in relation to sensory properties. In this context, the Brazilian berry extract was effective in to control the skin oiliness and improved the sensory properties of the cosmetic formulation, being therefore indicated for application in cosmetics for oil skin care.</p>



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Title	Academic League of Cosmetic Sciences at the State University of Londrina
Authors	Bianca M. Trambaioli ^{1*} , Camila C. Valentim ¹ , Júlia R. S. N. Lopes ¹ , Giulia M. Assi ¹ , Audrey A. S. G. Lonni ²
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Abstract	<p>The Academic League of Cosmetic Sciences (LACCO) is a research project in education as a Complementary Training Program (Res. CEPE 142/2012) coordinated by Prof. Dr. Audrey A. S. G. Lonni, faculty member of the Department of Pharmaceutical Sciences at the State University of Londrina (UEL). Starting in 2021, its objectives are to complement the teaching due to the low workload (75 hours) of the Cosmetology discipline offered by UEL. The League aims to develop oratory skills, direct scientific studies, provide training in professional skills in the cosmetics field, and foster interdisciplinary and personal relationships through teamwork. To achieve this, lecture cycles are held during the academic year, covering topics ranging from cosmetics development, industrial or magistral production, to entrepreneurship. It addresses self-care topics, skin diseases, skincare during pregnancy, and current market trends, always with the objective to cover all topics related to cosmetology. The audience for these events consists of students and graduates from the aesthetic healthcare field, such as pharmacy, aesthetics, medicine, biomedicine, nursing, chemistry, among others. Since its foundation, meetings have been held remotely to reach the national academic community, always featuring speakers and students from various Brazilian locations. Since the establishment of LACCO, 10 study cycles have been conducted, comprising 25 lectures. The first cycle addressed the theme "Seals in Cosmetics", the second "Skincare", the third "Dermic System Studies", the fourth focused on "Innovations in Cosmetology", the fifth on "Entrepreneurship in Cosmetology", the sixth on "Cosmetics Development", and others. In all study cycles, invited speakers are renowned professionals who teach and/or work with dermocosmetic products, ensuring the integrity of the content offered to participants. Currently, there are 25 members participating in LACCO's organizational chart, and when combined with the four years term of LACCO's Directorate, there are over 50 members, including students from UEL, the State University of Maringá, and the Federal University of Campina Grande. This fact illustrates the diversity, interdisciplinarity, and expansion of the teaching project offered by the Academic League of Cosmetic Sciences at UEL.</p>



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Title	Influence of oils and extracts of natural origin on the sensory, physical mechanical and moisturizing properties of a cosmetic formulation
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Abstract	<p>The composition of the formulation is a determining factor in the sensory properties and adherence to the use of the product. Therefore, organogels can be an innovative alternative for the application of natural oils and extracts in cosmetics. In this context, this study aimed to evaluate the influence of pequi, buriti, olive, and avocado vegetable oils and the extract of <i>Olea Europaea</i> (Olive) Fruit Extract (and) Maltodextrin on the physical-mechanical, sensory and moisturizing properties of an organogel-type formulation.</p> <p>To this end, an organogel-type formulation was developed, with or without 5% of each vegetable oil or 1% of the extract. The formulations were evaluated in terms of rheology and texture. In the efficacy study, 8 healthy participants aged 20-30 were recruited (CEP:45620321.2.0000.5403) and measurements of the aqueous content of the stratum corneum, TEWL and image analysis were carried out before and 2 hours after application of the formulations to the anterior region of the forearms. The vegetable oils significantly increased ($p<0.05$) the firmness parameter of the formulations and showed thixotropic rheological behavior, with the one containing pequi oil showing the highest firmness, work of shear, and hysteresis area.</p> <p>All the formulations showed a significant increase ($p<0.05$) in the stratum corneum water content. Still, only the formulation with avocado oil significantly ($p<0.05$) improved the water distribution on the skin surface, which corroborates the sensory analysis, where this formulation was considered the most moisturizing. Furthermore, adding the oils and extract improved the sensory properties compared to the vehicle. Confocal reflectance microscopy imaging analysis indicated an increase in the thickness and shine of the stratum corneum for all formulations except the vehicle. Additionally, it was observed that only the formulations containing avocado and pequi oils and the extract exhibited a reduction in furrow size.</p> <p>Thus, the addition of vegetable oils and extract to organogels resulted in effective formulations with improved sensory properties. Finally, these results could contribute to the development of more sustainable and effective cosmetic products that align with the principles of positive cosmetology.</p>



P45

Title	Microemulsion obtained in situ from facial mask with whitening and anti-aging activity
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Abstract	<p>The cosmetics market has greatly emphasized the contribution that aesthetics has made to society, involving not only self-esteem, but also the well-being of individuals. In this context, the skin plays a fundamental role and the use of skin care cosmetics is increasing. Niacinamide is a cosmetic active ingredient with blemish-lightening and anti-aging effects. As an alternative to minimize the damage caused to the skin over the years, the present work proposes to develop a polymeric facial mask that, when administered and moistened with an activating solution, transforms into an antioxidant microemulsion, enabling greater skin penetration of niacinamide, which acts as a model of hydrophilic active ingredient with whitening and anti-aging activity. The project stages initially involve obtaining and characterizing MEs, containing orange (<i>Citrus sinensis</i>) essential oil (OE), ozonized oil and Olivem 300 in the oily phase, tween 20 and propylene glycol in the surfactant phase, water in the aqueous phase and niacinamide at a concentration of 5%. MEs were characterized by particle size (DLS) and determination of antioxidant activity. In parallel, HPMC films, containing the same components as MEs, were produced by the “casting” technique, using HPMC as a polymer and propylene glycol as a plasticizer and finished in a mold for a facial mask. The films were subjected to thickness tests and morphological analysis under an optical microscope and scanning electron microscope (SEM). As results, the microemulsions showed isotropic behavior, nanometric size (< 100 nm) and adequate IPD (<0.5). The films were transparent with uniform thickness and homogeneous appearance. Regarding the determination of antioxidant activity, the ability of the ME containing the EO of <i>C. sinensis</i> to inhibit the ABTS radical had a satisfactory response compared to the control group, the inert microemulsion and the isolated essential oil. In this way, MEs obtained in situ from facial masks can bring better efficacy, safety and innovation to aesthetic treatments in the area of anti-aging and skin whitening.</p>



P46

Title	Clinical efficacy of oil-in-serum cosmetic formulations containing olive oil and olive extract standardized in hydroxytyrosol in post-inflammatory hyperpigmentation
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Abstract	<p>Post-inflammatory hyperpigmentation (PIH) is the result of excess production or abnormal distribution of melanin in the skin due to inflammatory processes, such as acne. The hydroxytyrosol, present in olive oil and olive extract, presents antioxidant and anti-inflammatory properties and can act on the inhibition of tyrosinase, an enzyme involved in melanin synthesis, helping to reduce excessive pigmentation in the skin. In this context, this study aimed to evaluate the long-term clinical efficacy of cosmetic formulations in the form of oil-in-serum containing olive oil (<i>Olea europaea</i>) and olive extract standardized in hydroxytyrosol in the skin with PIH. For this purpose, a gel was developed with or without (G1) the addition of 0.1% olive extract (G2), in addition to an oil containing 10% olive oil.</p> <p>For the clinical study (CEP 66403822.7.0000.5403), 16 healthy participants aged 18–28 years with oily skin and PIH were recruited, and divided into two groups: 8 participants used the formulation containing the active substances, and 8 used the vehicle formulation.</p> <p>The formulations were evaluated by instrumental measures regarding the the stratum corneum water content (Corneometer[®]), transepidermal water loss (TEWL - Tewameter[®]), sebum content (Sebumeter[®]), porphyrin count (Visiopore[®] PP34), and evaluation of dark spots (Visioface Quick[®]) in the malar region of the face at the beginning of the study (t0) and after 21 days of nightly use of the formulations. At the end of the study, participants answered a questionnaire regarding efficacy perception. After 21 days, the use of formulation G2 resulted in improved hydration and reduced TEWL, related to skin barrier function. High-resolution image evaluation showed a reduction in the color difference between the lesional and perilesional regions in participants who used the formulation with hydroxytyrosol, a result also noted in the efficacy perception questionnaire. Additionally, the use of the formulations did not alter sebum content or porphyrin count.</p> <p>In conclusion, olive extract added benefits to the formulation by improving skin barrier function and increasing hydration compared to the vehicle, in addition to showing a reduction in the skin hyperpigmentation.</p>



P47

Title	Physico-chemical and functional stability of topical formulations containing <i>Schinus terebinthifolius</i>
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Abstract	<p>The UVB radiation is the main responsible for the skin lesions caused by excessive sun exposure because it leads to the formation of free radicals that induce oxidative stress and various cellular damage. <i>Schinus terebinthifolius</i> (ST) is a plant rich in phenolic compounds, which have antioxidant properties and can provide new opportunities for treatment and prevention of diseases mediated by UVR like photoaging and skin cancer. Therefore, its topical use may provide the necessary photochemico protection in addition to sunscreens. Moreover, the topical use of bioactive substances is a powerful strategy to avoid possible systemic toxicity. Thus, two topical formulations containing ST extract were prepared (Polawax[®] - F1 and Polawax[®]/Aristoflex[®] - F2), and their physico-chemical and functional stability under 4°C, room temperature (RT) and 40±2°C/75±5% RH were evaluated. After six months at 4°C, RT and 40±2°C/75±5% RH F1 and F2 (control and added with ST extract) maintained their color and consistency characteristics. The pH values of F1 and F2 remained compatible with the pH values of skin range from 5.0 to 6.0, and all formulations also remained physically stable upon centrifugation assay, showing no phase separation in the storage conditions evaluated. The spreadability of the formulations increased with the addition of weights, which suggests good spreadability. Regarding functional stability study using DPPH scavenging activity, it was observed that temperature, storage time, and compound of formulation influenced the antioxidant activity (AA) of ST extract. After six months stored at 4°C, RT and 40±2°C/75±5% RH the DPPH radical scavenging ability of raw material was stable. F1 decreased 8.5% of AA only accelerated condition, while the antioxidant activity of F2 lost 21 and 27.35% of AA at RT and 40±2°C/75±5% RH, respectively. Since F2 showed a loss of AA higher than F1, it can be suggested that the higher water content of F2 destabilized active compounds of ST. Thus, the reduction in AA observed may be related to a possible degradation of polyphenols present in the extract Concluding, these data suggest that F1 remain stable during the study, and it may be explored as potential product against the oxidative damages in the skin.</p>



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Title	Cosmetic efficacy for the development of products for the eye area: active ingredients strategy and clinical approach to promoting well-being
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Abstract	<p>Introduction</p> <p>Intrinsic characteristics present in the eye area represent a challenge when developing cosmetic products. When including specific treatments, such as the hyperpigmentation responsible for the appearance of dark circles, targeted interventions must be defined for the best efficacy and acceptance by the end consumer. The aim of this study was to evaluate the clinical efficacy of combining two cosmetic actives that act on complementary mechanisms for the treatment of dark circles.</p> <p>Material and Methods</p> <p>To develop the formulation, an active ingredient from Brazilian Biodiversity was chosen in combination with a cosmetic active ingredient that acts on different mechanisms to reduce hyperpigmentation. The clinical trials were conducted in accordance with Resolution 466/12 of the National Health Council, on volunteers with dark circles and signs of ageing in the eye area. The parameters assessed were hydration, skin pH, and image analysis to determine dark circles and wrinkles.</p> <p>Results and Discussion</p> <p>Immediately, there was a 62% increase in hydration. After 24 hours, hydration levels were still high, reaching 27%. The pH of the skin remained stable throughout the study, with no significant variation after 60 days of using the product. After 60 days, wrinkles and fine lines in the periorbital region were reduced by 7.6%. Dark circles under the eyes were also significantly reduced after 60 days of using the product, reaching 100% responsiveness in the panel.</p> <p>Conclusion</p> <p>Due to its anatomical complexity, the eye area requires assertive considerations for cosmetic treatment. By combining different active ingredients that act in complementary ways to reduce hyperpigmentation, it is possible to obtain results that contribute to improving the appearance of the region, as well as allowing greater adherence to treatment and promoting well-being for the end consumer.</p>



P49

Title	Aplicabilidade de extrato e óleo de <i>Passiflora</i> ssp. em nanoemulsões cosméticas com potencial hidratante e antioxidante
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Abstract	<p>The <i>Passiflora</i> genus has more than 630 species in the world, 150 of them are native to Brazil, which is the largest global producer. The species <i>Passiflora edulis</i> (<i>P. edulis</i>) is native, cultivated and consumed in Brazil. The <i>P. edulis</i> seeds are rich in polyunsaturated fatty acids such as linoleic, oleic, palmitic and linolenic oil which have potential applicability as oily phase of emulsions and moisturizing active ingredient. Phytochemical studies from the genus demonstrated the presence of phenolic compounds, especially flavonoids. In this context, <i>Passiflora cincinnata</i> (<i>P. cincinnata</i>) is also a native species, popularly known as maracujá-do-mato and not yet explored by cosmetology. Plant ingredients such as these have increasingly been incorporated in nanoemulsions, which have several advantages such as increased permeability, better sensorial and stability. Obtaining these using low-energy methods has proved itself as a more economically viable alternative, which does not require specialized equipment and is easier to scale up compared to high-energy methods. Thus, the objective of this research was to obtain cosmetic nanoemulsions through low energy methods, using both the aqueous extract of <i>P. cincinnata</i> and the oil from the seeds of <i>P. edulis</i>. <i>P. cincinnata</i> extract was obtained by ultrasound-assisted aqueous extraction of leaves, while <i>P. edulis</i> seed oil was obtained commercially. A 22 factorial with a central composite design was conducted using ethyl oleate as the oily phase and polysorbate 80 as the emulsifying system, with droplet size (DS), polydispersity index (PDI), and zeta potential (ZT) as response variables. The formulations were subsequently subjected to preliminary stability study (45±5°C / 5 days), with DS, PDI, and ZT values as evaluation parameters. One point among the nine obtained from the factorial design was chosen and added with <i>P. edulis</i> oil and <i>P. cincinnata</i> extract. The formulations exhibited DS of 102.48 nm, PDI of 0.255, and Zeta of 13.2 , indicating stability and demonstrating the potential of these inputs in cosmetic nanoemulsions obtained by low-energy methods.</p>



P50

Title	Development of microemulsions containing ferulic acid and validation of assay method
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Abstract	<p>Ferulic acid is a phenolic compound with low water solubility and high antioxidant potential present in different cosmetic products designed to minimize the signs of skin aging. Microemulsified systems may be able to increase the bioavailability of this active ingredient in the dermis. Dosing the active ingredient is an important tool to ensure safety, effectiveness and certify the quality of finished products. Thus, the objectives of this work were to develop microemulsions containing ferulic acid and validate an analytical method using high-performance liquid chromatography to quantify its content. The microemulsions were obtained by the spontaneous emulsification method, containing 2% ferulic acid. 18 formulations were proposed, characterized macroscopically and in terms of active ingredient dosage, droplet size and polydispersity. The formulations with the best characterization parameters were subjected to preliminary stability in an oven at 45°C for 5 days. The development of the method by high-performance liquid chromatography took place using a phenyl-hexyl stationary phase, with ferulic acid monitoring by a diode array detector. Validation of the assay method was carried out according to parameters recommended in RDC 166 of 2017 by ANVISA. Macroscopically, the microemulsions were transparent and slightly yellowish in color. The formulation selected for validation of the analytical method was the one with the lowest proportion of surfactant (Polysorbate 80 at 15%), and the lowest variation in droplet size (32.7 ± 1.3 nm) and polydispersity (0.267 ± 0.016) parameters. A content of $101.3 \pm 0.7\%$ of ferulic acid was achieved. The analytical method analysis time was 5 minutes and the criteria required for validation parameters were duly met. The chromatographic parameters for the ferulic acid peak were satisfactory, with theoretical plate values 5700, tailing factor of 1.25, critical pair resolution of 1.91 and purity of 0.9999. After 5 days of preliminary stability, there were no significant variations in the characterization tests of the selected formulation, which was followed by accelerated stability evaluation. In this way, a preliminarily stable microemulsion was obtained and a rapid method was developed to determine the ferulic acid content, contributing to monitoring the quality of these products.</p>



P51

Title	Influence of physicochemical properties of fragrance raw materials on substantivity and additional benefits in textured hair
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Abstract	<p>Fragrance is an important attribute for consumer choice and loyalty to hair cosmetics. The lasting of hair fragrance is commonly associated with the permanence and efficacy of the product on the hair. Therefore, it is important to understand the factors that influence the substantivity of fragrances in this substrate. Among these factors, physicochemical properties play a fundamental role, as they determine the affinity between the raw materials and the hair fiber. However, hair fiber can have different characteristics depending on the type and damage level. In this work, we evaluated the interaction of fragrance raw materials with textured hair, understanding the characteristics of this type of hair and how to provide greater substantivity to fragrances. The substantivity of the raw materials was evaluated by gas chromatography coupled with mass spectrometry and the results obtained showed that the physicochemical properties affect their substantivity in hair, as expected. Raw materials with low polarity and volatility, and high viscosity have greater substantivity in the hair and, because they are potential film formers, they were evaluated for their ability to act in synergy with active ingredients present in hair cosmetic formulations to protect the hair from humidity and thus help control volume and frizz. Film formation was assessed by dynamic swelling, which consists of measuring the diameter of each hair fiber while it is immersed in water for a certain period. Smaller variations in diameter indicate less swelling and, consequently, the formation of a hydrophobic film on the surface. The results obtained showed smaller variations in the diameter of the fibers treated with the raw materials compared to the untreated and placebo groups. The effect of this film on volume and frizz control was evaluated using the RUMBA system. The results showed that the tresses treated with the selected raw materials had less volume variation when exposed to a high humidity environment compared to the untreated and placebo groups. We therefore found that the raw materials with the greatest substantivity in textured hair were able to act in synergy with active cosmetic ingredients to protect against environmental humidity, helping to control volume and frizz.</p>



P53

Title	Comparative investigation of moringa oil permeation in afro and caucasian hair fibers by mass spectrometry and imaging
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Abstract	<p>In the field of cosmetology, there is great interest in evaluating the permeation of cosmetic actives into hair fibers using various ionization and detection systems. Matrix Assisted Laser Desorption Ionization (MALDI) is a technique widely explored for the analysis and identification of biomolecules such as proteins and lipids. Additionally, mass spectrometry (MS) is an important analytical technique commonly used for quantifying individual compounds and accurately measuring molecular masses. This approach allows for detailed analysis of a specific region of biological tissue without damage, enabling precise localization of active principles based on tissue morphology. Furthermore, this technique allows for correlating quantified data obtained by spectrometry with the spatial distribution of components in the tissue, providing a more complete and accurate understanding of interactions between active principles and biological tissue.</p> <p>Moringa Oleifera, a tree native to Africa and some Asian countries, is known for its numerous benefits both for human consumption and commercially. Its oil is particularly notable for its antiseptic and anti-inflammatory properties. In cosmetics, it is often used in hair products, acting as an effective conditioner that strengthens hair strands and promotes their health.</p> <p>In this study, MALDI-MS imaging technique was used to evaluate and compare the permeation of moringa oil in Caucasian and Afro-descendant hair fibers. The fibers were treated with the oil and longitudinally cut using a specific proprietary histological device for this purpose. Analyses were conducted using time-of-flight MS, Bruker brand, autoflex maX model.</p> <p>The spectra obtained indicated significant differences in the permeation and distribution of fatty acids within Caucasian and Afro-descendant hair fibers. The percentage of oil permeation was measured for both types of fibers. The results demonstrate a new way of measuring permeation and interaction in the cortex of hair fibers, potentially substantiating claims regarding hair penetration and nourishment.</p>



P55

Title	Effect of different solvents of <i>Humulus lupulus</i> on cell viability and regenerative capacity of keratinocytes in vitro
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Abstract	<p>Plant extracts are commonly used in cosmetics due to their therapeutic properties. <i>Humulus lupulus</i>, known as hops, is primarily cultivated for beer production. It contains bioactive compounds such as humulones, lupulones, and xanthohumol, recognized for their antibacterial, antioxidant, and anti-inflammatory effects. Recent research highlights its potential in formulations for treating dermatological issues such as acne, hyperpigmentation, and blemishes, as well as deodorizing, protecting against oxidative stress, and revitalizing the skin. Our study assessed the impact of three different extracting solvents - 70% ethanol, 50% ethanol, and 50% propylene glycol - regarding cytotoxicity and regeneration of human keratinocytes in vitro with <i>H. lupulus</i> extracts. Results from the MTT assay on the HACAT cell line showed distinct cytotoxicity profiles. The extract with 70% ethanol as the extracting solvent caused 38.69% cell death, compared to 20.57% for 50% ethanol and 19.20% for 50% propylene glycol. The concentration required for 50% cytotoxicity was 10.48 mg for 70% ethanol, 33.70 mg for 50% ethanol, and 58.70mg for 50% propylene glycol. In the wound healing assay, treatment with 2.5mg of the extracts showed no significant effects on cell replication and wound closure within 24 hours. Untreated cells had a 46% closure rate, while cells treated with extracts using 70% ethanol, 50% ethanol, and 50% propylene glycol as extracting solvents had closure rates of 30%, 41%, and 36%, respectively. After 48 hours, closure rates increased to 66%, 65%, and 52%, compared to 100% for control cells. These findings suggest that 50% propylene glycol, although less cytotoxic, was not as efficient in extracting bioactive compounds compared to ethanol at the proposed concentrations, highlighting the impact of extracting solvents on obtaining these bioactive compounds. Although previous studies have demonstrated cell regeneration in zebrafish and reduction of inflammation and oxidative stress in rats consuming beer, research on human epithelial cells is still limited. Therefore, this study sought to explore this gap.</p>



P56

Title	Development of a nanostructured lipid carrier containing Cinnamomum zeylanicum Blume essential oil as a skin lightening formulation
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Abstract	<p>The skin is constantly exposed to ultraviolet radiation, causing increased production of reactive oxygen species and pigmentation disorders. There are several active ingredients on the market that lighten hyperpigmented areas of the skin, but they cause sensitivity and dermatitis, as well as limited effectiveness. As an alternative to minimize these reactions, Cinnamomum zeylanicum Blume essential oil (CEO), a natural component and tyrosinase inhibitor, can act by reducing the production of melanin in the skin. Therefore, the present study proposes to develop a nanocarrier formulation containing CEO as a skin lightener. Initially, the CEO, purchased commercially, was characterized using a gas chromatograph coupled to a mass spectrometer, analyzed in relation to the inhibition of tyrosinase in vitro and antioxidant activity, using the DPPH, ABTS and β-carotene/linoleic acid methods. Next, homogeneous mixtures formed by solid lipids and CEO were selected visually and by thermal analysis. Subsequently, Nanostructured Lipid Carriers (NLCs) were obtained by the hot microemulsion/sonication method, from the constituents avocado butter and CEO, in the oily phase, water and surfactant (Tween 80®), in the aqueous phase. Therefore, the physicochemical and morphological characterization of NLCs and evaluation of cytotoxicity and in vitro release were carried out. As results, the CEO presented trans-cinnamaldehyde as the majority component (49.43%) and anti-tyrosinase activity of 48% at a concentration of 80 $\mu\text{g/mL}$ and 77% at a concentration of 800 $\mu\text{g/mL}$. Regarding antioxidant analyses, CEO showed the ability to reduce the radicals ABTS ($\text{IC}_{50} = 143.30 \mu\text{g/mL}$), DPPH ($\text{IC}_{50}$ of 254.41 $\mu\text{g/mL}$) and β-carotene/linoleic acid (IC_{50} of 1476.50 $\mu\text{g/mL}$). NLCs were successfully obtained, with nanometric size ($< 100 \text{ nm}$), low polydispersity index (< 0.5), zeta potential between -13 to -18 mV, high encapsulation efficiency ($> 93\%$) and low cytotoxicity. Through transmission electron microscopy analysis, it was possible to confirm the formation of nanometer-sized spherical particles. In the in vitro release test, NLCs promoted sustained release from CEO from 4h until the end of 12h of the experiment. Thus, the study aims to contribute as a new natural therapeutic option for hyperchromia, such as melasma, solar lentigo and freckles.</p>



P57

Title	Evaluation of the antioxidant potential of <i>Kappaphycus alvarezii</i> extract in cosmetic formulation for skin protection
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Abstract	<p>Kappaphycus alvarezii is an algae of great commercial value and its use extends from the food to cosmetics industries. This macroalgae, in addition to being rich in fiber and carbohydrates, is a source of minerals and bioactive compounds that have potent antioxidant activity. Antioxidants play a fundamental role in protecting the skin, restoring cellular structure and acting to prevent aging, by eliminating molecular damage caused by reactive oxygen species, generated by cellular metabolism or exogenous sources. The objective of this work was to evaluate the antioxidant activity of the hydroethanolic extract of <i>K. alvarezii</i> and its effectiveness, when incorporated into a cosmetic serum formulation. The extract was produced from fresh algae samples, obtained from marine farms through maceration, followed by rotary evaporation and freeze-drying. The in vitro antioxidant activity of the lyophilized extract, as well as the formulations containing concentrations of 0.5% and 1.0% of the macroalgae extract, were evaluated using the DPPH free radical scavenging method. Cell viability was assessed using the MTT method for in vitro safety analysis. The evaluation of the antioxidant activity of the extract presented promising results regarding the reduction of the DPPH radical. The assessment of cell viability indicated that, at concentrations of 0.5% and 1% of extract, cell survival was 82.7% and 53.3% respectively. The antioxidant activity of the extract varied in different concentrations, from 30.2% (0.0625% concentration) to 66.8% (1% concentration). At concentrations of 0.5% and 1% of the extract, there was no significant difference in relation to antioxidant activity ($p > 0.05$), just as there was no significant difference at the same concentrations for the evaluation of the antioxidant potential of the formulations ($p > 0.05$), indicating that both extract concentrations could be applied to the formulations. These results indicate that <i>K. alvarezii</i> extract has potential as an antioxidant agent and could be a valuable ingredient in the development of cosmetic formulations aimed at skin protection.</p>



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Title	Lipoperoxidation profile of the stratum corneum of black and caucasian participants: quantification of the UV-induced lipoperoxides by the HPLC-TBARS-EVSC protocol
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Abstract	<p>Brazil, a tropical country, receives intense sunlight exposure. The geographic feature renders the skin health of its population highly susceptible to prolonged solar radiation. Particularly, black individuals often expose themselves to sunlight without employing photoprotective measures, such as sunscreen. Ultraviolet radiation (UVR) induces photoaging, sunburn, oxidative stress, immunosuppression, and cutaneous carcinogenesis. Nonetheless, the skin possesses protective mechanisms against UVR, like the stratum corneum (SC) structure which serves as a barrier, preventing water and electrolyte loss, and contributing to skin hydration, among other attributes. However, when exposed to UVR, lipids of the SC undergo damage, leading to the formation of free radicals and reactive oxygen species (ROS) implicated in skin harm. Consequently, UVR increases skin lipoperoxidation, compromising skin protection. Although black and white skin exhibits differences, these disparities regarding UVR remain poorly understood. Empirically, it is believed that black skin possesses attributes that confer greater resistance to UVR, although no robust data confirm this hypothesis. Thus, we employed the HPLC-TBARS-EVSC (high-performance liquid chromatography-thiobarbituric acid reactive substances-ex vivo stratum corneum) protocol to investigate the black and caucasian skin regarding their cutaneous oxidative stress through the quantification of the SC lipid peroxidation ex vivo. The investigation was previously approved by the local ethics committee and included 16 participants (8 of black skin and 8 caucasians). The participants' SCs were obtained randomly from the forearms by tape stripping (six tapes per site) from two delimited areas of 9.5 cm². The tapes containing the SC from one site were artificially irradiated in a photostability chamber. Then, SC samples were extracted from the tapes and the HPLC was used to quantify the biomarker, the malondialdehyde – 2-thiobarbituric acid (MDA-TBA2) adduct. Overall, black and caucasian SCs presented low levels of the MDA-TBA2 adduct before irradiation and an expressive elevation of the biomarker after the UV stress. The irradiated SC samples from the black participants had an increase of the lipid peroxides of, approximately, 458%. To the caucasian participants, the SC lipoperoxidation elevated about 286%. These results indicated that black skin experienced a meaningful enhancement of the formation of UV-induced free radicals, as well as the caucasian SC, however, in a lower intensity. Consequently, photoprotective measures are also imperative for subjects with black skin aiming at the reduction of the generation of lipid peroxides, increasing the protection of the skin's outer layer. Further studies are warranted to elucidate the impact of UVR on the black population's skin health and to determine the most effective photoprotective strategies and products tailored to their specific needs.</p>



P59

Title	Development of antiaging formulation containing oils from the Amazon region
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Abstract	<p>Brazil is one of the largest producing and consuming markets for the cosmetics industry in the world, with a strong tendency towards the use of more natural cosmetics. Therefore, it is natural that the demand, use and development of formulations with regional products increases over the years, considering Brazilian biodiversity. Thus, typical fruits from the Amazon region represent a great interest, with diverse possibilities for this sector. This article aims to develop an anti-aging formulation, using fruit oils typical of this region. The initial research focused on understanding the characteristics necessary to develop an anti-aging cosmetic formulation, including the effects of skin aging, influenced by extrinsic and intrinsic factors, in addition to the properties of the selected fruits. Through a bibliographic research, the vegetable oils of cocoa, buriti, açai and pataua were selected, due to described amount of flavonoids and antioxidants present, which will contribute to the desired effect. These components will act by reducing the amount of free radicals, reducing oxidative stress and the aging of skin cells. Prototypes were tested to incorporate plant active ingredients and evaluate accelerated stability according to the guidelines of the ANVISA Cosmetics Guides. The development of the base formula included research about natural surfactants and emulsifiers in different concentrations, based on pharmacotechnical calculations. Data regarding accelerated stability will be presented in this study.</p>



P60

Title	Development of microemulsions containing essential oils to prevent skin aging
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Abstract	<p>Development of microemulsions containing essential oils to prevent skin aging. Marília dos Anjos Fonseca Leite, Federal University of Sergipe, 2023.</p> <p>Over time, human skin undergoes several changes due to intrinsic and extrinsic factors, resulting in signs of aging. Intrinsic factors are related to natural aging, while extrinsic factors, such as exposure to UV rays, can accelerate this process. Essential oils in cosmetics have been extensively investigated due to their varied biological activities and high acceptance by consumers. At the same time, nanostructured formulations have been the target of interest in the cosmetic industry for directing the entry of cosmetic active ingredients into the skin, thus improving their topical action. Therefore, the objective of this study was to develop a nanostructured formulation from microemulsions containing essential oil to prevent skin aging. Initially, pseudoternary phase diagrams were obtained using a mixture of surfactants: PEG-40 Hydrogenated Castor Oil or PEG-7 Glyceryl Cocoate in a 1:1 (v/v) ratio. Capric/Caprylic acid triglycerides (TACC) were used as the oil phase and distilled water as the aqueous phase. The transparent systems obtained were characterized through visual analysis and polarized light microscopy. Based on these results, transparent liquid systems (SLT) with 5% oil phase and lower surfactant concentration were selected. The essential oils of <i>Citrus sinensis</i> L. Osbeck. (orange oil), <i>Pelargonium graveolens</i> L. (geranium oil), <i>Rosmarinus officinalis</i> L. (rosemary oil) and <i>Cinnamomum cassia</i> (cinnamon oil) were incorporated into the selected systems at a concentration of 1% and evaluated for droplet size, polydispersity index (IPD), pH, conductivity and rheology. Next, the antioxidant activity of the essential oils and formulations was carried out. As a result, it was observed that all formulations presented isotropy and Newtonian behavior, characteristic of microemulsions (MEs). The pH of the formulations varied between 4.5 and 7.0, compatible with the skin, the droplet size was less than 50 nm and the IPD was less than 0.4. Regarding antioxidant activity, among the four essential oils, the most active was <i>Cinnamomum cassia</i> obtained from the leaves. ME containing cinnamon essential oil also showed better antioxidant activity and may be a promising formulation in preventing skin aging.</p>



P61

Title	Synthesis of nanohydroxyapatite encapsulated in liposomes for use in dermocosmetics
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Abstract	<p>Brazil is one of the global leaders in cosmetics consumption and research, driven by concerns about skin aging, where the loss of collagen is crucial for skin firmness and elasticity. Hydroxyapatite (HAp) is used in dermocosmetics to stimulate collagen production and delay aging. The difficulty in penetrating the skin is a challenge for cosmetic formulations, and liposomes are proposed as a solution, as they are amphiphilic vesicles that protect the encapsulated ingredients. The study proposes the use of nanoHAp encapsulated in liposomes as a non-invasive alternative to injectable HAp, aiming to stimulate collagen production and delay skin aging, offering a more comfortable and affordable option.</p> <p>Methodology:</p> <p>Liposomes (thin films) and Hap (precipitation) were synthesized, followed by encapsulation. This method was proven through the characterization of the system, through Fourier Transform Infrared Spectroscopy, as well as the techniques of dynamic light scattering, X-ray diffraction, scanning and transmission electron microscopy, and thermogravimetry was also performed.</p> <p>Results and Discussion:</p> <p>The synthesis of HAp was successful, demonstrating similarity with biological HAp in the diffractogram, characterized by a high degree of crystallinity, which favors its reabsorption in the body. Thermal treatment (sintering) directly affects the diameter of the particles, resulting in grain growth and increasing their crystallinity. The sonication process produces cavities through the phenomenon of acoustic cavitation, leading to the formation of nanoHAp causing the bubbles to implode when they reach a critical size. SEM analysis showed distinct characteristics for liposomal and nanoHAp vesicles, suggesting a predominance of vesicles. Electron microscopy confirmed the formation of liposomes, showing nanoHAp-like particles inside the aqueous core of the liposomes. This indicates the successful encapsulation of nanoHAp into liposomes.</p> <p>Conclusion:</p> <p>The synthesis of nanoHAp and liposomes was successful using specific methods. The nanoHAp was encapsulated in liposomes through sonication, and analyzes confirmed the interaction between the structures, validating the encapsulation of the complex. Future tests will enable the formulation of dermocosmetics that stimulate collagen restoration, slowing down skin aging.</p>



P64

Title	The effect of cosmetic ingredients of phenol type on immediate pigment darkening and their (photo)protective action in association with melanin pigmentation: a model in vitro study
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Abstract	<p>Introduction: Immediate pigment darkening, the first response of skin to solar exposure leading to undesired irregular pigmentation and dark spots, is the rapid onset of melanin pigmentation resulting from oxidation of the melanogenic indoles, namely 5,6-dihydroxyindole (DHI) and 5,6-dihydroxyindole-2-carboxylic acid (DHICA) available in epidermal melanocytes. Phenolic compounds used as cosmetic ingredients, such as 6-paradol, phenylethyl resorcinol, and ginger extract, are recognized for their antioxidant properties and their ability to inhibit tyrosine kinase. This study aims to elucidate the relationship between the presence of these cosmetic ingredients and IPD, as well as to evaluate their effectiveness in antioxidant and DNA protection.</p> <p>Methods: In vitro studies were conducted to investigate the influence of phenolic ingredients on the photo-oxidation of DHI and DHICA, lipid photooxidation, DNA damage, and thymine decay induced by solar radiation.</p> <p>Results and Discussion: It was observed that the inclusion of phenolic cosmetic ingredients resulted in a reduction in the photooxidation of DHI and DHICA, thereby decreasing melanin formation (25–30% decrease with phenylethyl resorcinol). Both paradol-6 and ginger extract were able to halve the peroxidation of linoleic acid in a riboflavin-sensitized photoreaction. Additionally, the decay of thymine, both as free thymine and as a DNA base, was nearly completely inhibited in the presence of these phenolic compounds.</p> <p>Conclusion: These results open new perspectives in the development of formulations for skincare, which help control blemishes and combat the effects of aging induced by sun exposure.</p>



P66

Title	Skin of colour: High sun protection factor combined with exclusive antioxidant complex to prevent and treat signs of ageing
Authors	L.B. Silva ^{1*} , P.P. Soldati ¹ , P.C. Moncayo ¹
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Abstract	<p>Introduction</p> <p>The development of sunscreens that adapt to and are effective on different skin types and tones is an area of progress in the study of cosmetic formulations. Due to the wide spectrum of skin pigmentation, the efficacy and acceptability of conventional products remain variable among population groups. Therefore, the aim of this study was to clinically evaluate a new sunscreen on different skin types and tones.</p> <p>Material and Methods</p> <p>The evaluation of UVA-PF and SPF factors followed the ISO 24443:2012 and ISO 24444:2019 methodologies, respectively. MMP-1 synthesis was assessed in skin explants. The clinical tests were carried out on subjects with Fitzpatrick phototypes ranging from II to VI, by applying a formulation containing a combination of active ingredients from Brazilian biodiversity to the face for up to 60 days. Different parameters were assessed, namely: hydration, sebum analysis, image analysis and evaluation of skin tone homogeneity.</p> <p>Results and Discussion</p> <p>The UVA-PF and SPF values obtained were 18.4 and 50.7, respectively. MMP-1 synthesis was reduced by 49% after 30 days. The product was able to increase skin hydration by 32% and 22% after 15 min and 30 days, respectively. Skin oil levels were maintained up to 8 hours after application of the product, with no variation from the initial time. After 30 days, there was a 24% reduction in oiliness in the frontal region of the face. After 60 days of use, there was a 7.7% reduction in wrinkles and expression lines, with 94% panel responsiveness. There was also an improvement in the homogeneity of skin tone after 60 days, with a 3.5% reduction in color variation.</p> <p>Conclusion</p> <p>Strategic approaches during the development of cosmetics containing comprehensive sun protection are important to ensure that all audiences are catered for, regardless of skin type or tone. The combination of potent active ingredients with appropriate technical applications contributes to new products that are suitable for consumers.</p>



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