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**34°** Congresso Brasileiro  
de Cosmetologia

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## POSTER ABSTRACTS

### P02

<b>Title</b>	<b>Accelerated Stability Study and Oxidation Evaluation in Non-Ionic Emulsions Enriched with Essential Oils</b>
<b>Authors</b>	Karina L. C. Maso *; Vicente N. Sanford; Ana Thais S. Damasceno
<b>Affiliations</b>	WU Cosmetic Care, Eusébio-CE, Brazil
<b>Abstract</b>	<p>Recently, in industrial daily life, it has been possible to see that essential oils have been highly requested by consumers in the cosmetics field. The challenge that the cosmetic industry faces is the incorporation of these organic raw materials into formulations that present the desired and legally required stability by quality criteria. This study provides details on the physicochemical and organoleptic results of the accelerated stability at different application percentages of three essential oils (Lavender, Lemongrass and Citronella) in a standard non-ionic emulsion base (body cream) and at different application percentages of the antioxidant BHT (butylhydroxytoluene). 21 formulations were prepared and taken to accelerated stability studies for 28 days in the following parameters: cycles, environment and sunlight (63 samples total). The results were evaluated using Microsoft Excel, graphically representing (through clustered columns) the stability trend for each essential oil tested, with a result tolerance value predefined by the company. After this analysis, it was possible to conclude that the Citronella EO results showed stability in the formulations from 0.02% of BHT, which suggests suitability of its use as an essence in this type of cosmetic base, without the product's rheology being committed during the foreseen period of validity. On the other hand, the results of the Lavender EO showed just a slight change in color at all concentrations of the antioxidant in sunlight, which suggests that it can also be used as an essence, as long as the possibility of slight alteration foreseen is considered. The results of the EO of Lemongrass, rich in monoterpenes (highly unstable), showed notable changes in pH, color and odor of the samples in all percentages of BHT, what makes this EO not stable for its use as an essence. To ensure the stability of products containing EO of Lavender or Citronella, it is recommended that the emulsion be filled in dark or amber colored bottles. The performance of these stability studies by the cosmetics formulator is vital to ensure the delivery of a safe and stable product to the market.</p>





## P04

<b>Title</b>	<b>Microbial Biopigments for the Development of Moisturizing Lip Mask</b>
<b>Authors</b>	Mariane M. Vergilio <sup>1</sup> ; Laura M. Aiello <sup>2</sup> ; Carolina Ishimoto <sup>3</sup> ; Juliano L. Bicas <sup>3</sup> ; Gislaine R. Leonardi <sup>1,2,*</sup>
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<b>Abstract</b>	A Consumers' search for cosmetics, which have ingredients of natural origin in their formulation, becomes stronger every year. Biotechnology has contributed to the success of research aimed at finding raw materials that can color cosmetic formulations. Bicaferine is a red polyketide produced by several <i>Fusarium</i> species. Alternatively, the red fungal biomass obtained by submerged fermentation of <i>Fusarium oxysporum</i> in rice medium has a red color and turns blue after heat treatment. Both the red extract containing bicaferin (EV) and the blue biomass (BP), for which the biological tests indicate the absence of acute toxicity, have potential use in the food, cosmetic and pharmaceutical industries, given the new market trend in offering natural, renewable and sustainable products. <i>Fusarium</i> -derived pigments can be industrially used not only because of their coloring power but also because of their already reported biological activities (e.g., antimicrobial activity). On the other hand, lip moisturizers are widely used by both men and women to prevent dryness caused by the sun, wind and cold. In this context, the objective of this project was to carry out the application of microbial biopigments in the elaboration of moisturizing lip cosmetic products. As a result, the tested biopigments conferred reddish pigmentation to the developed lip mask. However, there is greater homogeneity of the formulation produced with EV compared to that produced with BP. In conclusion, the biopigments tested have the potential for cosmetic application, as well as offering a marketing advantage by providing natural and sustainable appeal.

## P05

<b>Title</b>	<b>Mapping of the Frequency of Use of Makeup by Adult Women, with Lower Purchasing Power, Residents in Brazil</b>
<b>Authors</b>	Marcos Cesar Veçoso, Newton Andreo Filho, Patrícia Santos Lopes, Vânia Rodrigues Leite e Silva
<b>Affiliations</b>	Universidade Federal de São Paulo - UNIFESP
<b>Abstract</b>	Programs such as “Look Good, Feel Better” (Taggart et al., 2009), a private initiative that involves encouraging and orienting personal care as a way of positively impacting the quality of life of adults with cancer, have been recognized as effective for this purpose, as already demonstrated experimentally, establishing a link between the use of cosmetics and well-being (Korichi et al., 2008). Additionally, self-care with appearance is related to several aspects of human success and power (Soaigher et al., 2016) and is a strengthening attribute of women's self-esteem (Diniz & Ferreira, 2020). The topic has been the subject of studies, such as an exploratory investigation into the factors that drive the consumption of cosmetics (Strehlau et al., 2015), and which, in the end, raises two hypotheses relating the more intense consumption of cosmetics by mature and also from higher socioeconomic classes. Thus, mapping the frequency of make-up use among the adult female population (over 30 years old) and with lower purchasing power (classes B2 and C) can constitute



an important addition to the data set that makes it possible to advance towards a better understanding of the contributions of the use of makeup to the well-being of this public, thus constituting the objective of this work. A semi-probabilistic national sample of volunteers in the targeted profile was studied, via an electronic questionnaire applied to participants of a national online panel representative of the Brazilian population, from which, among other points, the frequency of makeup use was surveyed. In total, 40.1% said they use makeup only on special occasions or even never (or almost never). There was no statistically significant association between the frequency of makeup use and different regions of the country. However, statistically significant associations were identified between the frequency of makeup use and: 1) socioeconomic class and age groups considered, helping to answer the aforementioned hypotheses and 2) self-report of anxiety, adding a new hypothesis to be investigated.

## P06

<b>Title</b>	<b>Benefits of Pequi Oil in Cosmetics for Homeostasis and Skin Barrier Function</b>
<b>Authors</b>	Letícia Kakuda *; Patrícia M. B. G. Maia Campos
<b>Affiliations</b>	School of Pharmaceutical Sciences of Ribeirão Preto – USP, São Paulo, Brazil
<b>Abstract</b>	<p>The demand for sustainable and plant-based cosmetics has increased significantly in recent years. In this scenario, the application of ingredients from Brazilian biodiversity in cosmetics, such as pequi oil extracted from the species <i>Caryocar brasiliense</i> Cambess, native to the Brazilian cerrado and with a rich composition of active metabolites, can result in innovative products. In this context, the aim of this study was to develop and evaluate the physical-mechanical, sensorial properties of cosmetic formulations containing pequi oil (SisGen: A15D96E), and the short-term clinical efficacy of these formulations. For this, a gel cream formulation was developed with or without (vehicle-F1) 5% pequi oil (F2), which were evaluated the texture profile and spreadability using the Texture AnalyzeTA.XPlus® Texturometer. The stability test by determination of the rheological behavior was performed in rheometer Brookfield®RVDV3. The formulations were submitted to thermal stress at room temperature, 37 and 45°C and evaluated every 7 days, for 28 days. In the clinical study (CEP nº 45620321.2.0000.5403) 22 healthy participants, aged 20 - 30 years, were enrolled. The formulations were evaluated for their sensorial properties and clinical efficacy by instrumental measurements in terms of stratum corneum water content - Corneometer®, transepidermal water loss (TEWL) - Tewameter®, skin microrelief - Visioscan® VC 98 and sebum content (Sebumeter®) before and after 2 hours of application of the formulations in the frontal region of the face. After 28 days of study, there was no change in the rheograms at all times and storage conditions. The texture profile results corroborated with the sensorial analysis data, as lower values of the work of shear parameter, the spreadability in the sensorial properties are better. In the efficacy study, the application of the formulation with pequi oil improved the skin microrelief by increasing the Sesm parameter, related to skin smoothness, increased hydration, reduced TEWL and did not alter sebum. In conclusion, pequi oil added benefits to the formulation, improving the skin barrier function, by significantly reducing TEWL and increasing hydration when compared to the vehicle.</p>



## P07

<b>Title</b>	<b>Ascorbic Acid Incorporated in Liquid-Crystalline System: Development, Physicochemical Characterization, and Evaluation of Antioxidant Activity</b>
<b>Authors</b>	Analara Cordeiro de Macêdo <sup>1</sup> , Nayara da Silva Saú <sup>2</sup> , Tamiris Ayumi Okada <sup>2</sup> , Bruna Galdorfini Chiari Andréo <sup>2</sup> and João Augusto Oshiro Junior <sup>1</sup> .
<b>Affiliations</b>	<sup>1</sup> Universidade Estadual da Paraíba – UEPB, Campina Grande, Brasil. <sup>2</sup> Universidade de Araraquara – Uniara, Araraquara, Brasil
<b>Abstract</b>	The use of ascorbic acid (AA) as an interesting asset for the cosmetic industry is attributed to the stimulation of collagen fiber formation, and an increase in the sun protection factor when associated with sunscreens. However, AA is thermolabile, oxidizable, and hydrophilic. Thus, an attractive approach to overcome these limitations is the incorporation of AA into liquid-crystalline systems (LCS), which have distinct rheological properties due to the fluidity of a liquid and the crystallinity of solids. Furthermore, they can be developed using vegetable oils with antioxidant action to enhance the benefits of the formulation. This study aims to develop and characterize AA incorporated in LCS composed of grape seed oil, isopropyl myristate, water, and Brij® O10, and to evaluate its stability and antioxidant activity. The LCS was obtained from a phase diagram in the form of an equilateral triangle. Drawing its lines parallel to the axes corresponding to each component, fifty-four points with different concentrations are obtained. The characterization of the internal structure, physical-chemical evaluation, and antioxidant activity was gotten by polarized light microscopy, low-angle x-ray scattering (SAXS), rheology, and determination of antioxidant activity. The results allowed classifying the formulations into: i) viscous opaque system; ii) liquid opaque system (LOS); iii) viscous transparent system (VTS) and; iv) transparent liquid system. Through microscopy it was possible to identify that only the formulations named BJ22 (lamellar) and BJ50 (hexagonal) were structurally organized, a result confirmed by SAXS, thus, they were chosen for the other experiments along with BJ18 (control). These formulations demonstrated a reduction in viscosity with AA, probably due to its acid character that can interfere with the organization of the SLC. However, they were characterized as non-Newtonian and pseudoplastic fluids, reducing viscosity with increasing shear. The stability and the DPPH method determined that BJ50 was effective in delaying the oxidation of AA and maintaining its antioxidant activity, justified by the higher proportion of surfactant and formation of hexagonal structures, which reduces the exposure of the drug to the medium. Therefore, it becomes evident that the BJ50 formulation is suitable for commercialization, as it has low cost and adequate spreadability properties.

## P10

<b>Title</b>	<b>Development and Assessment of the Physical Stability of Hair Conditioner Containing Avocado Oil (<i>Persea Americana</i> Mill.)</b>
<b>Authors</b>	Bárbara Aires Campos Pinto
<b>Affiliations</b>	Universidade de Brasília
<b>Abstract</b>	Considering the composition and properties of avocado oil ( <i>Persea americana</i> Mill.), the cosmetic industries have become increasingly interested in the manufacture of products using this fruit in their formulation, since it is rich in proteins, vitamins A, C and E, fatty acids, amino acids and other lipid compounds that have an excellent emollient action for all hair types, with a moisturizing effect, especially on damaged and dry hair. Therefore, the use of this oil is widely considered in cosmetic formulations that favor hair care, as they are essential



for maintaining hydration and emollience. Thus, the objective of this work was to develop, evaluate the physical stability and effectiveness of a paraben-free hair conditioner containing avocado oil. Therefore, three formulations were developed: a base formulation without avocado oil, another containing 5% avocado oil and a third containing 10% avocado oil. Stability tests were carried out for the conditioners whose microscopic and macroscopic characteristics were observed considering the pH and spreadability analyzes of the formulations that were packaged under different temperature conditions (5, 23 and 40 °C). According to the results obtained, conditioners containing avocado oil remained stable at the end of the 90-day study. Inhibition of the growth of *Staphylococcus aureus* was observed. Regarding the Differential Scanning Calorimetry (DSC) test, the results presented suggest two events in the curves obtained in the African and Caucasian hair types, in which both acquired a very significant conditioning hydration level, thus indicating an indication of the effectiveness of the formulations.

## P11

<b>Title</b>	<b>Effectiveness of a Prebiotic Lotion Containing Panthenol, Niacinamide, Bisabolol, Hyaluronic Acid, Tocopherol and A-Glucan Oligosaccharide on Tissue Regeneration After Tattoo</b>
<b>Authors</b>	Ana Paula Eskildsen Pagano*; Deli Brito de Oliveira
<b>Affiliations</b>	Theraskin Farmacêutica Ltda.
<b>Abstract</b>	Tattooing is an invasive procedure that causes an injury to the skin. After an injury, it is necessary for the body to initiate repair through the healing process, which is controlled by several cells through the secretion of growth factors, cytokines and chemokines. Growth factors are proteins that stimulate and activate cell proliferation and migration through the activation of angiogenesis and gene transcription, among other reactions, which activate and accelerate the healing process. The production of inflammatory mediators associated with the injured skin is an important factor in the exacerbation of the immune response that can negatively interfere with the skin healing process, unharmonizing the stages of re-epithelialization, cohesion and epidermal hydration. The development of a product that helps in the regeneration of injured skin by increasing the production of growth factors, as well as being able to reduce the production of inflammatory mediators, can be an important differential in the tissue repair process. The objective of this study was to evaluate the efficacy of a prebiotic lotion in tissue regeneration after tattooing, by quantifying the tissue growth factor TGF- $\beta$ and the inflammatory mediators IL-1 $\alpha$ and histamine. Human skin fragments obtained from elective plastic surgery were submitted to the tattoo procedure and treated with prebiotic lotion for 4 days. Then, the quantification of TGF- $\beta$ , IL-1 $\alpha$ and histamine by ELISA was performed. The skin fragments submitted to the tattoo procedure showed a reduction of 30.22% in the production of TGF- $\beta$ and an increase of 28.42 times and 150.68%, respectively, in the production of IL-1 $\alpha$ and histamine when compared to the basal control group, while treatment with prebiotic lotion was able to significantly increase the production of TGF- $\beta$ by 106.51% and significantly reduce the production of IL-1 $\alpha$ and histamine by, respectively, 28.20% and 46.79 % in relation to the tattoo group. The prebiotic lotion had a positive effect on the tissue repair and regeneration process by increasing the production of TGF- $\beta$ and reducing the anti-inflammatory markers IL-1 $\alpha$ and histamine.



## P12

<b>Title</b>	<b>Biophysical and Structural Characterization of Photoaging Skin Compared to Less Photoexposed Skin</b>
<b>Authors</b>	Gabriela Maria D'Angelo Costa*, Patrícia Maria Berardo Gonçalves Maia Campos
<b>Affiliations</b>	School of Pharmaceutical Sciences of Ribeirão Preto, University of São Paulo, Avenida do Café s/n, Vila Monte Alegre, Ribeirão Preto, SP, Brazil.
<b>Abstract</b>	<p>The characterization of the skin in regions with different intensities of photoaging is fundamental to develop more effective cosmetic products. Photoaging is a result of prolonged sun exposure that results in visible skin changes, such as wrinkles, pigmentation changes, sagging, and dryness. In addition, photoaging skin presents morphological and structural changes that can be assessed only by non-invasive instrumental measurements. In this context, the aim of this study was to evaluate the biophysical, morphological and structural characteristics of the skin of the frontal region of the face and volar region of the forearms, which suffers less damage from solar radiation, using biophysical techniques and imaging analysis. After approval by the Research Ethics Committee (CEP/FCFRP 84599418.8.0000.5403), 27 healthy women with presence of photoaging on the face, age 39 to 59 years, Fitzpatrick Phototype II and III were recruited. Measurements were taken on the frontal region of the face and volar region of forearm by Dermascan® - high frequency ultrasound to evaluate the dermis, Visioscan®, Tewameter®, Corneometer®, Colorimeter® and Cutometer®. Statistical analysis of parametric and non-parametric data was performed by the Shapiro-Wilk test and Student's t-test or Man-Whitney. The results obtained showed significant differences in dermis thickness and echogenicity, transepidermal water loss, skin coloration, elasticity and in the skin microrelief parameters roughness (Ser), flaking (Sesc), and skin smoothness (Sesm) between the skin of the frontal and volar forearm regions. The volar region of the forearm showed greater elasticity and echogenicity of the dermis, lighter coloration and better skin microrelief. The frontal region of the face, which showed signs of photoaging, showed less echogenic and thicker dermis, lower stratum corneum water content and higher transepidermal water loss and skin roughness. In conclusion, photoaging skin has different biophysical and structural characteristics than skin that is less exposed to solar radiation, such as the volar forearm region. Finally, instrumental measurements are important to detect skin changes early and prevent the clinical signs of photoaging with the use of cosmetics.</p>

## P13

<b>Title</b>	<b>Cosmetic Formulations Development for Skin Hydration and Protection Containing Vegetal Oils</b>
<b>Authors</b>	G. F. Cadioli*; P. M. G. B. Maia Campos
<b>Affiliations</b>	School of Pharmaceutical Sciences of Ribeirão Preto – USP, São Paulo, Brazil
	<p>The skin's hydrolipidic mantle is essential to the maintenance of hydration and cutaneous homeostasis. Continuous exposure to expose components such as solar radiation can compromise this mantle, by causing skin barrier function changes. Thus, cosmetic formulations development based on biocompatible ingredients with the epicutaneous emulsion like vegetable oils that are rich in fatty acids such as linoleic and oleic acids is crucial to maintain the hydrolipidic mantle and skin physiology. In this context, the aim of the present study was the development and evaluation of moisturizing biocompatible cosmetic formulations based on vegetable oils aiming the maintenance of the skin hydrolipidic mantle. For that, emulsions</p>





formulations were submitted to stability tests by centrifugation, pH analysis and rheological behavior determination. The sunflower oil containing formulation was submitted to sensory properties and immediate efficacy evaluation for skin barrier function protection by transepidermic water loss measurement – TEWL. The results obtained showed that the formulations were stable and showed a non-Newtonian pseudo plastic behavior, which is suited for its purpose. Furthermore, the formulation containing sunflower oil reduced significantly the TEWL after 2 hours of application indicating a skin barrier function protection, beyond that it was well evaluated by sensory perception parameters as touch sensation, hydration, spreadability and smoothness. In conclusion, the formulations were stable maintaining its organoleptic characteristics and with rheological behavior and sensory properties suited to cosmetic products. In addition, the sunflower oil added developed formulation was effective protecting the skin barrier function. Finally, the cosmetic formulations based on vegetable oils containing lipid mantle's fatty acids development is fundamental to obtain cosmetic formulations biocompatible and more effective to maintain cutaneous physiology.

## P14

<b>Title</b>	<b>Development and Evaluation of Cosmetic Formulations with Film-Forming Properties Based on Polysaccharides From Natural Sources</b>
<b>Authors</b>	R. B Zanin*; L. Kakuda; P. M. B. G Maia Campos
<b>Affiliations</b>	School of Pharmaceutical Sciences of Ribeirão Preto – USP, São Paulo, Brazil
	<p>The exposome comprises a series of factors that individuals are exposed to daily, like solar radiation and pollution, which act on the skin triggering responses that accelerate skin aging. Thus, the development of cosmetic formulations with a film-forming effect is capable of reducing the skin pollutant interaction, such as polysaccharides and biopolymers. In this context, the aim of this study was to develop and evaluate the rheological behavior and the texture profile of cosmetic formulations containing the biopolymer composed of Tara extract (<i>Caesalpinia Spinosa</i> Fruit Extract) and red algae (<i>Kappaphycus Alvarezii</i> Extract), as well as the clinical efficacy and sensorial properties of these formulations. For this, formulations were developed and added (F2) or not (vehicle - F1) 1% of the active substance. After preliminary stability tests, the formulations were evaluated for rheological behavior (BrookfieldRVDV3T), texture profile and spreadability (TextureAnalyzeTA.XPlus®) for 28 days at room temperature, 37 and 45°C. The evaluation of efficacy was performed on the skin of the anterior region of the forearms, with 15 participants, aged 19 to 30 years. The regions were analyzed before and after 2 hours of application of the formulations, in terms of the skin microrelief, transepidermal water loss -TEWL, distribution of hydration and stratum corneum water content, using the equipment Visioscan®, Tewameter®, MoistureMAP and Corneometer®, respectively. The results showed that after 2 hours of application, the F2 formulation significantly reduced the TEWL and increased the stratum corneum water content and the water distribution on the skin surface When compared to F1. Regarding the texture profile, there was no change in the work of shear, which did not compromise the spreadability of the formulation in the sensorial properties, corroborating with the data obtained in the sensorial analysis, since the participants preferred F2 in relation to the parameters spreadability, stickiness and oily residue. Furthermore, the formulations were stable and showed non-Newtonian pseudoplastic rheological behavior, with no changes in the rheograms during the study. In conclusion, the formulation added to biopolymer under study was effective in protecting the barrier function and improving skin hydration.</p>



## P15

<b>Title</b>	<b>Evaluation of the Antioxidant Potential of a Fixed Oil from the Amazon Against the ABTS•+ Radical</b>
<b>Authors</b>	Fernanda B. Almeida; Vera Isaac *
<b>Affiliations</b>	São Paulo State University (Unesp), School of Pharmaceutical Science, Araraquara, São Paulo, Brazil.
<b>Abstract</b>	<i>Astrocaryum vulgare</i> Mart (SisGen - A6A557B) is a native and non-endemic palm species from Brazil, belonging to the Arecaceae family and popularly known as tucumã, found in the Amazon and the cerrado. The fixed oil of <i>A. vulgare</i> fruits has, in its chemical composition, several carotenoids, responsible for giving its orange color, being $\beta$ -carotene the major one, besides fatty acids and phytosterols, which are chemical substance classes of interest for cosmetic use, as antioxidants. Thus, this work aimed to evaluate the antioxidant potential of the fixed oil of <i>A. vulgare</i> fruits against the 2,2'-azinobis (3-ethylbenzothiazolin-6-sulfonic acid) radical (ABTS•+). To evaluate the antioxidant activity of <i>A. vulgare</i> oil, solutions of fixed oil, in acetone, were prepared in six concentrations, in triplicate. The results obtained were plotted on a graph of absorbance by the concentration of <i>A. vulgare</i> oil and the equation of the straight line was used to calculate the value of the Trolox equivalent antioxidant capacity or TEAC. The TEAC value was calculated by replacing y, from the straight-line equation of the ABTS•+ radical inhibition curve, with the absorbance value found for 1000 $\mu$ M of Trolox and then the result was divided by 1000, thus obtaining the value of 908.29 $\mu$ M Trolox/mg of oil, i.e., 1 mg of <i>A. vulgare</i> oil is required to present the same antioxidant activity performed by 908.29 $\mu$ M of standard Trolox. This methodology is a colorimetric reaction in which there is a reduction in absorbance at 734 nm as the capture of the radical by <i>A. vulgare</i> oil occurs. Environmental factors directly influence the inhibitory activity for the ABTS•+ radical. In addition, according to literature data, plant species can produce secondary metabolites that prolong the endpoint of the reaction, leading to false low TEAC values. A strategy to solve this problem would be to evaluate the kinetics of the reaction so that, only after the endpoint of the reaction, the determination of the TEAC value would be performed, thus guaranteeing more accurate results.

## P16

<b>Title</b>	<b>Formula Development Containing Starch from Carrots Peels, Potatoes Peels, Chayote Peels, and Carrots And Chayotes as Coloring and Thickening Products</b>
<b>Authors</b>	Nicole Natale Freitas *; Bruno Batista da Silva; Thiago da Cruz Canevari; Letícia Caramori Cefali
<b>Affiliations</b>	Universidade Presbiteriana Mackenzie- UPM, São Paulo, Brazil
<b>Abstract</b>	In order to minimize the environment impacts during the production of cosmetics formulation, it has been interesting to use components of food waste, such as discarded vegetable peels during food preparation, and so these peels can be used as products for cosmetic formulas. Therefore, the purpose of this study is extracting starch from vegetable peels that are discarded after food preparation and then be used as thickening products in oil water emulsion. So, potato peels, chayote peels and carrots peels were washed, dried, and immersed in a watery solution of sodium metabisulfite. After letting the peels rest in the solution, the material obtained was filtered and ground with distilled water. This dough was vacuum filtered, the starch was separated from the water through decantation and then dried in a heater. The obtained starch was white (the colour of the potato peel), orange (the colour





of the carrot peel) and green (the colour of the chayote peel), the final output was 3.23%, 1.17% and 0.63% from each sort of peel. An oil water emulsion was developed containing 5% starch, the product has an orange colour due to the presence of beta carotene, a specific scent, creamy aspect, pH 5.76, and 0.97 g/mL density. The formula was submitted to a stability study, and so it was observed that the emulsion was chemically and physically stable when submitted to a room temperature (27 +/- 3 °C) and protected from light. The use of the starch obtained from potato peel, chayote peel and carrot peel can be considered a sustainable alternative for food waste utilization. This starch contributes to the chemical-physical emulsion stability, besides giving pleasant colouring and aspect.

## P17

<b>Title</b>	<b>Development of Powder Eyeshadow Containing Natural Origin Glitter</b>
<b>Authors</b>	Amanda S Roxo*; Bruno B. da Silva; Letícia C. Cefali
<b>Affiliations</b>	Universidade Presbiteriana Mackenzie – UPM, São Paulo, Brazil
<b>Abstract</b>	Glitter of natural origin is a sustainable option to minimize the impacts of microplastic presence on environment, and in many cosmetic formulations, the synthetic version is used frequently. In short, the aim of the study was to develop a cosmetic formulation of powder eyeshadow for eyes, containing glitter of natural origin, together with pigment obtained from beetroot and with the sodium chloride addition to replace the mica use, thus offering scintillation to formulation. For this, pigment was first obtained from beetroot extract and then the glitter from gelatin. After that, cosmetic formulation was developed and the glitter was added, already colored by the extract presence and sodium chloride to evaluate color and shimmer effect. Formulation was also subjected to stability tests to be considered, finally, promising formula in replacement for ingredients derived from synthetic material commonly used in cosmetics.

## P18

<b>Title</b>	<b>Influence of Acerola Extract in the Rheological Behavior and Sensory Properties of Hydrogels</b>
<b>Authors</b>	Katarina B. Saraiva*; Vitoria Tonini; Patricia M. B. G. Maia Campos
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<b>Abstract</b>	Plant extracts, due to their wide composition and medicinal properties, have been applied in the development of cosmetics for various purposes, such as anti-aging, hydration, and control of skin oiliness. Polymers of natural origin have also been increasingly used in cosmetics to obtain hydrophilic gels and modifiers of the rheological properties of formulations. The ability of molecules of different sizes to be absorbed and released from their structure makes hydrogels attractive to be applied in the cosmetic area. Knowledge of how formulation ingredients can influence a cosmetic product is an important factor in its development. In this context, the aim of this work was to evaluate the influence of acerola extract on the rheological and sensorial properties of cosmetic gel formulations based on four different polymers - Sclerotium Gum, Ammonium Acryloyldimethyl taurate/VP Copolymer, Carbomer, and Hydroxyethylcellulose. The gels were added or not (vehicles) of acerola extract. The pH values were measured and the rheological and sensory parameters were analyzed using a questionnaire supported by the Sensorimeter® equipment. Data analysis showed changes in viscosities (P < 0.05) for the same gel with and without the addition of the extract. Previous



<b>Abstract</b>	<p>studies have demonstrated the influence of acid addition, or pH change, on the rheological behavior of gels, corroborating the result obtained, in which the addition of acerola extract resulted in a change in the viscosity of the gels. Other factors, such as the addition of substances as polysaccharides, present in acerola extract, can influence the rheological behavior of hydrogels. Sensory analysis showed that Sclerotium Gum and Ammonium Acryloyldimethyl taurate/VP Copolymer based gels were better evaluated. However, the Sclerotium Gum gel containing the acerola extract showed better results in the parameters of touch sensation, hydration, and spreadability. Furthermore, it was observed that the gels with the best sensory evaluation had lower values in the rheological parameters related to apparent viscosity and consistency index. Finally, the addition of the extract improved the sensory properties of the gels under study.</p>
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## P19

<b>Title</b>	<b>Antioxidant Phytoingredient of Brazilian Biodiversity with Cosmetic Applicability for Prevention of Skin Aging</b>
<b>Authors</b>	Samara V. F. Araújo <sup>1</sup> ; Stella M. A. G. Barreto <sup>1</sup> ; Júlia M Fernandes <sup>2</sup> ; Jean A. A. Silva-Filho <sup>1</sup> ; Augusto L. Souto <sup>3</sup> ; Silvana M. Z. Langassner <sup>1</sup> ; Márcio Ferrari <sup>1</sup>
<b>Affiliations</b>	<sup>1</sup> Federal University of Rio Grande do Norte - UFRN, Natal, Brazil. <sup>2</sup> University of Paris, Paris, France. <sup>3</sup> Federal University of Paraíba – UFPB, João Pessoa, Brazil.
<b>Abstract</b>	<p><i>Kalanchoe laciniata</i> (L.) DC., more commonly known as “saião” and “coirama branca”, is an easy to grow plant that contains in its chemical constitution active metabolites such as polyphenols and flavonoids that are used in skin products to prevent of skin aging. In cosmetics, the use of plant-based actives in nanoemulsion systems has received increasing attention. Therefore, this work aimed to obtain the hydroethanolic extract from the leaves of <i>K. laciniata</i>, quantify the phenolic compounds and total flavonoids, evaluate the <i>in vitro</i> antioxidant activity and develop cosmetic nanoemulsions with the obtained extract</p> <p>for use as a product to prevent skin aging. To this end, hydroethanolic turbo-extraction (50% ethanol, v/v) was carried out on the plant (in natura leaves): solvent proportion of 1:1 (w/v). The extract obtained was quantitatively characterized for the total concentration of phenolics and total flavonoids. The <i>in vitro</i> antioxidant potential of the <i>K. laciniata</i> leaves extract was evaluated using different methodologies: 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging; 2,2'-Azino-bis (3- ethylbenzothiazoline-6-sulfonic acid (ABTS.+) radical scavenging; scavenging of hydroxyl and superoxide radicals; metal ion chelation (Cu<sup>2+</sup> and Fe<sup>2+</sup>); and reducing power and total antioxidant capacity. Nanosystems were obtained from an experimental design (2<sup>3</sup>+3 CP) and characterized in terms of droplet size, polydispersity and zeta potential. The nanoemulsions were developed by the ultrasonication method. The developed systems were evaluated for their preliminary stability in an oven at 45°C for 5 days and accelerated stability for 90 days under different temperature conditions (4 °C, 25 °C and 45 °C). The extract showed 3.48% of phenolic compounds and 13.52 µg Eq/mg of total flavonoids. <i>In vitro</i> results of antioxidant activity demonstrated the potential of <i>K. laciniata</i> extract at different stages of the oxidative cascade. After 90 days under different temperature conditions, the systems were considered stable. Thus, the results demonstrate the antioxidant activity of the leaf extract of <i>K. laciniata</i>, showing its promising profile as a cosmetic raw material for formulations regarding the prevention of skin aging.</p>



## P20

<b>Title</b>	<b>Avaliação in vitro da Síntese de Melanina do Óleo de Semente da Amora Preta Xavante</b>
<b>Authors</b>	<b>Luana C. Teixeira</b> <sup>1</sup> ; Mariana D. Miranda <sup>1</sup> ; Ana Paula Horacio <sup>1</sup> ; Madeline de S. Correa <sup>2</sup> ; Daniela F. Maluf <sup>1</sup>
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<b>Abstract</b>	Blackberry xavante ( <i>Rubus</i> sp.) is a rich source of bioactives, such as vitamin A and C and polyphenols, owning relevant antioxidant activity and sunscreen factor. The ability to reduce or increase melanogenesis is interesting in certain cosmetics. This work aimed to evaluate using <i>in vitro</i> model the effect of blackberry seed oil in melanin synthesis. Blackberry xavante oil was obtained by extraction with supercritical CO <sub>2</sub> . The synthesis of melanin was evaluated through the spectrophotometric method. Human melanoma cells were plated, treated with sterile tyrosine, supplemented medium, blackberry oil, Inajá oil, nanocapsules of blackberry oil and nanocapsules of Inajá oil, followed by incubation for 72h. The reading was performed at the wavelength of 405 nm. Compared to the control, the cells treated with blackberry xavante oil and its nanocapsules did not show any significant changes in the melanin synthesis by the method applied.

## P21

<b>Title</b>	<b>Evaluation of the Rheological Behavior of Makeup Bases with Treated and Untreated Pigments</b>
<b>Authors</b>	<b>Hariel M. U. Tessaro</b> ; Vera L. B. Isaac
<b>Affiliations</b>	São Paulo State University (Unesp), School of Pharmaceutical Sciences, Araraquara, Brasil
<b>Abstract</b>	The use of colored cosmetics has shown an increase in market sales, even with the pandemic period currently experienced. Among the characteristics of the product that are evaluated by the consumer, is its ease of application, that is, the force that she will have to use to apply the product in the desired location. The objective of the present work was to evaluate the rheological behavior of two makeup bases, one of them manipulated with treated pigment, and the other with untreated pigment. Each of the formulas was manipulated twice, the difference between them being the pigment used, in addition to the emulsifier: formula 1 contains triethanolamine stearate and formula 2 contains ethoxylated cetostearyl alcohol with 20 EO. After waiting the 24 hours necessary for the formulation to acquire consistency, each of the four formulas was evaluated in a HAAKE RS-1 rheometer and the result of the analysis was evaluated using the graphics provided by the equipment software. Regarding the results found, formula 1 with the treated pigment showed lower thixotropy when compared to the thixotropy of formula 1 with the untreated pigment. In relation to formula 2, the opposite was observed: the formula with the treated pigment showed greater thixotropy than the formula with the untreated pigment. Thixotropy is an important property of evaluation in cosmetics, as it facilitates spreadability and allows the release of actives, when necessary, during the application of the product. These results allow us to infer that the pigment is not responsible for the change in the rheological behavior, but the emulsifying agent used in the two different formulations.



## P22

<b>Title</b>	<b>Development of Cosmetic Formulations for Hand Care Based on Vegetable Oils: Sensorial and Texture Properties</b>
<b>Authors</b>	A. E. Lima *; L. Kakuda; P. M. B. G. Maia Campos
<b>Affiliations</b>	School of Pharmaceutical Sciences of Ribeirão Preto – FCFRP-USP, Ribeirão Preto, SP
<b>Abstract</b>	<p>The pandemic caused by Covid-19 has changed hygiene and hand care habits. Excessive hand washing and the use of alcohol gel can lead to the destabilization of the lipid barrier of the skin, causing dryness. In this context, the use of oils in cosmetics, due to their rich lipid composition, can protect the skin from damage caused by excessive hand hygiene. Thus, the aim of the study was to develop and evaluate the sensorial properties and texture profile of cosmetic formulations containing avocado and sunflower oil. For this, 4 gel cream formulations were developed containing or not (vehicle-F1), 2% of avocado oil (F2), 2% of sunflower oil (F3) or the association of these oils (1% each-F4). The formulations were evaluated in terms of texture profile and spreadability, using the Texturometer TA.XTPlus, and sensorial properties. For the sensorial analysis, 35 participants, aged 20 to 30 years, were recruited, and they evaluated each formulation regarding the parameters of spreadability, touch sensation, hydration and white residue. In addition, the participants were questioned about the indication of use of each formulation, where they classified the use on the hands or the body. The results showed that the addition of the oils in association significantly increased the work of shear in the spreadability test, which compromised the spreadability of the F4 formulation in the sensorial analysis and the participants reported a slower absorption sensation. In addition, F1 presented lower values of firmness and obtained lower scores in sensory parameters, while F2, which presented higher firmness and consistency than F1, was the best classified in the sensorial analysis for application on the hands and body. However, only the formulation F2 containing 2% of avocado oil was considered suitable for application on the hands, in terms of texture parameters and sensorial properties. Finally, the choice of vegetable oil or their association was dependent on the indication of use of the formulation, which means, for the hands, the formulation containing avocado oil was preferred in sensorial perception.</p>

## P23

<b>Title</b>	<b>Industry 4.0 and Sustainability in the Cosmetic Industry</b>
<b>Authors</b>	Maria Eugênia Bombonato Rocha; Profa. Dra. Vania Passarini Takahashi
<b>Affiliations</b>	Faculty of Pharmaceutical Sciences of Ribeirão Preto, University of São Paulo – USP
<b>Abstract</b>	<p>Changes in priorities and needs guide consumers to a new position towards the environment in which they are inserted, demanding purposeful actions by companies that benefit the planet and society in addition to being economically sustainable. That said, the entire cosmetics supply chain will impact sustainability, therefore, it is essential to take into account the concept of Life Cycle Thinking (LCT). Within this, Industry 4.0 technologies can assist in a more sustainable manufacturing.</p>



## P24

<b>Title</b>	<b>Topical D-Panthenol Effects on Components and Physiological Parameters of the Stratum Corneum by Confocal Raman Microspectroscopy</b>
<b>Authors</b>	<b>V.T.P. Ferreira</b> <sup>1</sup> ; G.C. Silva <sup>2</sup> ; A.A. Martin <sup>2</sup> ; P. M. B. G. Maia Campos <sup>1*</sup> .
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<b>Abstract</b>	<p>Topical use of d-panthenol presents well established moisturizing properties and of maintenance and repair of the skin barrier function, however, its exact action mechanisms are not completely elucidated. In this context Confocal Raman Microspectroscopy is an optical method that enables non-invasive and non-destructive <i>in vivo</i> analysis of biological data with sensitive acquisition of subtle molecular changes in different skin layers. So the aim of this study was to evaluate the effects of topical d-panthenol on the components and physiological parameters of the stratum corneum (SC). For that, nine healthy research participants underwent skin evaluation by Confocal Raman Spectrometer Skin Analyzer 3510. Spectral data were acquired in the fingerprint region obtained from the skin of the anterior forearm, immediately before and 120 minutes after the application of a cosmetic formulation containing or not containing 5% d-panthenol.</p> <p>The semiquantitative determination of the skin Natural Moisturizing Factor (NMF) indicated an increase of the relative amounts of ceramides and lactate when compared to the control. The profile relative to the lamellar and lateral organisation of intercellular lipids (ICLs) suggested an increased hexagonal organisation at the first half of the SC, while the profile relative to the secondary structure of keratin suggested a depth-dependent increase of the relative amounts of the <math>\beta</math>-pleated sheet form, both related to increased water binding in the SC.</p> <p>In conclusion, the effects of topical application of D-panthenol on components and physiological parameters of the SC favour the physiological conditions of skin barrier function and the prevention of transepidermal water loss. In addition, the study contributes to the elucidation of D-panthenol action mechanisms and other concurrent biochemical processes.</p>

## P25

<b>Title</b>	<b>Assessment Oily, Spreadability and Demaquilant Action in Make-Up Base Containing Silicate and Solar Filters Comparing to Commercial Bases</b>
<b>Authors</b>	<b>L. A. Mascaro</b> *; V. L. B. Isaac *
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<b>Abstract</b>	<p>Brazil occupies a fourth position in the world ranking of consumption of personal hygiene, perfumery and cosmetic products, according to the Brazilian Association of the Personal Hygiene, Perfumery and Cosmetics Industry, reflection of growth of multifunctional products in Brazil and in the world, having become a trend from 2022. Products that combine benefits gain the attention of consumers, who seek, in addition to beauty, to reduce the time spent on skin care and the products needed for this care. In view of scenario, it was verified that, currently, on the market, there is only one products similar to the one of the present proposal. The work proposes an emulsified formula for makeup base, which promotes, in addition to the benefits, the reduction of phases in the “Skin Care”. The difference lies in the presence of a mineral active as a rheological and sensorial modifier, and sunscreens; the final product is a liquid makeup base with a dry touch and technological raw materials that bring a pleasant sensation during application, used for beautification and skin care on a daily basis.</p>





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After development, the formula was subjected to centrifugation to check for phase separation and compared with two commercial liquid bases in the greasiness, spreadability and makeup removal tests. In the oiliness test, samples were recorded on a filter paper to observe the halo corresponding to the oil present; in the spreadability, two glass plates and increasing weights were used, observing the expansion in centimeters of the samples; and in the demaquilant action, the ability of the micellar makeup remover to remove how samples from the skin was tested, using cotton disc and checking the mass. The proposed formula presented the best performances in the tests of oiliness and demaquilant action. However, in the spreadability presented an excellent result, with a difference of 0,5 cm than the commercial base 2. The removal of the product using the demaquilant resulted in a greater mass, in relation to commercial products, indicating that its emollience, in addition to facilitating applicability, also facilitates the complete removal of the product, avoiding remnants that can clog pores, causing acne or irritation.

## P26

<b>Title</b>	<b>Sustainability in the Covid-19 Pandemic: A Case Study in Cosmetic Companies</b>
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<b>Abstract</b>	<p>During the COVID-19 pandemic, Euromonitor reports indicated that it would emerge successfully from the pandemic scenario, brands and companies in the cosmetic sector prepared for a new scenario (economic recession, reduced family income, lasting changes in search, purchase and use of cosmetics with strong evidence of socio-environmental values), and that easily make available information about the company and its products, helping consumers to have and increase their marketing and ecological awareness. <b>Objective:</b> to analyze sustainable cosmetics companies, the dimensions of sustainability and accredited certifications, and the performance and challenges faced during the COVID-19 pandemic. <b>Method:</b> Exploratory-descriptive research, with literature review and case studies in twelve companies that make sustainability reports and accredited certifications available on their websites. Sustainability analysis carried out through social and environmental indicators, according to the Global Reporting Initiative (GRI) Standards model. <b>Results:</b> In the environmental dimension, the highlight is related to the availability of information related to raw materials or recycled materials, in 83.3% of the companies and, in the social dimension, 75% present information related to actions aimed at the local community. We identified that the positioning and actions taken by companies during the COVID-19 pandemic are related to the “Social Topics” of the GRI model, the main ones being: donation of gel alcohol to communities and health units and monetary donation to the purchase of hospital supplies. Accredited certifications were identified in different proportions, regarding the absence of animal testing (67%), packaging, reverse logistics process or disposal of materials (58.3%) and information on the ingredients used in their products (50%). In particular, the “eureciclo” seal and the “Ecocert COSMOS” certification, which were found in 25% of the companies. <b>Conclusions:</b> The information available on the websites, mainly certifications, facilitates the identification and alignment of consumer values with the company, which also makes it recognized for specific types of customers. As for the challenges of the selected companies, it was found that most of them seek to present, mainly, their actions that are consistent with environmental topics, forgetting that sustainability is also built by the presence of social and economic topics.</p>



## P27

<b>Title</b>	<b>Use of Brazilian Biodiversity Actives in Photoprotection</b>
<b>Authors</b>	Bruna Santa Rosa; Ana Carolina N. Ishida; Vera Isaac *
<b>Affiliations</b>	São Paulo State University (UNESP), School of Pharmaceutical Sciences, Araraquara.
<b>Abstract</b>	Brazil is the 4th country where cosmetics are most consumed and the 3rd that most develops products. The use of actives from biodiversity has become a highlight in research and it is already known that the blend of secondary metabolites has functions such as antioxidant activity and assists in photoprotection, reducing the damage caused by ultraviolet radiation (UV) and blue light (LA). The objective of this work was to evaluate the synergistic potential in the photoprotection of extracts from the peel of jaboticaba (ECJ), annatto (EU), jambu (EJ), Brazil nut oil (OCB), cumarú oil (OC), babacá oil (OBC), babassu oil (OBÇ), patauá oil (OP), cupuaçu butter (MC), pequi oil (OPQ), ucuuba butter (MU) and bacuri butter (MB). Spectrophotometry, at wavelengths of 280-500 nm, which correspond to UVA, UVB and LA radiation (stock solution of 100 mg/mL). The concentration of total phenolic compounds was quantified using the Folin-Ciocalteu reagent and the actives were incorporated into emulsions containing two chemical filters and the <i>in vitro</i> Sun Protection Factor (SPF) was evaluated using the Optometrics SPF 290-S. Scanning spectra were obtained with absorbance greater than 2.5 in the region comprising UVB radiation, greater than 1.0 in the UVA range and between 1.0 and 2.5 in the LA. In the quantification of phenolic compounds, values from 0 to $26.86 \pm 0.04$ (equivalent mg of gallic acid/100 mg of active) were obtained. In the evaluation of SPF <i>in vitro</i> , the "cream base" with chemical filters obtained a value of $22.91 \pm 2.72$ , while the sunscreens containing 2% of active, obtained results of up to $27.54 \pm 2.29$ . The use of sunscreens is the easiest and most effective way to protect the skin from damage from solar radiation and blue light, including photoaging, hyperpigmentation and DNA damage. Matching notably antioxidant actives that have a synergistic effect, increasing SPF and reducing blue light damage is promising and goes against the claim of using phytocosmetics, which is no longer a passing trend and has become a solid future projection.

## P28

<b>Title</b>	<b>Antioxidant Phytochemical Complex with Anti-Aging Action Characterized by <i>in vitro</i> Methodologies</b>
<b>Authors</b>	<b>Scheila D.F. Alves</b> <sup>1</sup> ; Larissa A. Reischl <sup>1</sup> ; Gabriel M. Castellani <sup>2</sup> , Maidileyvis C. Cabello <sup>3</sup> ; Maressa Donato <sup>3</sup> ; Maurício Baptista <sup>3</sup> ; Rosangela Itri <sup>3</sup> ; Solange T. Osuka <sup>1*</sup>
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<b>Abstract</b>	Exposome is the set of exposures from internal and external sources accumulated throughout life, as well as the human body's response to these factors that promote skin aging. Among these factors, solar radiation is the main cause of cell damage, once it induces the formation of free radicals that, consequently, lead to an exacerbated production of reactive oxygen and nitrogen species, ROS and RNS, respectively, which trigger oxidative reactions and cause an imbalance in cellular homeostasis and, therefore, causes oxidative damage to DNA, proteins and lipids. Therefore, a strategy to control these reactions is using species with high antioxidant activity, capable of neutralizing and controlling oxidative and nitrosative stresses. In this context, a complex of plant extracts was created, obtained by an intelligent extractor system capable of extracting compounds with different physicochemical properties





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concomitantly. The phytochemical composition obtained has several bioactives that act in synergy offering antioxidant and anti-inflammatory activities, they are green tea, rosemary, chamomile and turmeric, in addition to lutein and quercetin, which were incorporated due to their also known antioxidant and anti-inflammatory actions. *In vitro* safety was performed by cell viability assay, using the MTT marker. While the efficacy was characterized by several methodologies, its antioxidant capacity was evaluated by DPPH and its anti-aging potential was evaluated by the reduction of DNA damage, *i.e.*, breakage in single and double strands, using the phosphorylated histone markers and PARP1, respectively. Furthermore, the deposition of lipofuscin, a known marker of cellular aging, was characterized with the Sudan Black B (SBB) dye by optical microscopy. Corroborating these results, a biomimetic cell membrane assay was carried out to evaluate its membrane protection effect. The results obtained proved the antioxidant action of the active *in vitro*, in addition to its protective effect from DNA breakage of ca. 77%, reduction of lipofuscin deposition at low concentrations and membrane protection ten times greater than that promoted by  $\alpha$ -tocopherol.

## P29

<b>Title</b>	<b>Cosmetic Hair Composition Containing Noni Leaf Extract and Its Benefits on the Hair (<i>Morinda Citrifolia</i> L).</b>
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	<i>Morinda citrifolia</i> L., popularly known as noni, although widely consumed in Asia for over 2000 years, is still little known in Brazil. Noni is a species of the Rubiaceae family. It has been used for centuries in the traditional medicine of the Polynesian peoples. The leaves and fruit are consumed in different forms by various communities around the world. The leaves of this plant have antibacterial and antioxidant properties, interesting for application in cosmetics. This study aimed to evaluate the action of ethanolic extract of the noni leaf ( <i>Morinda citrifolia</i> L.) as an active in shampoo and conditioner formulations, and its benefits on two types of hair (Type I-smooth and Type IIIb-curly). The extract was obtained through a cold percolation process. A phytochemical screening was performed and the presence of the of the following secondary metabolites was confirmed: alkaloids, steroids and flavonoids. Tests were performed to analyze antioxidant activity of the extract and it showed a DPPH antioxidant activity value of $(138.06 \pm 5.04 \text{ mg}/100\text{g})$ . "Base" formulations for shampoo and conditioner were developed and applied in pre-defined amounts of noni leaf extract. These formulations were subjected to organoleptic, physicochemical and microbiological analyses and were stable throughout the stability study. The dry and wet combing, shine and hair resistance tests on both strand types when treated with noni leaf extract showed greater combing, shine and increased and improved resistance of bleached hair significantly compared to the control. Thus, it was possible to attest to the protective properties that noni leaf extract provides to the hair strands under study..



## P30

<b>Title</b>	<b>Evaluation Of the Cytotoxic Potential of Leaf Extracts and Pseudofruits of <i>Anacardium occidentale</i> in HDFa, HepG2 And HaCat Cell Lines</b>
<b>Authors</b>	<b>Any C. I. Diniz; Vera L. B. Isaac*</b>
<b>Affiliations</b>	Saõ Paulo State University (Unesp), Faculty of Pharmaceutical Sciences, Araraquara Campus
<b>Abstract</b>	<p><i>Anacardium occidentale</i> (SISGEN code: A82635D) popularly known as cashew tree, whose pseudofruit is cashew, a tropical plant native to Brazil, rich in vitamin C, calcium, phosphorus and iron. The objective of this work was to evaluate the cytotoxic potential of extracts of leaves and pseudofruit of <i>A. occidentale</i>. The evaluation of the cytotoxicity of the extracts was performed by the methodology that uses the MTT dye that, in contact with the cells, undergoes metabolism by the mitochondria, forming insoluble violet formazan crystals, making it possible to verify the cell viability. Assays were performed on human hepatoma cells (HepG2), fibroblasts (HDFa) and metabolically incompetent human keratinocytes (HaCat). The standardized cell concentration for the assays was <math>5 \times 10^5</math> cells/mL. After solubilization of the crystals, the plate was analyzed in a spectrophotometer at a wavelength of 595 nm. The percentage of dead cells was calculated in relation to the negative control, representing the cytotoxicity of each treatment. Then, the percentage of living cells was also determined. Cytotoxicity assays were performed in three independent experiments. The range of concentrations used for the leaf extract was from 0 to 1.13 mg/mL, corresponding to 0 to 0.125% of extract, and for the pseudofruit extract it was from 0 to 20.43 mg/mL or 0 to 2 % extract. In the HDFa and HepG2 strains for the leaf extract, it was not possible to calculate the IC<sub>50</sub>, as it presented 70% of the live cells at its highest concentration, thus, its cell viability is higher than that of the pseudofruit extract. For the HaCaT strain, the IC<sub>50</sub> was calculated and the results found were an IC<sub>50</sub> of <math>0.014 \pm 0.001</math> mg/mL for the leaf extract and <math>1.711 \pm 2.630</math> mg/mL for the pseudofruit extract. The leaf extract showed a lower IC<sub>50</sub> than the pseudofruit extract in the three cell lines. It is possible to observe that, to obtain about 70% of live cells, a concentration of 1.13 mg/mL of the leaf extract and 1.42 mg/mL of the pseudofruit extract is necessary. Therefore, the two extracts are not cytotoxic, but the leaf extract has lower cytotoxicity.</p>

## P31

<b>Title</b>	<b>Hydroglycolic Extract from <i>Mouriri elliptica</i> Martius (Melastomataceae): Obtaining, Chemical Study, Application in Photoprotective Formulation and in vitro SPF Evaluation</b>
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<b>Abstract</b>	<p>Nowadays life expectancy is increasing and with it the skin ages. A loss of function and differences in skin appearance proceed unavoidably. Exposure to UV radiation can induce cellular changes in skin cells, resulting in a set of signals called photoaging. In this context, sunscreens act in a preventive way and the development of products with natural actives could help. Many plant extracts present antioxidant and photoprotective activity that is generally linked to the presence of phenolic substances produced by plants. In the species <i>Mouriri elliptica</i> Martius (Melastomataceae), whose leaves are traditionally used for problems of the digestive tract, phenolic substances (tannins and flavonoids) have been identified that have a direct relation with the antioxidant capacity verified in the hydroalcoholic extracts of this species. The objective of this study was to evaluate the photoprotective capacity (SPF) and photostability of formulations developed with the addition of the standardized.</p>



hydroglycolic extract prepared from the leaves of *M. elliptica* (Melastomataceae) Spectrophotometric (UV-Vis) and chromatographic techniques (HPLC-DAD) were applied to qualitatively and quantitatively determine the markers. By DPPH the antioxidant activity of the extract after chemical standardization was evaluated. Furthermore the stability of formulations containing the extract was performed. Besides analysis of the formulations photostabilization, the Sun Protection Factor (SPF) of the main formulations was examined in vitro. By chemical analyzes it was possible to develop a standardized extract in: 1.91 mg/mL of total phenols, 1.19 mg/mL of total tannins, 0.26 mg/mL of total flavonoids and 48.7 mg/mL of gallic acid. After stability study, the formulations developed with the addition of 3%, 5% and 10% of this extract were completely stable. However, for the sun protection factor and photostability tests, the formulations showed no activity.

## P32

<b>Title</b>	<b>Effect of Assisted Food Supplementation on Hair Health Based on the DNA: A Bridge Between “Live Follicle” And “Deated Fiber”</b>
<b>Authors</b>	<b>Thaiane Robeldo</b> <sup>1,5</sup> ; Estrela D’A. Machado <sup>3</sup> ; Tatiane, M. M. Fujii <sup>4</sup> ; Thaís H. S. Rocha <sup>1, 2</sup> ; Elson Longo <sup>2</sup> ; Valéria M. Longo <sup>1, 2*</sup>
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	<p>The hair follicle (HF) is a mini-organ whose main function is to produce the hair fiber.<sup>1</sup> The HF is, thus, a “factory” of production, in which the matrix of keratinocytes, melanocytes, and fibroblasts interact mutually in the dermal papilla for hair fiber formation. The HF is one of the few structures that can be regenerated over a lifetime through a unique cycle of its own. This is because they have in their structure, their own stem cells, a dynamic and defined gene expression.<sup>1,2</sup> HF has a regular growth cycle (anagen), a regression mediated by apoptosis (catagen) and dormancy or death (telogen).<sup>1</sup> With each cycle, a new fiber is formed while the old one is discarded, in an active process called exogenous. Thus, HF is extremely sensitive to numerous factors that regulate this cycle, such as cytokines, neuropeptides and hormones, which are partly produced in the follicle<sup>3</sup> and food that are part of an exogenous regulation.</p> <p>In this work, a genetic test for hair health comprising 22 polymorphisms in all was developed. Nine polymorphisms related to environmental and genetic factors that act on hair health, such as: oxidative stress, pro-inflammatory cytokine, inflammatory cytokine, vitamin D receptor, nuclear receptor activated by peroxisomes; 1 (one) related to the color of the threads; 3 (three) related to the swell; and 4 (four) related to kartin disorders. A case study involving 10 volunteers between 22 and 60 years old was carried out, in which the DNA of each one was collected using the DNA Sal method. After the analysis of the 22 polymorphisms (SNPs) the volunteers were divided into 8 groups, according to the genetic variants were found and a food supplement was formulated for each group, which was administered for 90 days. At time zero (T0) and time 90 (T90), 30 hairs fibers were collected close to the root, for further analysis of the mechanical strength of the hair. Biochemical examinations and scalp triscopy images were also performed. All results analyzed together showed greater health of the hair fiber, scalp and systemic.</p>



## P33

<b>Title</b>	<b>Immediate Clinical Efficacy of a Cosmetic Formulation with Alpha Hydroxyacids</b>
<b>Authors</b>	Ana P. Fonseca <sup>1</sup> , C. Dal Pizzol <sup>1</sup> , Patricia M. B. G. Maia Campos <sup>2</sup>
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<b>Abstract</b>	<p>Alpha-hydroxy acids (AHAs) are widely used in cosmetics due to their moisturizing, wrinkle-reducing, and pore-smoothing properties. In this context, the aim of the present study was to evaluate the clinical efficacy and safety of a cosmetic emulsion containing glycolic acid, lactic acid and lipohydroxyacid. After approval by the Ethics Committee (CEP 4,806,683), a clinical trial was conducted with male and female subjects, aged 35 to 59 years (mean: 46 years), Fitzpatrick phototypes I to VI, who had dilated pores, wrinkles, fine lines and uneven skin tone on the face.</p> <p>The study was completed with 30 subjects, who applied the product once a week for 3 weeks. At the beginning of the study, the subjects read and signed the Informed Consent Form and Image Disclosure Form. Clinical assessments were performed at baseline and after 7, 14, and 21 days of study. Instrumental measurements were assessed with Visia®CR before and 15 minutes after application. Self assessment questionnaire to evaluate product efficacy was performed based on the "Standard Guide for Sensory Claim Substantiation" (ASTM E 1958-06, 2006) by applying a questionnaire 24 hours after product application.</p> <p>Through the results it is possible to notice that the product has high cutaneous and ophthalmological tolerance. The image analysis evince that the product significantly reduced (<math>p &lt; 0.001</math>) the surface parameters, indicating a reduction in pore size and improvement in skin texture, visibility coefficient, indicating reduction in the visibility of wrinkles and improvement in skin texture and improved skin homogeneity, suggesting improvement in skin tone uniformity, immediately after application in comparison to baseline (T0). Such results corroborate with those obtained in the self-assessment questionnaire, where 86% of the participants noticed that the pores were less apparent and were smoothed; 90% that skin became softer and smoother and 72% that skin blemishes were smoothed and are less apparent.</p> <p>In summary, the investigational cosmetic emulsion was considered safe and presented efficacy in smoothing pores, crow's feet, wrinkles, and skin blemishes after the first use of the product.</p>

## P34

<b>Title</b>	<b>Formulation Development for Oily Skin Based on Vegetable Oils for Hydro Lipid Balance of Acneic Skin</b>
<b>Authors</b>	R. Ribon de Melo <sup>1</sup> ; C. Dal Pizzol <sup>1</sup> ; Ana P. Fonseca <sup>1</sup> , Patricia M. B. G. Maia Campos <sup>2</sup>
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<b>Abstract</b>	<p>Excessive sebum secretion is one of the factors that cause acne. The altered ratio between saturated and unsaturated fatty acids in sebum and the altered amount of fatty acids such as linoleic acid<sup>1</sup> has been identified as one of the causes of oily/acneic skin. There are many products with the purpose of promoting balance to oily skin and treating/preventing acne, presented in the form of cleansing gels, tonics, dryers, among others.</p>



In this context, the aim of the present study was to develop a formulation for oily skin aiming to minimize five factors responsible for the formation of acne lesions: increased sebum production, hyperkeratinization, compromised skin barrier function, colonization by Cutibacterium acnes and resulting inflammatory reaction.

To this end, a cosmetic form of dry touch oil for oily/acneic skin of anhydrous composition was developed, combining medium and long chain lipids, such as Joboba (Simmondsia Chinensis Seed Oil), Black Cumin (Nigella Sativa Seed Oil) and Melaleuca oils. (Melaleuca Alternifolia Leaf Oil) and salicylic acid.

A clinical study (CEP 4.789.328) was carried out with 32 participants, age 28 ± 8 years, acne grade (According to Leeds) 94% Grade II and 6% Grade III and 53% with oily and 47% mixed skin.

The Global Acne Grade System (GAGS) method showed that there was a significant reduction ( $p < 0.05$ ) of the global acne classification values (GAGS) after 14 and 28 days of product use, product significantly reduced ( $p = 0.0422$ ) open comedones+closed comedones after 7 days of daily use and reduced ( $p = 0.0032$ ) pustules+papules after 7 days of use.

According to the results of the Sebumeter®, there was a significant reduction ( $p < 0.05$ ) in the values of skin surface oiliness after 28 days of home use of the study product and 100% of the research participants showed a reduction in skin oiliness. In addition, there was a significant reduction ( $p < 0.05$ ) in TEWL (transepidermal water loss) values after 28 days of investigational product use.

In conclusion, the use of appropriate lipids for oily skin favored the integrity of the skin barrier, reduced surface oiliness, acne severity, number of comedones and inflammatory lesions.

## P35

<b>Title</b>	<b>Permeation of Cosmetic Organic Actives and Their Distribution in Hair Fiber: An Imaging Mass Spectrometry Research</b>
<b>Authors</b>	<b>Valéria M. Longo</b> <sup>1*</sup> ; Tatiana P. Sartori <sup>2,3</sup> ; Thaianne A. Robeldo <sup>1</sup> ; Robeta B. Costa <sup>1</sup> ; Natália R. Pedroso <sup>1</sup> ; Carolina Lourenço <sup>4</sup> ; Emanuel Carrilho <sup>2,3</sup>
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<b>Abstract</b>	One of the most desired analyzes currently in cosmetology is the verification of the entry and distribution of cosmetic actives inside the hair fiber. In particular, the Raman microscopy technique makes it possible to measure characteristic vibrations that detect the presence of the active of interest and its permeation depth in the cortex. However, this technique has the limitation of fluorescence from melanin, that restricted this use to discolored, albino or white fibers. <sup>1</sup>  Mass spectrometry (MS) is an analytical technique used to identify and quantify compounds, as well as to elucidate the structure of unknown molecules. Innovative approaches to this technique, based on various ionization and detection systems, have been developed.





Currently, one of the widely used methods for the analysis of biomolecules, such as proteins, lipids and peptides, is Matrix Assisted Laser Desorption Ionization (MALDI). Thus, MALDI-TOF is a technique used in the investigation and identification of organic molecules, especially biopolymers, with high m/z ratio (> 103 Da). A new direction for this technique has been carried out through the acquisition of images directly from biological tissues, known as Imaging Mass Spectrometry (IMS), which allows the direct analysis of a section of any biological tissue, without damaging it, enabling the correlation of mass spectrometry data with the morphological characteristics of the tissue and the location of active principles.<sup>2</sup>

In this work, we used the imaging technique by MALDI-MS for the first time to map the permeation of fatty acids from coconut, argan and avocado oil in Afro hair fibers. The fibers were previously treated with the respective oils, embedded in histological resin and cut longitudinally and transversally in a histological cutting device developed for this purpose. The analyzes were performed with an MS analyzer by time of flight, Bruker brand, autoflex maX model.

The images obtained show the permeation and distribution of fatty acids and other active principles within the hair fiber, which will allow the customization and adjustments of hair treatments, as well as verification of claims related to the permeation of actives.

## P36

<b>Title</b>	<b>Evaluation of Effectiveness of Phospholipid Based Formulation as a Peptide Delivery System and Pro-Age Associations on the Effects of Skin Chronology</b>
<b>Authors</b>	Carolina V.Santos <sup>1</sup> ; Érica Pagano <sup>2</sup> ; Henrique S Gonçalves <sup>3</sup> ; Lúcia C. C.Gobbo <sup>4</sup>
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<b>Abstract</b>	The largest organ of the human body, the skin, suffers from aging due to exposure to the external environment, the so-called extrinsic factors and intrinsic factors that come from the actions of time and metabolism. The skin visibly expresses the action of time and is transformed by it. It is, then, chronological aging. With the passage of time and the loss of the body's ability to recover from the action of free radicals, epidermal keratinocytes lose adhesive properties, leading to epidermal thinning and dryness. The fibroblasts of the dermis (collagen and elastin) are equally attacked and, with this, a global reaction occurs that involves the development of wrinkles, blemishes, loss of luminosity, loss of elasticity and skin firmness and the consequent sagging, loss of vigor and increased dryness of the skin. In this study, it was used a combination of innovative actives with mechanisms that acts on the effects of aging and that interact with the most relevant protein structures of the dermo-epidermal junction (DEJ), which provides structural and functional integrity to our skin, however, this functionality begins to diminish over time. The selected actives, such as peptides with bioactive functionality, stimulate collagen types IV, VII and XVII. By increasing the activity of these proteins, the entire structure of DEJ is improved, this leads to a significantly visible cosmetic benefit. The texture of the product, composed of lecithin, the phospholipids, molecules identical to those of human body cells, facilitates the bioavailability of the actives. According to the study protocol and procedures of the subjective tests with volunteers used to evaluate the efficacy of the investigational product, after 26 days of treatment, it was possible to verify that: 81% of the research participants noticed a reduction in skin sagging;



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94% of participants research participants noticed reduction of wrinkles and expression lines, improvement of skin firmness, rejuvenation and improvement of texture and freshness; 100% of the research participants perceived the promotion of the lifting effect, improves skin hydration, leaving it softer and hydrated, revitalizing effects, in addition to improving the overall appearance of the skin, thus proving the effects of the product.

## P37

<b>Title</b>	<b><i>In vitro</i> skin irritation prediction raises the safety profile and ensure the success of cosmetic products</b>
<b>Authors</b>	Giulia Ballesterio <sup>1</sup> ; Nayara Cristina Perez de Albuquerque; Sebastião Gonçalves <sup>2</sup> ; Franciane Marquele-Oliveira <sup>1</sup>
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<b>Abstract</b>	High-performance ingredients that guarantee the preservation, quality, and safety of a cosmetic product have long been idealized by scientists. Literature data and compendia provide the safety and efficacy profile of the ingredients and, more recently, new <i>in vitro</i> tools can still enhance the success of the final product. Laboratory reconstructed skin models can be highly relevant tools due to their morphological and physiological similarities with human skin, overcoming false-negative results, for example, in dermal irritation assays in non-clinical models. Laboratory reconstructed skin models present advantages of greater accuracy and precision in skin irritation prediction due to the standardization of the test system. In this context, the preservatives (or ingredients that help in the preservation), which are one of the main raw materials in a variety of cosmetic products, deserve attention regarding the toxicological profile, due to the increasing number of unwanted reactions. Therefore, this work aims to evidence the toxicological profile of preservative ingredients by combining technical-scientific information with data obtained in skin irritation studies. Additionally, the <i>in vitro</i> evaluation of a finished product was also performed. The skin irritation prediction studies using reconstructed human epidermis (ES RHE) were conducted according to OECD 439. The results have shown that preservative ingredients such as Ethylhexylglycerin (EHG) and the mixture of Sodium Benzoate and Potassium Sorbate (SB/PS) presented a dermatological safety profile as predicted in the technical-scientific information, as well as contributed to the safety profile of the finished test product. These ingredients were also evaluated for their behavior against selected microorganisms. It was observed that EHG has great potential against gram-positive microorganisms, while the broad-spectrum activity of SB/PS benefits great efficacy at low dosage levels when compared to preservatives with the same activity profile. Finally, the results suggest that the combination of the <i>in vitro</i> epidermis model test with data from the literature can help in the selection of ingredients used in the preservation and the selection of products with a high safety profile and with remarkable success for the market.





## P38

<b>Title</b>	<b>Impact of the Antioxidant Hydroxytoluene Butylate (HTB) on the Modulation of Cell Proliferation of Melanoma Tumor Lineages</b>
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<b>Abstract</b>	Hydroxytoluene butylate (HTB) is a preservative and antioxidant widely used in skin care products and cosmetic formulations, achieving excellent performance in the concentration of 0.01% to 0.1% when associated with a sequestering agent (EDTA). The literature shows that, despite not permeating to deeper layers of the skin, small amounts can come into contact with the more superficial layers. Considering the low concentrations used in cosmetic formulations, the Cosmetic Ingredient Review Expert Panel confirms the safe use of HTB in the face of irritation, sensitization, and photosensitization assessments. On the other hand, in the context of toxicogenic safety, although HTB demonstrates the absence of a genotoxic effect, its ability to modify the genotoxic potential of other substances was evidenced, as it was also considered a controversial ingredient due to its action as a promoter of tumorigenesis or anticarcinogenic. The present study in partnership with Provanza Comércio aims to evaluate the modulatory effect of HTB on the cell proliferation of human skin cells, both in healthy cells and primary human fibroblasts (HDFn) as well as cancer cells and melanoma cell lines (A375 and SK-MEL-28), in 2D in vitro models. Provanza is a cosmetics industry whose purpose is to develop products based on consumer safety and health. The experimental design was carried out with the treatment of cell lines at concentrations of 0.01% to 2% in two exposure times (24 and 48 hours). The evaluated BHT concentrations proved to be cytotoxic (viability < 50%) for both tumor lineages, as well as for fibroblasts; however with different response profiles. It was observed, in a more accentuated way, the biased profile of high concentrations of HTB providing an increase in the proliferative capacity of melanoma cell lines. Viability indices resulted in 85% ± 0.18 for the A375 strain and 34% ± 0.12 for the SK-MEL-28 strain, compared to 36% ± 0.067 for the HDFn primary culture. This study demonstrates the relevance of the complementarity of safety studies with the evaluation of cosmetic formulations in the presence of strains with a mutant genetic profile, which can stimulate uncontrolled proliferative cycles and trigger adverse effects.

## P39

<b>Title</b>	<b><i>In vitro</i> Skin Permeation: A Custom Tool for Investigating the Performance and Effectiveness of Products</b>
<b>Authors</b>	Nayara Cristina Perez De Albuquerque*; Daniel Blascke Carrão; Thaís Bueno de Toledo; Wilson José Ramos Santos Junior; Vitor Paulo Trombine Teato; Franciane Marquele de Oliveira
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<b>Abstract</b>	The investigation of the performance and effectiveness of topical products, such as cosmetics, is a challenge in the product development and registration sectors in Brazilian industries. According to ANVISA, Guide 20/2019, the in vitro performance of a topical product can be investigated by performing release or skin permeation studies. The release process makes the active available for absorption. The active, driven by the formulation, must be able to penetrate the stratum corneum and diffuse to the epidermis and dermis, depending



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on its expected action site. However, it is necessary to highlight that some factors inherent to the skin, such as hydration and integrity of the stratum corneum, can influence the permeation of the active in the skin, and consequently, its effectiveness. Such changes in skin characteristics can occur in cosmetic consumers, for example, damage to the stratum corneum in scratches or aesthetic treatments such as peeling, and dehydration due to environmental conditions. These phenomena and the impact on the effectiveness and performance of topical/cosmetic products can be investigated through the *in vitro* skin permeation assay.

Thus, this work aimed to apply the *in vitro* skin permeation study as a scientific tool to investigate the impact of skin dehydration and stratum corneum damage on the permeation of an active in a cosmetic product. The assay was performed using a caffeine-containing cosmetic product on (i) intact skin; (ii) skin with damaged stratum corneum and (iii) dehydrated skin, according to OECD Guide No. 428. The results showed differences in permeation parameters, such as flow ( $\mu\text{g}/\text{cm}^2/\text{h}$ ) and lag time (h), for the active caffeine in whole skin and skin with altered characteristics. For damaged skin, there was an increase in caffeine permeation due to the removal of the first barriers of the skin, increasing the maximum flow. On the other hand, the dehydration of the skin negatively impacted the caffeine permeation, reducing the maximum flow due to the lower hydrophilicity of the skin. These results demonstrate how well-established and internationally validated scientific tools can be customized to answer recurring questions in the 21st-century cosmetic industry.

## P40

<b>Title</b>	<b>Development of Liposomes Delivery Green Coffee Oil for Cutaneous Administration</b>
<b>Authors</b>	Lilian Rosário da Silva Montanheri; Patrícia Santos Lopes; Vânia Rodrigues Leite-Silva; Newton Andreo-Filho*
<b>Affiliations</b>	Department of Pharmaceutical Sciences, Institute of Environmental, Chemical and Pharmaceutical Sciences – Federal University of São Paulo – Unifesp – Diadema campus.
<b>Abstract</b>	Vesicular systems have been highly explored for the administration of both hydrophilic and lipophilic bioactives to the skin. These systems are of great importance because they favor the stability of the actives and their permeation through the skin. Green coffee oil (GCO) has aroused interest for placement in cosmetic products, however its complex composition offers challenges for incorporation into nanostructured systems that can promote greater skin permeation of its components. In this work, we sought to use GCO as a cosmetic active for delivery in multilamellar vesicles (MLV) and small unilamellar vesicles (SUV). MLVs were obtained by hydrating 0.675% (w/v) soy phosphatidylcholine (PC) and 0.039% (w/v) cholesterol (CHO) in aqueous medium, resulting in a molar ratio of (PC:CHO 9:1), under constant stirring for 15 min and heating to 60°C. The SUVs were obtained from the MLVs, where they were subjected to a high pressure homogenization process in a closed system for 5 min, at a pressure of about 10,000 psi and 1,500 psi of back pressure. After this procedure, the SUVs were analyzed by laser diffraction, based on the Mie light scattering theory, to determine the size and particle size distribution (t = 0 day). After obtaining, the samples were kept at room temperature (25°C), and the particle sizes were monitored by laser diffraction, at different time intervals, of 1, 2 and 6 hours, and 20, 27 and 70 days. The initial results showed that it was possible to obtain liposomal vesicles, both multilamellar and unilamellar, with a mean size of 4.34 and 0.26 $\mu\text{m}$ for MLV and SUV at T0, respectively. The monitoring of SUVs over time allows us to infer that the SUVs maintained stability for 27 days, showing a size variation of less than 10% of the size initially determined. The results obtained are promising, indicating the possibility of producing vesicles carrying the GCO for cutaneous application for therapeutic and cosmetic purposes.



## P41

<b>Title</b>	<b>Use of Powder from the Leaves of São Caetano Melon (<i>Momordica charantia</i> L.) in Hair Cosmetic Formulations</b>
<b>Authors</b>	Elaine C.C. Almeida; Josilene de A. Cavalcante; Melânia L. Cornélio*
<b>Affiliations</b>	Universidade Federal da Paraíba – UFPB, João Pessoa, Brasil
<b>Abstract</b>	The medicinal species commonly known as São Caetano melon <i>Momordica charantia</i> L. (Cucurbitaceae), originated in Asia and is currently considered an invasive plant in tropical and subtropical countries due to its rapid adaptation in these regions. The leaves, flowers and fruits have a significant chemical and nutritional composition and activities such as antioxidant, antimicrobial and anti-inflammatory have already been proven in several parts of this plant. The objective of this work was to obtain and characterize the powder from the leaves of <i>Momordica charantia</i> L, obtained by drying in a foam layer, for later use in hair cosmetic formulations of shampoo and conditioner. For the physicochemical characterization of the obtained powder, analyzes of pH, ash, moisture, solubility, total titratable acidity, measurement of brix, lipids, in addition to the determination of ascorbic acid and phenolic compounds, were carried out, following specific methodologies. Shampoo and conditioner formulations were developed with the incorporation of powder from São Caetano melon leaves in different concentrations, and all results were compared with control formulations without addition of the active. The physical-chemical analyzes show promising results regarding the presence of vitamin C and phenolic compounds, indicating the possible antioxidant activity present in the powder. The accelerated stability study was carried out following the methodology adopted by the National Health Surveillance Agency (Anvisa), for 60 days, with the samples being stored in ambient conditions, refrigerator, oven at 50 °C and sun exposure. The efficiency of the formulations developed was evaluated by means of foam and surface tension tests, for shampoos, and by combability tests and strands of different hair types, for both products. The foams and surface tensions of the formulated products matched market products. To evaluate the resistance of the strands, a traction test was carried out, which obtained positive results, increasing the traction of the yarn, after the application of the developed products. From what has been observed, the powder of São Caetano melon leaves can be an alternative for use as an active in hair cosmetic formulations.,

## P42

<b>Title</b>	<b>Sensory Perception of a Facial Moisturizing Serum Based on Natural Gums</b>
<b>Authors</b>	C. Recine Amore <sup>1</sup> ; C. Dal Pizzol <sup>1</sup> ; Ana P. Fonseca <sup>1</sup> ; Patricia M. B. G. Maia Campos <sup>2</sup>
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<b>Abstract</b>	Polysaccharides are widely used in cosmetic formulations due to their thickening, gelling and emulsifying properties. In this way, they help to control the rheological properties of emulsions and contribute to stability. In some cases, mixing two polysaccharides leads to a synergy of their properties. Xanthan gum (GX) is an anionic exocellular polysaccharide produced by aerobic fermentation by the bacterium <i>Xanthomonas campestris</i> . Its branched structure and rigid conformation explain its higher rheological characteristics when compared to most of the other commonly available polysaccharides. Acacia gum (GA) is an exudate from Acacia Senegal trees and is a complex acidic branched heteropolysaccharide



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composed of three fractions. Its emulsifying capacity is attributed to the ArabinoGalactan-Protein (AGP) fraction, the higher the AGP content the more stable the emulsion. GX-GA mixtures benefit of thickening and emulsifying properties of xanthan and acacia gums respectively.

In this context, the aim of the present study was to evaluate the sensory perception of a facial moisturizing serum based on a combination of xanthan gum and acacia gum (GX-GA) in comparison with a formulation based on xanthan gum (GX) through a quantitative in-use test study with 120 target consumers. To this end, the perceived efficacy study was carried out with 120 women applying the GX-GA formulation and the GX formula randomly for 12 days each product. The participants were between 20 and 55 years old; they were from social class A, B and C; residents in São Paulo; with the habit of using moisturizing serum.

According to the product acceptance method on a 7-point scale, the results showed a statistically significant difference in three evaluated parameters. The GX-GA formulation showed better appearance, greater general acceptance and a greater sense of well-being when compared to the GX formulation. In addition, the GX-GA formulation also stood out in the evaluation of the perception of effectiveness for providing a more vibrant skin and forming a protective film on the skin.

Finally, the proposed moisturizing serum based on xanthan gum and acacia gum showed perceived effectiveness in the evaluated parameters, mainly in relation to the feeling of well-being, lush skin and showed good acceptance.

## P43

<b>Title</b>	<b>Evaluation of Structuring Systems in the Development of Oleogels for Cosmetic Use</b>
<b>Authors</b>	Laura Moretti Aiello <sup>1</sup> ; Daniele Cristina Zulim Botega <sup>2</sup> ; Gislaine Ricci Leonardi <sup>1</sup>
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<b>Abstract</b>	The development of organic phase gels has reached great interest in cosmetic field due to their stability, low irritability, emollience and ease of preparation. They have been applied mainly as systems for the release of cosmetic actives and in the composition of nanostructures. The aim of this study was the development and evaluation of oily systems structured with different waxes for cosmetic use. Different concentrations of sunflower or rice bran waxes were used for the structuring of oil phases composed of apricot, avocado, marula or sunflower oils. The gelation process was confirmed by the Tube Inversion Test and by Microscopy with and without light polarization. The structuring of the evaluated oils was observed in the concentration range of 0.5-3% with the rice bran wax and in concentrations above 1% of the sunflower wax. In the microscopic analysis, crystals with elongated shape dispersed in the oil of the formulations in which structuring occurred were observed. Thus, it can be concluded that, in lower concentration ranges, the rice bran wax showed higher gelling capacity of the studied oils. This result can be microscopically visualized through the formation of crystals in larger and more intense amounts. The combined use of such waxes and oils represent potential stable and emollient systems to be applied in the cosmetic area or in the development of more complex systems, such as bigels.



## P44

<b>Title</b>	<b>Innovative Approach of Prebiotics and Inactivated Probiotics for Wrinkle Reduction: Performance Through <i>in vitro</i>, Clinical Efficacy, and Metagenomic Analyses</b>
<b>Authors</b>	P. P. Soldati*; L. M. C. Vasquez-Pinto; P. C. Moncayo
<b>Affiliations</b>	Natura Cosméticos, São Paulo, Brasil.
<b>Abstract</b>	The progressive reduction of essential skin components, such as hyaluronic acid, collagen, and elastin, besides proteins that act in the dermal-epidermal junction (DEJ) have structural consequences that contribute to the wrinkle formation. In addition, the use of active ingredients that targets the skin microbiome brings opportunities for use in different cosmetic benefits. The aim of the study was to evaluate the synergy between prebiotic and inactivated probiotics in stimulating essential proteins and their use in a new cosmetic formulation regarding anti-wrinkle benefits and modulation of the skin microbiota. For the <i>in vitro</i> measurements Total Collagen and Elastin synthesis, different active ingredients combination were incubated in normal human dermal fibroblasts for 72h. Clinical trials were conducted according to Resolution 466/12 of the National Council of Health, considering subjects as women aged 18-60 years, phototype Fitzpatrick I-VI, with different grades of wrinkles. For anti-aging markers evaluation, the cosmetic formulation was randomly applied in the forearm, twice a day, for 28 d. For wrinkle reduction, skin hydration, cutaneous micro-relief, dermal density evaluation, and microbiome analyses, the formulation was randomly applied in the forearm, twice a day, for 28 d. For wrinkle reduction, skin hydration, cutaneous micro-relief, dermal density evaluation, and microbiome analyses, the formulation was randomly applied in the face and neck, twice a day, for 28 d. The control group in all assessments was set as the skin without application of any product. Using <i>in vitro</i> protein evaluation, it was possible to determine the best synergistic combination between the active ingredients tested. After the formulation use we found that all the biomarkers evaluated were significantly increased after 14d and 28d. Moreover, we observed a significant increase in skin hydration after 15 min and up to 48h. The present findings also showed an improvement in skin texture, increased skin redensification, and maintenance of microbiota diversity. Screening techniques applied to define the best synergy between active ingredients, combined with biomarkers evaluation and clinical tests, can work as an effective approach to provide a deep understanding in the mechanism of action of a cosmetic formulation,

## P46

<b>Title</b>	<b>Obtaining Stable Salicylic Acid Nanoparticles for Action in the Skin Surface and Follicular Environment</b>
<b>Authors</b>	Rute Gonçalves Miranda, Miguel de Oliveira Napoleão, Isabella Ferreira de Souza, Patrícia Santos Lopes, Vânia Rodrigues Leite-Silva, Newton Andréo-Filho*
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<b>Abstract</b>	Salicylic acid (AS) is an asset consecrated for its keratolytic and anti-inflammatory ability on the skin. The objective of this work was to obtain nanostructured lipid carriers conveying AS (CLN-AS) and evaluate their release at skin pHs: superficial, follicular and acne. For this, a CLN-AS formulation was prepared by incorporating AS (0.51mg/g) in capric/caprylic acid triglyceride and glyceryl monostearate, as an oil phase; and, purified water, polyvinylpyrrolidone and ethoxylated oleic alcohol as the aqueous phase. Both phases were heated to 80°C, then the





aqueous phase was poured over the oily phase during stirring and heating (90°C), and then allowed to cool. Likewise, it produced CLN without AS (CLNsAS) for evaluation as blank. Both formulations were characterized by laser diffraction (DL) and UV-vis spectrophotometry to identify particle size and AS concentrations in the formulations and during release assays, respectively; considering ethanol ( $\lambda=304$  nm) and sodium phosphate buffer (PBS) at 50 mM pH 6.5 ( $\lambda=296$  nm) as solvents to obtain the analytical curves. For the assay, PBS solutions were produced at 50 mM at pHs mimicking the skin environments: superficial (5.5), acneic (6.5), follicular (7.5) and HCl 0.01M pH 1.2, with 50 mL being transferred to cylinders kept under agitation. 5 mL samples of the dispersions of CLN-AS, CLNsAS and AS(solAS) solution were transferred to a dialysis membrane bag (cut off 10kDa), submerged in PBS and HCl media. The system was kept under constant agitation for 8 hours (h), samples of 2 mL were collected every hour to quantify the released AS. Analysis of the formulations by DL revealed 90-100% of nanoparticles in the 500 nm range. It was verified that while solAS released 79% of AS in the first hour, from CLN-AS the most intense release was verified for the medium with pH 5.5 (50%), while the percentages released for pH 6.5 and 7.5 was 40 and 43%, respectively. In all cases, the percentage released at the end was 80%. At pH 1.2, there was release in 1h (9%) and 8h (39%). Demonstrating that media whose pH is above the pKa of AS (2.8) may favor drug release. The results obtained suggest that CLN-AS are effective in releasing AS in acidic to neutral media, as found in the skin.

## P48

<b>Title</b>	<b>Antioxidant and Anti-Inflammatory Effects of Plant Extracts on Skin Photoaging</b>
<b>Authors</b>	<b>Raquel Anacleto</b> <sup>1</sup> ; Sarah B. Rosa <sup>2</sup> ; Andrea Monte-Alto-Costa <sup>2</sup> ; L. M. Rocha <sup>1</sup> ; Gleyce M. Barbosa <sup>1*</sup>
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<b>Abstract</b>	The skin is considered the largest organ in the human body and can be affected by several external factors, such as ultraviolet radiation. Ultraviolet radiation (UV), mainly UVA, penetrates deeply into the skin, reaching the entire collagen and elastin support system present there, and therefore is considered the main promoter of cutaneous photoaging. Several studies and mechanisms have been developed to combat the negative signs of this exposure, including the use of plant extracts that have promising effects in combating the signs of aging. <i>Hypericum brasiliense</i> and <i>Annona acutiflora</i> are medicinal plants from Brazilian biodiversity that have a metabolism rich in substances such as flavonoids, xanthenes and phloroglucinols, responsible for reducing oxidant and inflammatory processes in the body. The objective of this study is to evaluate the effects of plant extracts from leaves of <i>Hypericum brasiliense</i> and <i>Annona acutiflora</i> that have antioxidant and anti-inflammatory potential on the skin, in order to evaluate damage reduction and prevention of photoaging. 3T3 dermal fibroblast cells were used, which were submitted to in vitro methodologies. To assess the cytotoxicity of the extracts, the cells were subjected to the MTT assay to determine the safest concentrations. To trigger photoaging, cells will be exposed to 16 J/cm <sup>2</sup> of UVA radiation, divided into four exposures. In the evaluation of the antioxidant and anti-inflammatory potential, the samples submitted to the treatment with the extracts and with the UVA radiation will be submitted to



	tests to evaluate the levels of oxidative stress, such as lipid peroxidation and levels of free radicals. For the collagen and elastic system, protein quantification tests will be performed to evaluate the presence of proteins such as Col-1, Col-3 and Elastin. Until now, it was possible to verify that certain concentrations of extracts (15 µg/ml; 7.5 µg/ml; 3.7 µg/ml; and 1.8 µg/ml) in the samples did not cause cytotoxicity to the cells and are considered promising for effectiveness tests. An aged skin is characterized by the decrease of fibroblasts in its matrix, therefore, exposure to UVA radiation and treatment with extracts is being developed and will evaluate the partial result of this effectiveness on skin cells.
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## P49

<b>Title</b>	<b>Surfactant-Free Emulsions for the Delivery of Cosmetic Ingredients: Development, Characterization and <i>in vitro</i> Skin Permeation Studies</b>
<b>Authors</b>	Hichem Kichou <sup>a</sup> , <u>Amanda C. Caritá</u> <sup>a</sup> , Xavier Perse <sup>a</sup> , Martin Soucé <sup>a</sup> , Laurianne Gressin <sup>b</sup> , Guillaume Gillet <sup>b</sup> , Igor Chourpa <sup>a</sup> , Emilie Munnier <sup>a*</sup> , and Franck Bonnier <sup>a</sup>
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<b>Abstract</b>	Surfactants are widely used to stabilize cosmetic emulsions. However, these ingredients mostly come from chemical synthesis with significant consequences on the environment and have their value in formulation challenged. Taking into consideration the growing consumer demand for natural and sustainable products, it is extremely important to develop alternatives to the utilization of this type of ingredient. In this sense, High-Frequency Ultrasound Technology (HFUT) stands out. This technology allows the stabilization of emulsions through a physical process, without the addition of surfactants. In the present work, emulsions containing caffeine or α-tocopherol were prepared by HFUT, and key formulation parameters — such as pH, particle size, and viscosity — were evaluated. Stability studies were conducted at 40°C for 30 days. In addition, permeation experiments (for caffeine) and the stratum corneum depth profiles (for α-tocopherol) were performed using Franz Cells methodology on reconstructed or human skin. The results demonstrate that formulations are stable, have appropriate particle size distribution, with an average diameter of less than 5 µm, and possess a high viscosity close to 9000mPas. Skin permeation studies confirm that the emulsions produced by the HFUT promote the delivery of hydrophilic and lipophilic molecules to the skin, without compromising efficacy. These results reinforce the promising character of the HFUT in the development of natural and minimalist cosmetic formulations.





## P50

<b>Title</b>	<b>Evaluation of the Immediate Moisturizing Effect of Cosmetic Formulations Containing Vitamins on Tattooed Skin</b>
<b>Authors</b>	L. N Favaro *; L. Kakuda; P. M. B. G. Maia Campos *
<b>Affiliations</b>	University of Pharmaceutical Sciences of Ribeirão Preto – FCFRP-USP, Ribeirão Preto, SP
<b>Abstract</b>	<p>The art of tattooing has been practiced all over the world and in the last years your popularity has significantly increased. In skin regions such as the arm, the damage caused by the exposome is more intense, like photoaging and skin fading, showing the need for specific cosmetics for tattooed skin. This way, the association of vitamins with antioxidant and moisturizing properties can result in products more effective for this public. In this context, the aim of this study was to develop cosmetic formulations added with fat-soluble vitamin C derivative and D-panthenol, evaluate the physic-mechanical and sensorial properties and short-term clinical efficacy of these formulations. The formulation developed, with or without (vehicle-F1) vitamins (F2), was submitted to the preliminary stability tests, stored at the temperatures ~25, 37 and 45°C and evaluated the rheological behavior (Brookfield®RVDV3T), texture profile and spreadability (TextureAnalyzeTA.XPlus®) for 28 days. The clinical efficacy was carried out with 16 participants (CEP-52158921.9.0000.5403), aged 20-30 years. Before (T0) and after 2 hours of the application of the formulations it was evaluated the skin microrelief-Visioscan®, transepidermal water loss (TEWL)-Tewameter®, skin water distribution-MoistureMAP and the stratum corneum water content-Corneometer®. In the arms, the skin without the tattoo was a control region and the tattooed area was divided into two regions, in which was applied the formulations F1 and F2. The formulations remained stable in the preliminary tests and did not show alterations in the rheograms. The F2 presented lower values of work of shear parameter, indicating that this formulation has better spreadability and sensorial perception. In addition, both formulations presented a texture profile compatible with the study's purposes. The clinical study showed that the F2 improved significantly the skin water distribution and reduced the TEWL, due the presence of the vitamins of the study, which are essential to the cutaneous function and manutention of eudermia. Finally, the formulation F2 added to the active substances showed better performance in the sensorial analysis and improved hydration and protection of tattooed skin, which is very important to guarantee the use of the products by the consumers.</p>

NOTE: The authors are responsible for the scientific content presented and its transcription in English.



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