To counteract aging, one of the possibilities is to use steadily cosmetics which protect and nourish the skin.

First of all, you can prevent and then correct. Prevention is done with skin hydration and the supply of essential elements that promote the physiological functions. Trying to maintain unchanged the water balance of the lips; essential for a meaty effect, turgid and red color. At the same time, facilitate cellular renewal delivering nutrients.

**Emollients**
The emollients, which are mainly lipids, improve the appearance of the lips giving greater flexibility and softness. Apply emollients with high absorption time is useful. Another option is to apply on the lips occlusive or semi-occlusive emollients. Occlusive emollients placed on the lips act as a coverage to water. The polarity of the molecules and the amount of product applied are important for determine film’s occlusivity. Occlusive emollients are usually highly apolar compounds (petrolatum, silicones), also semi-occlusive substances are equal or lower in polarity, but these substances generate thinner layers. Semi-occlusive substances are involved in the balance between lips and external environment by narrowing the leakage of water. The absorption time of emollients is very important, because apply a film that does not tend to penetrate the skin create an occlusive or semi-occlusive film for long time. The only way to get a short or average time occlusive film is to apply a mixture of emollients wich evaporate in different times. These substances, because of their highly apolar nature, do not penetrate the skin. The film thickness in application is fundamental to define the occlusivity and consequently the moisturizing effect. This «barrier» also protects from unwanted temperature changes.

**Humectants**
The humectants are hygroscopic substances (able to bind water molecules). The most used compounds are sugar alcohols, glycerin, propylene glycol, butylene glycol and pentylene glycol. These ingredients allow the penetration of water in stratum corneum’s surface by absorbing water. In this TEWL decrease. It is difficult to carry this category of humectants in a lip stick cause the chemical incompatibility with anhydrous emollients present in the lip balm. To solve this problem there is a new formulation solutions: non-aqueous emulsions (NAE): emulsions between ingredients readily soluble in water (internal phase) and anhydrous matrix (external phase). Then, there are humectants capable to penetrate epidermis decreasing TEWL by absorbing water in this layer without acting on the cutaneous osmotic pump. This type of humectant is clearly identified in hyaluronic acid and ectoin.
Active ingredients

Finally there are active ingredients against lip's aging that work by innovative biochemical channels.

The best known opportunity to increase lip hydration involve hyaluronic acid. The solution is to use different molecular weight hyaluronic acids that penetrate in different depth: cross-linked hyaluronic acid and different kinds of hyaluronic acid polymers create a «raft-molecule» which hydrates lips surface, sodium hyaluronate dehydrated with medium molecular weight microencapsulated in silica dimethyl sylilate and conveyed in humectants glycol to reach the external layers of epidermis while to reach deeper layers of epidermis, a low molecular weight fractions of hyaluronic acid obtained by enzymatic hydrolysis. Another method to deliver hyaluronic acid in various labial layers is the transmission of this within liposomes. There are two possible ways: the first is to insert hyaluronic acid in liposomes which are chemically different, so, it spread in different proportion inside labial skin layers. The second way (the most attractive solution from the point of view of the industrial process) is to intercalate hyaluronic acids with different molecular weight within a single type of liposome.

Hyaluronic acid, by binding water, increase the volume. It act a bit like a sponge, thus generates movements of extracellular matrix that decrease wrinkle's appearance. The result is less voluminous wrinkles and visible output cause decrease the intensity of gray areas on the lips. To reduce wrinkle's depth, attenuating skin deformation and stimulating epidermal renewal, scientific research created a peptide (Hexapeptide-48 HCl) able to stimulate the production of delta opioid receptor (DOR). Empirical studies show the correlation between the lack of delta-opioid and thin skin's layers. The amount of delta-opioid decrease because cytokines inhibit its activity. This peptite is able to reduce cytokines activity supporting the manifestation of molecules that neutralize citokines. The cosmetic effect obtained is an increase of cellular differentiation. Scientific evidence proving the ability of Hexapeptide-48 HCL decrease TEWL, hence the visibility of wrinkles. To increase the cell viability and the production of collagen and elastin, basic requirements for a healthy skin, has been studied a complex of aminoaocids (proline and lysine) combined with copper and Methyl gluco- side 6 phosphate which act in cellular biochemical reactions bringing significant improvements; By tests it has been shown a considerable increase in elastin and collagen production as well as to an increase of cell viability. The anti-wrinkle effect is the proliferation of the extracellular matrix that gives greater firmness to the lips. A method to nourish lips is a treatment with calcium.

To intervene effectively on wrinkles is therefore necessary to increase the level of water in skin. In fact, well-moisturized lips are healthy, defined, less wrinkled and confer a sense of health and attractiveness. There are two technical terms to define hydration, these are: the Natural Moisturizing Factor (NMF) and the Trans Epidermal Water Loss (TEWL – it measure the quality of skin barrier which prevents the excessive water loss). NMF is the set of water soluble substances, within stratum corneum, able to increase water retention. The most important NMF components are: aminoacids, urea, PCA, lactates, metal ions (mostly monovalent). A rise of NMF allows an increase of hydration in stratum corneum. The TEWL identifies the amount of water that passes from inside to outside of skin through epidermis. It is a measurement of perspiratio insensibilis. The TEWL is an important parameter, widely studied by dermatologists to understand the degree of skin health. The greater the value of TEWL, the greater the passage of water from inside to outside. So, the hydration is less. The NMF and TEWL are uniquely related: NMF increase produce a decrease in TEWL, but a reduction of TEWL not necessarily correspond to an increase of NMF. In fact, the skin acts as an osmotic pump; if the amount of water in the outer layers is insufficient, water will arrive from the lower layers. If we increase NMF components in the stratum corneum, the outermost layer will keep well hydrated, thus also the skin will be well hydrated and decrease the mathematical term TEWL. If I act by occluding the skin, it decreases the TEWL, but will not increase the NMF. The NMF is a contribution on the amount of certain substance inside skin, the TEWL is a purely physical value.
The smoothness of the lips was measured instrumentally, using a micro-camera (VisoFace Quick) which scours in 4 points the lips creating the relief. The data were processed by a software (Skin Surface Analyser SSA) in order to obtain a histogram of the depressions and a labial surface plot. The roughness of the lips decreased by 9.85% after 14 days, of 11.6% after 28 days and 13.3% after 56 days. In 80% of the volunteers, softness is improved after 28 and 56 days. Lip smoothness improved in 85% of volunteers after 28 and 56 days. Finally, the clinical evaluation of the visibility of wrinkles sees an improvement in the ‘85% of patients after 28 and 56 day. So, through clinical and instrumental tests it has been demonstrated its anti-wrinkle effect on the lips.

How to formulate
Lip balm is the most popular lip care product. We formulated a lip balm with the features described above. In particular, a lip stick in the form of non-aqueous emulsion (NAE), containing hyaluronic acid and sodium hyaluronate having different molecular weight, glycerine, antioxidants. The product also has a Sun Protection Factor of 15. In this formulation we conveyed in liposomes of lecithin three active hyaluronic acid or derivatives (Hydrolyzed hyaluronic acid – 0.05%, Sodium hyaluronate crosspolymer – 0.35%, Sodium hyaluronate – 0.25%). These ingredients provide superficial and deep, fast and slow hydration. By means of a hot-emulsification process, we have included in the formulation 7.5% of glycerin, a humectant which ensure surface hydration. Emollients and waxes used are semi-occlusive (Caprylic/capric triglyceride, Glyceryl behenate for example). Sunscreen SPF15 has been achieved using and Butyl Methoxydibenzoylmethane, Octocrylene and Hydroxyapatite, a mineral that contains calcium (useful for the skin) that has sun protection properties comparable to Titanium Dioxide (nano). The used antioxidants are vitamin E (Tocopherol), Vitamin C palmitate and an innovative antioxidant: Bis-ethylhexyhydroxymethoxy benzyl-malate.

It is the most abundant metal ion in the human body and is part of many fundamental biochemical processes in the skin self-repair mechanisms. To calcium is delivered in the form of calcium hydroxylapatite. In application, the PH of skin dissolves this biocompatible mineral allowing the penetration of calcium ions into labial skin. Calcium, as widely demonstrated by a study conducted with mice, contributes to increased cell proliferation and differentiation, increasing the cell turnover. When present in certain quantities in the extracellular matrix improves the health of the lips.

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