

## USE OF LAKAZES IN SELECTING CREAMS

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**Introduction.** Many technologies aimed at combating aging are based on active ingredients of natural origin.

**The aim of the study.** Increase of active ingredients for making organic cosmetics.

**Materials and methods.** Contemporary literary data, reviews of scientists and cosmetologists.

**The results obtained.** Lignin peroxidase has been identified for many years as an enzyme that destroys lignin in rotting trees, causing rapid discoloration. Since the molecular structure of lignin is similar to that of melanin, recent studies have confirmed that this peroxidase is also capable of destroying melanin.

Lignin peroxidase is a new skin lightening agent that acts by controlling the enzymatic oxidation process and the destruction of melanin in the skin. Most often it is obtained from a tree mushroom *Phanerochaete arryosporium*. In a double-blind, placebo-controlled study of 51 patients, the latter were divided into groups of day and night lignin peroxidase cream applied on one side of the face and 2% hydroquinone cream, or placebo on the other side. The use of lignin peroxidase cream was more effective, skin illumination was achieved faster than using 2% hydroquinone or placebo.

Independent expert Wendy Lewis argues that active substances of natural origin are the basis for the creation of new products of many famous brands. As an example, Korres with quercetin can be found in the new Wild rose collection or the Syneron whitening product containing peroxidase isolated from the lignin of the fungus to reduce pigmentation. Lignin peroxidase is an alternative to hydroquinone. This is a very promising and interesting ingredient, as the category of whitening agents that improve face color is one of the most sought after anti-age segments, especially in Asian countries.

**Conclusions.** Lignin peroxidase is well tolerated, and the frequency of side effects is minimized, so it is promising in cosmetology.

## PERSPECTIVES OF THE USE OF GIALURONIC ACID IN EXTEMPORARY RECEPTORY

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**Introduction.** Every woman sooner or later faces the problem of wrinkles, dryness and loss of natural skin color. The reason for these processes is the loss of skin with the age of natural hyaluronic acid. It is therefore advisable to introduce it into the extemporal creams.

**The aim** of the study. Analyze the causes of skin aging, examine the nature of hyaluronic acid, its compatibility with other components, depending on the type of skin; to determine which components should be included in the extemporal cream in the anti-age program.

**Materials and methods.** Before determining which components should be in the wrinkle cream, you need to disassemble the skin structure and which substances are deprived of skin at the age of 30+. Our skin consists of epidermis, dermis and subcutaneous fat (hypodermis).

The epidermis is an outer, thinnest layer of the skin, consisting of a corneous, spiced, granular and basal layer. The epidermis does not contain blood vessels, but is fed by the fact that nutrients and moisture propagate from the depths of the dermis to the outer skin of the skin. Therefore, the appearance of the skin depends on the qualitative and quantitative composition of the dermis.

The dermis consists of 2 layers of connective tissue: papillary and mesh. The papillary layer contains capillaries and numerous nerve endings. The net layer (reticular) is rich in lymphatic, blood vessels, nerve endings, sweat and sebaceous glands, collagen fibers and elastin, hyaluronic acid. Derma cells are fibroblasts that are involved in the synthesis of all skin structures. Collagen provides skin with

elasticity, elastin - elasticity, hyaluronic acid saturates the skin with moisture, supports protein fibers. With age, the number of structures of the dermis decreases, as a result, it becomes oblique, flabby and dry.

Subcutaneous fat (hypoderma) - the deepest layer of the skin, which is a depot for water-soluble vitamins, accumulates hormone estrogen, which affects the synthesis of collagen.

Hyaluronic acid (Hyaluronate) is a natural polysaccharide synthesized in the body by the cells of the dermis - fibroblasts. Due to the fact that the molecule contains both hydrophilic and hydrophobic parts, it can bind from 200-1000 molecules of water, thus providing moisturizing of the skin. Therefore, swelling under the eyes, dry skin, reducing its elasticity, the appearance of wrinkles, pigmentation - is the reason for the decrease in the content of hyaluronic acid.

Hyaluronic acid is high molecular and low molecular weight. High molecular weight contains large molecules that are not able to penetrate deep into the skin, so on the surface creates a film that prevents the evaporation of moisture. Low molecular weight penetrates the skin, regulates the formation of enzymes necessary for the integrity of the skin. It is better to introduce both types of hyaluronic acid into the creme, since the low molecular weight will penetrate into the skin and moisturize it, and high molecular weight will create the film and provide protection against evaporation.

Hyaluronic acid creates on the skin a protective film from ultraviolet radiation and microorganisms; has an antioxidant property, due to which it reduces inflammation when acne or acne occurs; synthesizes collagen; controls the water balance. Concentration can range from 0.01-1% but no higher than 2%, as it can provoke allergic reactions, worse digestion and fasting addiction and ceases to produce own hyaluronic acid. Pharmaceutical companies produce solutions of hyaluronic acid at a concentration of 0.25-0.55%. It is preferable to enter the simple cream of a hyaluronic acid (Hyaluronic acid), and not its salt (Sodium Hyaluronate). It has hydrophilic internals, therefore, it is introduced into the aqueous phase or as a gel. Slowly dissolves in cold water, it is possible to use warm, but distilled water. In the extemporal formulation, the most popular and promising are creams on emulsion bases. They can combine non-mixing substances and regulate bioavailability.

Emulsion cream is a thermodynamically unstable system consisting of two mutually soluble substances - oils and water. To ensure that the cream is stable and not flaccid, use an emulsifier that is selected according to the type of skin.

As the aging skin becomes dry and oiled, therefore, oils that are better suited for dry skin are selected from the oil phase. Among them: olive, almond, coconut, apricot, avocado, jojoba, shi, grape seed, walnut, hips, peach, sesame, cucumber, corn, and seaweed. Due to good conductivity, the oil provides an opportunity to penetrate the active substances into the skin, while the skin is well moisturized and saturated. The oil is able to maintain collagen fibers, trigger self-healing processes, smooth wrinkles, and nourish the skin with nutrients. But, it is better not to use mineral oils, as they create on the skin a film that clogs the pores. The oil phase is 10-40%.

The aqueous phase may contain purified water, hydrolyte or aqueous extract from the medicinal plant material. For dry and sensitive skin, hydrolytes from such plants as: rose, ylang ylang, celandine, cornflower, heather, hibiscus, calendula, lavender, linden, cucumber, chamomile, currants, hops, hips, grapes are best suited. The water phase can be 60-90% of the cream.

To combine these two phases, an emulsifier should be used. It accumulates at the boundary of two phases, creates a protective layer and reduces the interfacial tension. This is all due to the fact that the emulsifier is a difil molecule consisting of hydrophilic and hydrophobic parts.

To create a direct emulsion (O / B) using a hydrophilic emulsifier, whose hydrophilic-lipophilic balance (HLB) is 8-13. A thin fat film that is absorbed into the surface of the skin reduces the evaporation of moisture and thus directs moisture in the middle of the skin, which is essential for aging skin. In the winter it is better to use a dense cream, so it is better to take cream concentrations: 8-10%.

Emulsifiers for dry skin: guar gum, beeswax; agar-agar, Montanov emulsifier. Montanov emulsifier is a natural emulsifier that is compatible with all pigments, minerals, oils and active ingredients. In literary sources, it is indicated that it should be administered at a concentration of 1-5%, but we have experimentally found that for the formation of light consistency, the 10% concentration would be best suited. Among the modern "green" emulsifiers are also known Polawax, Olivem-1000, Emulsan, Lamequren.

**Results and discussion.** Hyaluronic acid is an integral part of the extemporal formulation for wrinkle control. When applying this component, attention should be paid to concentration, since allergy or may be addictive to the drug. When designing a recipe, remember the purpose, age and type of skin.

**Conclusion.** On the basis of the analysis it can be established that the pharmaceutical and cosmetic market presents a wide range of ready-made products on the basis of hyaluronic acid, but the extemporal formulation has several advantages over industrial production, because it allows taking into account the individual characteristics of a particular patient. Thus, when choosing components for the cream it is possible to choose a certain concentration of hyaluronic acid, oil and water phase and the emulsifier, depending on the type of skin.

## **EXPERIMENTAL STUDIES IN DEVELOPMENT OF SUPPOSITORIES OF COLOPROCTOLOGICAL APPLICATION**

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**Introduction.** In recent decades in Ukraine, as well as in most civilized countries of the world, there is a steady increase in the incidence and prevalence of coloproctological diseases, with the share of 15,3% among digestive diseases. The most common diseases of the anal canal and tissues of the perineum - hemorrhoids, anal fissures, rectum ulcers make up from 20 to 41% in the structure of coloproctological diseases. From hemorrhoids suffer 10-15% of the adult population, and its share among diseases of the rectum is about 42%; the proportion of anal fissure accounts for up to 15% of patients in proctologic hospitals. Diseases of the rectum of non-tumor genes significantly impair the quality of life of patients, in 2-3% they lead to disability, limit participation in social life. Drug treatment consists in the local application of drugs with anti-inflammatory, angioprotective and analgesic action. In accordance with the adapted clinical guideline based on the evidence of the All-Ukrainian Association of Gastroenterologists, the second line drugs of ulcerative colitis medical treatment are systemic and topical corticosteroids. Taking into account the absence of domestic suppositories containing corticosteroids on the pharmaceutical market, we consider it an urgent direction of scientific research the pharmaceutical development of suppositories containing hydrocortisone acetate. Historically, the first corticosteroid and benchmark for comparing the strength of all corticosteroids is hydrocortisone acetate.

**Aim.** To study physical and chemical properties of hydrocortisone acetate substance and suppositories with its content.

**Results and discussion.** Hydrocortisone acetate, like all corticosteroids, is a hydrophobic substance, so the first stage of the study was to investigate the solubility of the substance with the purpose of its rational introduction to the suppository basis. The solubility was determined in the following substances: glycerol, propylene glycol, polyethylene oxide-400 and hard fat at different temperatures and with the addition of solubilizers. It was found that hydrocortisone acetate is soluble in propylene glycol at a ratio of 1:50 with the addition of tween-80 and PEG-40-stearate in an amount of 0.3 g each.

**Conclusions.** Thus, the expediency of developing the composition of suppositories with hydrocortisone acetate has been substantiated and its solubility in solvents allowed for use in pharmaceutical technology has been investigated.

## **THE TOPICALITY OF USING GELS IN DERMATOLOGY**

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**Introduction.** Semisolids constitute a significant proportion of pharmaceutical dosage forms. They serve as carriers for drugs that are topically delivered by way of the skin, cornea, rectal tissue, nasal mucosa, vagina, buccal tissue, urethral membrane, and external ear lining. Because of their peculiar rheological behavior, semisolids can adhere to the application surface for sufficiently long periods before they are washed off. This