THEORETICAL RATIONALE OF EFFICIENCY AND SAFETY OF THE USE OF COSMETOLOGICAL PREPARATIONS OF HYALURONIC ACID

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Introduction. Hyaluronic acid (HA) - non-sulfonated glycosaminoglycan, is part of the connective, epithelial and nerve tissues. There are about 15 grams of GK in the body of a person weighing 70 kg, a third of which is split and synthesized daily, participating in the processes of regulation of tissue hydrodynamics, migration, proliferation, cell interaction.

For the first time HA was used in medicine in 1943 to treat frostbite in the military. Later a wide range of biological activity of the HA has determined its successful application in various fields of medicine: urology, rheumatology, proctology, oncology, cell therapy.

At present, the use of HA has become widespread as cosmetic preparations for smoothing wrinkles and correcting other defects of epithelial tissue.

The purpose of this work was a theoretical justification of the effectiveness and safety of the use of cosmetological preparations of hyaluronic acid.

Materials and methods. Analysis of scientific literature.

Results and discussion. According to modern scientific data, the elasticity and resilience of young skin largely depends on its hydration. One molecule of HA is able to attract about five hundred molecules of water, in connection with which the preparations of the HA are today the drugs of choice for the natural moistening of the skin.

It has been established that HA of different molecular weights has different penetrating properties. Traditional for the cosmetic market component is high molecular weight HA, with a molecular weight of more than 800 kDa, which has been used for a long time in cosmetology and is known for its unique moisturizing properties. But comparative tests of 50, 300, 800 and 1500kDa HA showed that HA with a molecular weight of more than 300 kDa has very low penetration properties in the skin, providing only a surface moistening effect.

Low molecular weight HA (with molecular weight of 50 kDa) has optimal properties for penetration into the skin. The 50 kDa HA is also much more effective at the genoregulatory level. Unlike the 800 kDa HA, which affects 40

genes, the 50 kDa HA significantly affects more than 120 genes, including key genes involved in the regulation of keratinocytes and the formation of complicated complexes of compounds, such as occlusal and other claudins.

It was also found that further reduction of the molecular weight of HA in the preparations does not lead to positive effects: HA of less than 20 kDa contributes to the onset of skin inflammation caused by the reaction of the tol-like receptors 2,4.

An essential characteristic of HA preparations is also the duration of their action. It is established that the duration of action of HA directly depends on the form of release, the degree of purification and the presence of other components in the composition of the HA. The most effective are preparations of highly purified stabilized HA, which are able to stay in the skin for a long time, maintains the water balance of cells, promotes their regeneration and protection, improves blood circulation and restores the work of the sebaceous glands.

As for the combined use of HA with other components, the combination of HA with inorganic UV filters (zinc oxide / titanium dioxide) is effective and justified, since according to modern data, UV radiation is an important factor that reduces the synthesis of HA by fibroblasts and simultaneously enhances the processes of its decomposition.

The undoubted advantage of HA preparations is also their high degree of safety: HA preparations do not cause allergic reactions and have no contraindications.

The review of the effectiveness and safety of the use of HA preparations can not be complete without specifying the limitations in their use: after prolonged use of HA preparations, fibroblasts lose the capacity for independent production of endogenous HA.

Conclusions.

1. Based on the analysis of modern scientific literature, the multifunctionality of HA preparations is shown, as well as the effectiveness and safety of their use.
2. A comparative analysis of various preparations of CG on penetrating ability and duration of action was carried out.
3. A large number of advantages and minor drawbacks of HA preparations are sufficient grounds for the development of new anti-aging HC preparations for the skin.