DEVELOPMENT OF REGENERATING LIP BALM TECHNOLOGY

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Introduction. Nowadays, the topical use of lip balms is actual, due to harmful influence of environment (ultraviolet light, temperature changing) on the thinnest skin of our body – the lips. The basic function of lip balm is creation of protective layer (barrier) on the surface of delicate skin of lips against negative external factors of an apartment: frost, wind and dry air.

Our balsam based on hyaluronic acid, which prevents dryness, a feeling of tightness of the skin of the lips. Formula of balsam contains also Cacao oil and Argan oil. Such composition protects the surface of lips from drying up due to retaining moisture inside skin. The main property of the balm is the reparative effect, that is, the restorative, that heals small cracks and wounds, restores the cells of the skin and copes with peeling.

As we know, hyaluronic acid has one more property – it visually increases the volume of lips by maintaining moisture inside the fibers of the skin. The Ukrainian market has little lip balm with hyaluronic acid, and this composition is not presented at all. We have researched the effectiveness of our lip balm and picked up the most productive production technology for it.

Aim: the aim of our research was development of new composition and effective technology of regenerating action lip balm.

Materials and methods: As objects of researches we took cacao oil and Argan oil, and as a regenerating component – hyaluronic acid. Technological process included melting of cacao oil and mixing it with Argan oil. In got mixture hyaluronic acid is dispergated with the help to the reactor and heated up to 60°C. After it by means of mixer with included electrical heater an emulsifier (Twin) is added to mixter and balm is homogenized.

Result and discussion.

On the basis of undertaken complex studies, namely: study of structure-mechanical properties, development of technology of balsam base, selection of active substances by means of sensory descriptions, on the basis of microscopic analysis the basic critical stages processes production of regenerating lip balsam action were chosen. It consists of the below enumerated stages:

Stage 1. Preproduction

Weigh out the necessary amounts of cacao oil and argan oil.

Stage 2. Preparation of base. Dissolution of oil of cacao

In collector out the necessary amount of cacao oil is weighed and melted.

Stage 3. Adding of argan oil

On the scales weigh the necessary amount of argan oil and add to the cocoa butter. Mix the composition at a temperature of 60 ± 5 ° C until the components are completely melted. Transfer oil solutions to step 4 using compressed air.

Stage 4. Dispersion of Hyaluronic Acid

From the measuring system, measure the required amount of purified water to the reactor. On the scales weigh the required amount of hyaluronic acid and add into the reactor. Mix 10 ± 2 minutes at temperature of 60 ± 5 ° C up to a homogeneity ion. Transfer the solution of surfactant to stage 5.

Stage 5. Preparation of a mixture of hyaluronic acid and emulsifier Twin-80. Getting an alloy of oils.

The reactor is manually loaded with cocoa butter from the tank for weighing. The melting of the Twin is carried out with the electric heating of the reactor at + 60 °C, with slow cooling to + 40 °C. After achieving 40 °C cocoa oil is added.

Stage 6. Homogenization of Balsam.

The mixture in the reactor is homogenised for 15 minutes with simultaneous vacuuming until a homogeneous white ointment is obtained. The mixture in the reactor than cooled to room temperature at constant stirring.

Stage 7. Filling in the form

The resulting mass is reloaded into the bunker of the filling machine.

With the help of a tubing machine, balm is packed in the form. Control the accuracy of the dosage, the performance of the machine and the correctness of the imprint on the drain (serial number and expiration date).

Stage 8. Packing of forms in boxes

Forms with the instructions for use are packed in packages on a packing machine. Each form, together with the instructions for use, is packed in a pack of cardboard. Packs are placed in cardboard boxes by hand on the table. In each box, put 50 pcs of packs with the forms and sheet "Packager".

Conclusion: On the basis of undertaken experimental studies the technology of lip balm was developed. Optimal temperature mode and order of introduction of components were chosen.

THE CHOICE OF MUCOADHESIVE IN THE COMPOSITION OF VAGINAL GEL

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Introduction. When developing a vaginal gel, an important criterion for its effectiveness is the prolongation of action to provide maximum therapeutic effect. For the fixation of the drug on the surface of the mucous membrane auxiliary substances – mucoadhesives are introduced to the composition, which cause not only the retention time of the substance on the surface, but also its uniform distribution and the completeness of API release. The purpose of the work was to conduct a study on the choice of mucoadhesive for the introduction to gel with resveratrol and hyaluronic acid.

Materials and methods. In the course of the study samples of gels with different mucoadhesives in the composition were used. Mucoadhesives used were: sodium alginate (FMC BioPolimer AS, Norway), methyl cellulose (Shin Etsu, Germany), Methocel – methyl cellulose with hydroxypropylmethyl cellulose (Dow Pharmaceutical Sciences, USA), OraRez® W-100L16 – vinyl methyl ether and maleic anhydride copolymer (BOAI, China). As a comparison drug, vaginal gel "Gynodec" (Yuriya-Pharm) was used. During the study, the rate of the gel distribution on the surface of the mucous membrane model, the degree of deformation under the action of mechanical forces, the degree of fixation of the gel on the mucosa surface under the influence of the physiological fluid and the adhesion ability of the samples have been determined.

Results and discussion. On the basis of the complex of physico-chemical research, indicators of bioadhesion of vaginal gel samples with different mucoadhesives in the composition have been established. By definition of the rate of gel distribution on the surface of the model of genital mucosa, it has been established that the best properties possesses the sample containing sodium alginate. Its rate of distribution is close to the reference drug. The study of gel samples deformation under the action of mechanical forces had shown that the sample with sodium alginate has the highest index of internal cohesion. As a result of determining the gel fixation on the surface of the mucous membrane under the influence of the model solution of the physiological fluid, it has been established that the best indicators have samples with methyl cellulose and sodium alginate in the composition. They did not change the shape of the spot and fixed well on the surface. It has been tensiometrically determined that the addition of sodium alginate in a concentration of 0.5% will provide a satisfactory adhesive ability of the vaginal gel.

Conclusions. According to the results of the conducted research, it is rational to introduce sodium alginate into the vaginal gel as a mucoadhesive substance.