

STADY OF PHYSICAL AND CHEMICAL CHARACTERISTICS OF A MODERN INTIMATE HYGIENE AGENT

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Introduction The performed marketing researches allow to assert that at present the hygienic care of female body intimate areas plays a significant role in everyday life and is an essential factor for health support. It is well-known that dead cells, moisture, and body secretion remnants form a favorable environment for the uncontrolled reproduction of pathogenic microorganisms on the lingerie fabric, resulting in pH change (due to the excretion of ammonia and aliphatic amines by bacteria), emanation of odor, as well as the risk of skin irritation initiation. Therefore, personal hygiene of female genital organs requires meticulous and at the same time thorough cleansing, which would not disrupt the natural functions of sensitive areas of the mucous membranes and would not provoke appearance of unwanted reactions.

Aim The purpose of this research work was to study and compare the established physical and chemical characteristics of the developed foam-washing agent with ready-made gels for intimate hygiene produced by manufacturers presented in the Ukrainian market.

Materials and methods On analysis of home and foreign normative and technical documentation, we established optimal physical and chemical indicators that a modern gel for intimate hygiene should correspond to the following: appearance – homogeneous gel-like mass, which can have a pearly look; color – must match the colors of the product of a certain name; scent – must match the smell of the product of a certain name; pH value should be in the range of 3.5–4.5; foaming capacity-foam number should be not <145.0 mm; foam resistance – 0.8–1.0 μ m; structural viscosity should be in the range 2000–12000 $\text{mPa} \cdot \text{s}$.

To obtain optimal results, all studies were conducted at room temperature $+15$ – $+25^\circ\text{C}$.

The rheological parameters (structural viscosity, shear stress, and other rheological parameters) were measured using Brookfield DV-II + PRO (USA) viscosimeter, SC 4-21 spindle. The following technique was used: Approximately 8.0–8.5 g of specimen were placed into the chamber, and the spindle was lowered into it, which led to rotational movements (20, 30, 35, 40, 50, 60, 80, and 100 r.p.m.), starting from small deformation rates and then in reverse order. At the same time, the indicators were fixed shear rates (Dr, c-1: 18.6, 27.9, 32.5, 37.2, 46.5, 55.8, 74.4, 93), shear stresses (τ , Pa), and structural viscosity (milli Pascals per second ($\text{mPa} \cdot \text{s}$)) on the viscometer display. This measurement was determined in triplicate.

Results and discussion The comparative characteristic of the samples under the study is given in Table 1. In our opinion, it should be noted that all the gels for intimate hygiene under study, other than Biona-forte and the product developed by us, had a typical specific scent that was proper for aromatizers included in their composition. In our opinion, this is inappropriate, as it is known that this particular group of auxiliary substances can cause irritation of the skin and mucous membranes. It was noted that, unfortunately, not all specimens had the pH value interval recommended for the agents of this group. It is well known that the study of structural and mechanical characteristics is an indispensable step in the development of foam-washing agents comprising gelators. To study the flow type and the presence of thixotropic properties in the investigated gels, we made complete rheograms that show the dependence on the shear stress (τ , Pa) on the rate gradient (Dr, c-1). These reoparameters were obtained by the method of continuous ever-increasing structure destruction, as a function of the shear stress. The readings were made while increasing spindle speed from 20 to 100 r.p.m. reaching a constant shear stress at the maximum number of revolutions and further reducing the number of spindle revolutions. The second stage of the study of structural-mechanical properties was devoted to the study of the dependence of structural viscosity on the shear rate gradient of the investigated gel samples.

One of the most important indicators of structural viscosity is mechanical stability (MS) as well. Therefore, the next step in our study was to calculate the value of MS for the developed gel and the means of comparison.

It should be noted that the optimal MS value is equal to 1.0. Consequently, analyzing the obtained values of the MS of the gel developed by us and the investigated agents, we can assert that all samples are close to the optimal value of MS, which indicates a slight degree of destruction of the structure of gels in the process of their mixing under industrial conditions and satisfactory extrusion properties.

Conclusions We carried out a comparative analysis of a number of gels for intimate hygiene and the agent we developed (by their merchandising and physical and chemical indicators), which are presented in the Ukrainian market in the average price range.

At this stage, the structural-mechanical properties of experimental samples were investigated, and it was proved that the agent developed by us had satisfactory characteristics in comparison with the ready-made agents for intimate hygiene. It was also established that the gel for intimate hygiene proposed by us had satisfactory consumer and physical and chemical parameters (the pH value is 3.5–4.5; the foaming capacity is foam number not <145.0 mm; and foam stability is 0.8–1.0 conv.units).

Thus, in our opinion, the developed gel can occupy its competitive position in the market among available consumer products in Ukraine.

THE DEVELOPMENT OF A POWDER WITH A PHYTOEXTRACT

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Introduction. Human skin is a powerful immunological barrier, being an integral part of innate immunity. Its gradual formation begins with infancy. The main functions are formed, such as protective function, metabolic function and signal function that allows to signal from the skin to the brain. The skin of a newborn child is not yet ready to perform these functions, so they react to external stimuli, much stronger than the skin of an adult. Unformed as a function of heat transfer and maintain the acidity requires help from the outside. Special care requires the skin under the diaper, as it is subject to frequent irritation. That is why it is very important to take care of the skin of a newborn baby. Especially important for our time the use of products containing natural ingredients, they are harmless and little allergic that is especially important for children's skin. The use of phytoextract with anti-inflammatory, sedative and local anesthetic properties, will give the desired high-performance result.

Aim. The creation of a powder composition for the prevention of diaper rash and dermatitis, which significantly improves the condition of the skin, stimulates regeneration processes, allows you to keep the skin dry, which generally provides a preventive effect.

Material and methods. The paper uses standard (physico-chemical, technological, etc.) methods included in the State Pharmacopoeia of the Republic of Kazakhstan.

Results and discussion. There are known powdery compositions for skin treatment, which contain as the main components and/or talc, starch, chalk, zinc oxide, montmorillonite clays and antiseptic (voitsekhovskaya A. L. Wolfenson I. Cosmetics today. M. 1988).

For children's cosmetics use more finely dispersed compositions, for example, on the basis of finely ground egg shells (Japan, application n 61-36806v, 1987).

The closest in terms of the set of signs is baby powder (*Asperio pueritis*) for external use, which includes talc, zinc oxide, potato starch. However, the composition of the powder does not include biologically active substances that can remove inflammation, enhance skin regeneration. Included in the powder talc and starch as a base contribute to the absorption of moisture, sweat. Zinc oxide disinfects and dries the skin.

The proposed composition contains talc, starch, zinc oxide, additionally dry chamomile extract.