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RESEARCH ON THE DEVELOPMENT OF A STOMATOLOGICAL PHYTOTOOTHPASTE BASED ON LOCAL RAW MATERIALS

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Relevance: Phytotherapy is a rich and inexhaustible source of nature, which provides the possibility of individual use of medicinal plants, taking into account the classification of diseases, leading symptoms and syndromes, as well as their etiopathogenesis. As a result, maximum therapeutic effect can be achieved with minimal side effects. Prevention and treatment of oral cavity diseases is one of the urgent problems of modern medicine. Currently, toothpastes are among the most effective hygienic means for the prevention of oral and dental diseases. Especially, toothpastes containing alcohol-aqueous extracts of plants improve the metabolic processes of the oral cavity, promote tissue regeneration, possess antiseptic and immunocorrective properties, and have anti-inflammatory, hemostatic, wound-healing, stimulating, deodorizing, and tissue trophic-normalizing effects. Chronic inflammatory processes occurring in the oral cavity negatively affect the general condition of the whole organism. At present, the pharmaceutical market of our country is supplied with various synthetic and plant-based medicinal products for the treatment and prevention of inflammatory diseases of the oral cavity. Today, the creation of new dosage forms based on local medicinal plants is one of the pressing tasks of modern pharmacy.

The aim of the study. To determine the physicochemical and technological properties of the stomatological phytotoothpaste developed on the basis of local raw materials.

Methods. The optimal composition and technology of the stomatological phytotoothpaste were developed, with sodium carboxymethyl cellulose used as the paste-forming base. As a result of the conducted research, it was found that some quality indicators of the prepared phytotoothpaste—such as appearance, authenticity, uniformity, thermal and colloidal stability, and pH value—comply with the requirements of regulatory documents.

The structural composition of this soft dosage form and its transition to a flowing state is mainly characterized by effective viscosity, which is related to the internal friction of substances and layers, and the deformational changes occurring under the influence of shear stress or flow rate gradient. Taking this into account, rheological studies of the paste under shear flow at different temperatures were carried out using the "Reotest-2" apparatus.

Results. According to the experimental results, the phytotoothpaste has a non-Newtonian flow under shear conditions. The paste behaved as a stable system, since with the increase of temperature from 25°C to 40°C, a decrease in shear yield stress was observed. In addition, the hardness coefficient decreased from 34 Pa·s to 25 Pa·s, and the mechanical stability decreased from 2.2 to 1.8.

Conclusions. The physicochemical and technological properties of the stomatological phytotoothpaste were determined. The toothpaste is characterized by its composition and values of shear yield stress, structural hardness, and mechanical stability depending on temperature. Pastes with such indicators are suitable for practical application as a soft dosage form.