



DEVELOPMENT OF TECHNOLOGY AND QUALITY ASSESSMENT OF DENTAL GEL

N.M. Rizayeva¹

A. Alkorov²

Tashkent Pharmaceutical Institute, Tashkent city, Republic of Uzbekistan

e-mail: nigoraruzikulovaphd@gmail.com

<https://doi.org/10.5281/zenodo.17326011>

Relevance: Parrot and oral cavity diseases are multifactorial in nature and, as established by modern research, are caused by microbial aggression. Therefore, dental products should primarily have an antibacterial effect. Considering the accompanying inflammatory processes, pain, and delayed tissue regeneration, dental preparations should be combined, possessing anti-inflammatory, analgesic, and promoting accelerated tissue regeneration. The article is dedicated to developing the technology of a dental gel based on modern hydrophilic bases, selecting the optimal composition, and choosing preservatives. The article provides a classification, brief description, and possible side effects of modern oral candidiasis medications.

Research objective: Conduct research on selecting the composition of a metronidazole and nystatin-containing dental gel, selecting the optimal basis for developing a gel technology for treating periodontal diseases.

Materials and methods: Hydrophilic gel formers readily incorporate large quantities of drugs and contribute to their complete and uniform release, allowing for the regulation of the biopharmaceutical and structural-mechanical properties of dental gels within the necessary range. Hydrophilic gel-forming agents include aqueous solutions of polymers such as sodium - CMC, MC, hydroxyethylcellulose, carbopol, sodium alginate, gelatin, and pectin. The gel-forming pH of the above-mentioned bases lies in the neutral region, which is convenient for oral use.

Results: A number of physicochemical indicators were identified, including the appearance, homogeneity of the gel, thermal stability, pH value of the solution obtained by aqueous extraction, and colloidal stability. Visual determination of the gel's appearance was carried out as follows: a gel sample was applied to a slide with a thin layer and then assessed with the naked eye. To assess the homogeneity of the gel, four samples weighing 0.02-0.03 g were taken. Each sample was applied to a slide, covered with another slide, and pressed tightly to create spots about 2 cm in diameter. As a result, the absence of particles in the stains indicates that the prepared gel meets the requirements of the ND. Determination of the pH of the aqueous extract of the gel was carried out by the potentiometric method using the Metler Toledo (Germany) pH meter. During the measurement process, 5.0 grams of gel were mixed with 50 milliliters of purified water and heated in a water bath at 50-60°C, after which they were filtered through a filter with white tape (TU 6-09-1678-86). The data obtained during the experiment are presented in the table. Determination of colloidal stability. Approximately 3.0-5.0 g of the gel sample was weighed and centrifuged in a CUM centrifuge at 1500 rpm for 5 minutes. Gel separation was not observed. To determine the thermal stability, 5 test tubes were taken and filled to 2/3 and placed in a thermostat at a temperature of 40-45°C for 24 hours, then the samples were placed in a refrigerator for 24 hours at 10-12°C. After 24 hours, they were kept at room temperature. When viewed with the naked eye, no layering of the gel samples was observed.

Conclusions: The obtained results show that the main advantage of the new system - a gel absorbed in the oral mucosa - is the ease of use, the possibility of long-term action, which allows for a course of treatment in the treatment of periodontal diseases. The quality indicators of the gel were



MPHAPP

THE 6TH INTERNATIONAL SCIENTIFIC AND PRACTICAL
CONFERENCE "MODERN PHARMACEUTICS: ACTUAL
PROBLEMS AND PROSPECTS"
TASHKENT, OCTOBER 17, 2025

in-academy.uz

determined: description, homogeneity of consistency, solubility, pH of aqueous solution, colloidal stability, and thermostability.