

THE DEVELOPMENT OF THE COMPOSITION AND TECHNOLOGY OF THE NEW PLANT PARODONTOPROTECTOR

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Statistical studies of the last years indicate the high rate of prevalence of inflammatory diseases of parodontium and of mucous membrane of the oral cavity in different age groups. Moreover, the indicated diseases have a negative influence on the quality of life, that is why they belong to the socially important diseases in medical practice. Therefore, at present the development of new drugs for the pharmacotherapy of inflammatory conditions in dentistry is a topical interest for the scientists who work in the pharmaceutical field, the solution of which should be based on the phased researches.

The purpose of our work was a theoretical and an experimental justification, the development of composition, technology and quality control methods of a new remedy in the form of herbal collection for the treatment of inflammatory diseases of parodontium and those of mucous membrane of the oral cavity. The objects of study included medicinal plant raw materials, tincture of Japanese Sophora, the collection «Denta-Phyt». The research was conducted by using organoleptical, pharmaco-technological, microbiological, biological, physical, chemical, mathematical methods.

Among the drugs for dentistry registered on the pharmaceutical market of Ukraine the limitation of complex phytomedicines, which include collections, was established and this factor indicates the prospects of their development for the further introduction into the medical practice.

According to the data on the use of collections for the treatment of inflammatory dental lesions in folk and official medicine in prescriptions the most widespread medicinal plants were selected and stable combinations with other plants in the composition of each collection were defined for them. As a result of analysis it has been noted the objects frequently combined with each other and perspective medicinal plants, the raw materials of which due to the content of biologically active substances, may be incorporated into the complex dental preparations. The microbiological screening of the infusions of raw materials of selected plants for the purpose of the experimental substantiation of MPRM-components of a new collection was carried out. The research was conducted by using the method of diffusion in agar in the modification of "wells". The medicinal plant raw material with the most expressive antimicrobial activity was defined due to the obtained values of the diameters of the zones of stunted growth of microorganisms *S. aureus*, *E. coli*, *P. aeruginosa*, *B. subtilis*, *P. vulgaris*, *C. albicans* and five MPRM-ingredients of the collection were selected: sage leaves, marigold flowers, St. John's wort herbs, linden flowers, peppermint leaves. The impact of the tincture of Japanese Sophora on the antibacterial and antifungal activity of modeling samples of the collection and also the content of the given component in the preparation were defined on the basis of microbiological studies, besides the substantiation of the optimum ratio of ingredients in phytopreparations. The rational composition of the new plant medicine for the local use in dentistry was established and it was conditionally called "Denta-Phyt"

(to 100.0): St. John's wort herbs (29.0), linden flowers (29.0), mint leaves (14, 0), marigold flowers (14.0), sage leaves (14.0), the infusion of Japanese Sophora (10.0).

The technological parameters of each medicinal plant raw material of phytomedicine and of the developed collection, which should be taken into consideration when making the drug, were studied with the help of pharmaco-technological researches. A rational technology of the new plant medicine was substantiated on the basis of analysis of the influence of regimes of getting infusions from the collection and the stage of dividing the components up to the value of solid residue, which indicates the content of extractive substances. The three separate fractions of the collection "Denta-Phyt" were studied with a particle size of 1.2 mm, 2.3 mm and 3.4 mm, for which the aqueous extracts were obtained by using different modes: the infusion time in a water bath (from 2 to 28 min in increments of 6.5 min) and the infusion time at room temperature (from 15 to 60 min in increments of 15 min). Two fractions of the collection of herbs - 1.2 mm and 2.3 mm, which can be combined into one with a particle size of 1-3 mm, were chosen according to the results of the study. The infusion time during 15 min in a boiling water bath and during 45 min at room temperature was selected as a rational mode of obtaining the aqueous extract from the phytomedicine.

The development of the project of the quality control methods for the new collection "Denta-Phyt" was based on a series of physico-chemical studies, as a result of which the parameters, by the following indicators such as appearance, identification, the loss of weight on drying, total ash, ash insoluble in hydrochloric acid, microbiological purity, a substance extracted, quantification of the active ingredients, were established. The main functional groups of components of the phytomedicine such as flavonoids, essential oils, polysaccharides, phenolic compounds were defined by using qualitative reactions. With regard for the different methods of tests based on for the identification of flavonoid compounds and essential oils in the composition of ingredients of collection ingredients (according to the monographs of the State Pharmacopoeia of Ukraine), it has been developed the unified methodology for their identification. So, the biologically active substances such as flavonoids (rutin, hyperoside, caffeic and chlorogenic acids) and essential oils (menthol, thymol, cineole) were detected by thin-layer chromatography analysis. The quantitative determination of active substances of the phytomedicine was carried out by the spectrophotometric method according to which the content of amount of flavonoids was established. The spectrum of pharmacological activity was defined on the basis of several studies. The anti-inflammatory influence of the infusion of the collection of herbs on the model of an acute aseptic inflammation caused by injection of carrageenin was detected. According to the method of Althausen, the presence of a moderate hemostatic action was established. Also, on the model of the experimental periodontitis, the specific parodontoprotecting activity of the collection "Denta-Phyt", which has a more expressive effect of the herbal preparation in comparison with the collection "Elekasol", was defined.

Thus, according to the results of studies conducted sequentially, the optimum composition, a rational technology and quality control methods of the new parodontoprotector – the collection "Denta-Phyt" were developed.