BIOPHARMACEUTICAL STUDY OF AN ANTIOXIDANT DRUG FORMULATION BASED ON ST. JOHN'S WORT (HYPERICUM PERFORATUM)

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Introduction. Oxidative stress plays a key role in the development of many disorders associated with the cardiovascular and nervous systems as well as chronic inflammation. Consequently, phytopreparations based on natural antioxidants have been the focus of extensive pharmaceutical research in recent years. Hypericum perforatum (commonly known as St. John's wort) is rich in potent antioxidant constituents such as flavonoids, phenolic compounds, and chlorogenic acid. Traditionally, this plant has been used in folk medicine for its anti-inflammatory and sedative effects. Modern pharmaceutical technologies make it possible to develop stable formulations with high bioavailability from this plant material.

Aim of the Study. To develop, on a scientific basis, the composition of a medicinal product derived from Hypericum perforatum extract and to investigate its biopharmaceutical properties.

Materials and Methods. The research plan includes collecting and standardizing the plant raw material in accordance with pharmacopeial requirements, selecting optimal extraction methods, and evaluating excipients such as microcrystalline cellulose, polyvinylpyrrolidone, starch, and others. The physical-chemical stability of the final dosage form will be tested.

Bioavailability will be assessed using in-vitro dissolution and disintegration tests as well as in-vivo animal studies. For the dissolution test, according to the XI State Pharmacopeia, in the absence of specific indicators, the rotating basket apparatus will be operated at 150 rpm for 45 minutes, and the tablet efficacy must exceed 75 %. For the disintegration test, also following the XI State Pharmacopeia, in the absence of specific requirements, testing will be performed on six tablets at a frequency of 28–32 movements per minute for 15 minutes, with a required yield of more than 75 %.

Expected Results. The study is expected to provide scientifically grounded conclusions regarding the optimal manufacturing technology of the Hypericum perforatum-based drug, the influence of excipients, and the parameters of stability and bioavailability. These data will have practical significance for the development of a new antioxidant phytopreparation.

Conclusion. A preparation based on Hypericum perforatum extract has the potential to reduce oxidative stress and may serve as a promising therapeutic agent for the prevention of chronic inflammation, metabolic syndrome, and cardiovascular diseases.