

Despite the focus of this work on solving applied optimization problems in agricultural biotechnology, it is also advisable to apply them to solve applied optimization problems for other complex systems. This will improve the quality of functioning of simulated systems by taking into account the structure of the studied objects and characteristics of technical means providing the studied process.

## **Studies of the pharmacotechnological properties of the *Rhodiola rosea* and Quercetin extract powder**

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One of the leading problems of modern medicine is the development of tools and methods to prevent the growth of pathological changes in the body, which are caused by stress reactions of various nature. Currently, the problem of both treatment and prevention of a wide range of diseases caused by chronic stress - various forms of psychosomatic pathology and neurosis is very relevant.

We decided to develop a medicinal product in the form of chewable tablets for the treatment of neuroses. *Rhodiola rosea* extract and quercetin were chosen as active substances. Quercetin has an antioxidant and capillary-stabilizing effect, and *Rhodiola rosea* extract is often used as a general tonic and adaptogen.

The production of tablets begins with the study of the properties of the original medicinal substances, which determine the rational way of tablets and the choice of excipients. The most complete conduct of the tablet material during compression reflects the mass, fluidity, degree of compaction and compressibility. Therefore, we conducted a study of the properties of the powder of dry extract of *Rhodiola rosea* and quercetin. In the course of the study, it was determined that the dry extract of *Rhodiola rosea* belongs to low-flowing materials, and quercetin has sufficient fluidity and the ability to compact. The moisture content in the material and the particle size have a significant influence on the fluidity and compaction of powders.

The data obtained from studies of the pharmacotechnological properties of the *Rhodiola Rosea* and Quercetin extract powder make it possible to predict the composition and amount of excipients for the development of the drug in the form of chewable tablets.

**Investigation the antimicrobial activity of ethanolic extract of green tea leaves  
against the Gram-positive strains**

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Green tea leaves are known to contain various bioactive compounds with potential health benefits, including antibacterial properties. The main components of green tea leaves responsible for this property are catechins, which are powerful antioxidants that can also exhibit antimicrobial activity.

Green tea leaves extract can be used as a natural alternative to synthetic antibiotics. Unlike synthetic antibiotics, which can lead to the development of antibiotic-resistant strains of bacteria, green tea leaves extract does not promote the emergence of resistant strains. Additionally, green tea leaves extract can be used in combination with synthetic antibiotics to enhance their effectiveness and reduce their side effects.

The aim of the study was determined the antibacterial activity of green tea leaves ethanolic liquid extract against the Gram-positive strains.

Green tea leaves of spices Chun My were taken for the study, the raw material was collected in Anhui province (China) from March to May. 10.0 g of the grinded leaves was mixed with 200 mL of 96% ethanol. Extraction was carried out within 1 hour on water bath with a condenser, then repeated two times with a new portion of the solvent. After that the obtained extracts were filtrated and concentrated using rotary evaporator to 20 mL.

The antibacterial activity was determined by the method of wells. Preparation of microorganisms` suspensions with determined concentrations of microorganisms