

Systems of polyphenols with prebiotic polymers as combinations with an unknown potential of biological activity

Type II diabetes is increasing dramatically. Moreover, the effectiveness of pharmacological treatment of diabetes often does not allow for the proper reduction of blood sugar levels, which results in the appearance of side effects (e.g., metabolic syndrome, retinopathy, and nephropathy). That is why it is essential to search for new therapeutic solutions or support the pharmacological actions already existing.

As a result of the project implementation, systems of plant raw materials with prebiotic substances will be obtained. Plant raw materials will be the basis for obtaining standardized extracts, characterized by a significant hypoglycemic potential, confirmed in several enzymatic and non-enzymatic tests conducted in vitro. Bearing in mind the importance of intestinal dysbiosis on carbohydrate disorders, standardized extracts will be combined with selected prebiotic substances during the lyophilization process. The obtained Extract - Prebiotic combinations will be subjected to physicochemical tests, and the dissolution rate profiles and changes in biological activity will be determined for them. The tests will be carried out in vitro continuously during the fermentation process. The project's final stage will be to determine the impact of selected polyphenols and the assemblies derived from them on the human microbiome.

As a result of the research, multifunctional systems for the supply of plant raw materials with hypoglycemic potential, the possibility of stabilizing the intestinal microbiome through the use of prebiotics, and a modified release of active substances from the matrix ensuring a good dosing algorithm for pharmacologically active polyphenols will be obtained.