

DESCRIPTION FOR THE GENERAL PUBLIC

Dynamic development of our civilization has contributed to huge advances in science and technology and considerably improved our living conditions. However, it also brought about numerous health related problems and exacerbated the issue of population aging. The most serious problems in the field of civilization and epidemiological diseases include increasing occurrence of diseases with anti-inflammatory background, growing morbidity of diabetes in people of all ages or commonness of neurodegenerative diseases that are on the rise and have reached a status of an epidemic and a top problem of 21st century. The most effective strategy in the prevention and treatment of these conditions is a conscious approach to diet through the supply of biologically active compounds and a healthy lifestyle. So far, human diet has been balanced based on bioactive compounds of plant products such as fruits, vegetables and herbs, while novel and alternative sources of phytochemicals have been constantly looked for. Considering this search, special attention should be focused on an unconventional and very rich source of bioactive substances, that is fruit tree leaves.

The aim of the project is a multidimensional analysis of phytochemicals in an unconventional material, i.e. the leaves of fruit trees (sour cherry, sweet cherry, plum, apricot, peach, pear, quince, and apple) and verification of their biological potential in treatment of diseases and medical conditions of 21st century. The project outcomes will be used for designing a model beverage with programmed health-promoting properties aimed at the prevention and treatment of the civilization diseases.

In summary, the experiments conducted during this project will result in:

- Identification of the bioactive fraction in the unconventional biological material, i.e. the leaves of selected fruit trees (by LC-MS QToF and UPLC-PDA-FL),
- Confirmation of lack of cytotoxicity and genotoxicity towards selected organs and cells of human alimentary tract, including gastric mucosa, intestinal epithelium and liver,
- Identification of biological properties in a model matrix *in vitro*
- Designing a new innovative product with targeted health-promoting properties in the form of innovative model beverages with acceptable sensory properties.