

In recent years, more and more attention has been paid to the effect of food on the human body. Both in Poland and in other European countries, the main cause of death is chronic non-communicable diseases (NCD), related, inter alia, to malnutrition. The development of chronic, autoimmune, neurodegenerative diseases, cancer and wasting of the body is related to the so-called oxidative stress caused by high levels of free oxygen radicals (ROS). Epidemiological studies provide evidence that eating foods rich in antioxidants reduces the risk of developing chronic diseases and oxidative stress. The consumption of fruit, vegetables and their preserves, which are an excellent source of antioxidant and health-promoting substances, has a particularly beneficial effect on the human body. The leaves of red, yellow and black raspberry varieties, characterized by a high content of polyphenolic compounds with bioactive properties, can be used in the prevention of chronic non-communicable diseases.

The aim of the project is to analyze the profile and content of phytochemicals in the leaves of colorful raspberry varieties and the possibility of modulating their health-promoting properties through the use of alcohol-vinegar fermentation. Based on the obtained results, stable model preparations of bioactive compounds with enhanced health-promoting properties will be developed.

The project includes 7 research stages, the effect of which will be:

- qualitative and quantitative identification of the fraction of bioactive compounds of red, black and yellow raspberry varieties leaves, using LC-MS techniques
- determination of the bioactive properties of the polyphenol fractions and their bioavailability during simulated *in vitro* digestion
- the use of alcohol-acetic fermentation in order to increase biological properties
- obtaining stable, model preparations of bioactive compounds with enhanced health-promoting properties

Research conducted in the project will be interdisciplinary in the field of chemistry, medicine and food technology.