

The aim of this study is to identify and analyze the structure and functions of novel prenyllipids in plants. A number of prenyllipids are a strong antioxidants. Prenyllipids are also engaged in electron transport chains in bacteria, plants and animals as a electron and proton carriers. The prenyllipids family includes i.e. vitamin E and coenzyme Q10, which are widely used in medicine, pharmacy and cosmetics. The information which can be found in several old papers indicate that there are still a big group of untypical, unidentified prenyllipids – i.e. vitamin E derivatives and ubiquinone homologues. In the present project, with modern techniques, we are going to verify the occurrence and origin of novel prenyllipids in different plant species. Our comprehensive approach will include: extraction and structural identification of novel prenyllipids, measurements of their antioxidant activity (*in vivo* and in the model systems), as well the analysis of their anticancer properties. The results obtained in this study will help to explain the role of novel prenyllipids in plants. Moreover, these compounds as the exogenous antioxidants and vitamins, can be used in prevention and treatments of diseases, including cancers.