The increased interest in a healthy lifestyle boosts the use of an appropriate diet, based mainly on fresh vegetable products. This widely encouraged trend brings the need to introduce new and diverse plant products with unique health-promoting properties. Meanwhile, the increase in production and consumption of raw plant products is often associated with reports on food poisoning, often with fatalities, resulting from the consumption of food contaminated with Human Pathogenic Microorganisms (HPMOs). Scientific reports indicate that HPMOs that cause the greatest threat to human health include: *Escherichia coli*, *Salmonella enterica* and *Listeria monocytogenes*. The occurrence of HPMOs in plants and on their surface is primarily a consequence of irrigation of crops with contaminated water, the use of organic fertilizers and the presence of wild animals within crop production sites.

The main research goal of this project is to determine the natural susceptibility of the unknown crop plant - *Salicornia europaea* L. to HPMOs. *S. europaea* is an obligatory halophyte commonly found in coastal areas in European countries. It is an edible plant (it constitutes a great richness of minerals and fiber) and has a number of health-promoting properties (it is used in the treatment of numerous diseases, e.g. arthritis, diabetes, asthma, cancer and overweight). *S. europaea* L. can be used as an addition to dishes, giving them a unique taste. In the project we will incorporate detailed environmental analyses on a European scale, which will take into account the impact of: (i) the different salinity of soils and (ii) the four climate types characteristic for Europe. Moreover, in the project we will determine the changes in the number and diversity of *S. europaea* microbiome in response to infection by HPMOs bacteria and we will identify compounds in the plant tissues and synthesized by endophytes associated with HPMOs' growth inhibitory properties. Studies on *S. europaea* already conducted by our research team during recent years have resulted in great interest of many international research institutions. The results obtained in framework of this project will allow to determine whether particular crops have lower susceptibility to colonization by HPMOs and enrich the knowledge of neglected crops, which can be the source of many specific anti-HPMOs compounds.

The implementation of this project's results will promote new trends in our efforts towards healthy food without HPMOs. In addition, research associated with this little-known plant will attract the attention of scientists to those species of plants that have been forgotten nowadays. Identification of compounds synthesized by *S. europaea*, as well as those secreted by its microbiome that prevent colonization of plants by HPMOs, may be the beginning of the development of modern technologies for obtaining plants without HPMOs.