

Development of new nutraceuticals from plants typical of the Mediterranean area with health effects in the prevention of metabolic syndrome

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The project is aimed at the development of new extracts with nutraceutical activity starting from plants cultivated in the Mediterranean area to be used as ingredients of food supplements exerting healthy effects against the main risk factors of metabolic syndrome.

The choice to use plants locally grown stems from the need to produce safer extracts than those obtained from raw materials from non-European countries because the current European legislation is particularly strict in terms of food safety.

It should be stressed that the extracts obtained from plants coming from non-European countries are often characterized by a content of pesticides, heavy metals and mycotoxins that result higher than those permitted by European legislation.

This goal will be achieved through:

- the identification of plants cultivated in the Mediterranean area with a high content of nutraceutical components, admitted in food supplements in accordance with current European legislation;
- the development of environmentally sustainable extraction processes using food-grade solvents. The extractions will be optimised by the Design of Experiments (DoE) and will lead to the production of extracts with a high content of nutraceutical components characterized by the phytocomplex integrity;
- the scale-up and industrial production of standardized dry extracts, titrated in bioactive components, with known chemical composition determined by chromatographic techniques coupled with mass spectrometry, with the quantification of the bioactive components;
- the assessment of bioaccessibility (solubility and stability in saliva and gastric and duodenal fluids) and the in vitro and in vivo bioavailability of extracts;
- the evaluation of the biological activities in pre-clinical studies using in vitro cell models to demonstrate the health properties of the extracts and their mechanisms of action.

The obtained results will allow the production of plant extracts to be used as ingredients of food supplements useful to reduce the risk factors of metabolic syndrome.