EXANDAS

Exploitation of aromatic plants' by-products

EXPLOITATION OF AROMATIC PLANTS' BY-PRODUCTS FOR THE DEVELOPMENT OF NOVEL COSMECEUTICALS AND FOOD SUPPLEMENTS.

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- *Rosa damascena*
- *Geranium macrorrhizum*
- *Lavandula angustifolia*
- *Sideritis scardica*
- *Ocimum basilicum*

products

By-products

Southeastern Europe is a region of rich biodiversity with several medicinal and aromatic plant species. Many of the collected wild or cultivated plants are subjected to distillations to obtain essential oils, creating a significant amount of hydrolate and herbal residue. The residue is considered waste and is disposed in landfills. Those by-products contain a large number of valuable bioactive secondary metabolites, representing a vast reservoir of valuable compounds, the exact composition of which is not always known.

EXANDAS aims to apply emerging and cutting edge technologies in the field of Natural Product Chemistry in order to fully and efficiently exploit the therapeutic potential of medicinal and aromatic processing waste and by-products.

Six academic groups and six SMEs partners from four EU Member States and three Third Countries will join forces and exchange know-how through an extended secondments scheme to advance Research & Innovation.

'Mastic gum' is the resin of *Pistacia lentiscus* (L.) var. chia (Duham), a Protected Designation of Origin (PDO) product originating from Greek island Chios. Mastic gum residue, named "kolophony", contains the mastiha triterpenic acids. It is estimated that 5-6 tons of kolofony are being produced -and mostly disposed as waste- every year. Its chemical profile and biological activities are unknown and these facts hamper its further exploitation.

- Collection of by-products
- Methodology extraction with eco-friendly technologies
- Methodology development for recovery of bioactive ingredients
- Bio- and chemical transformations

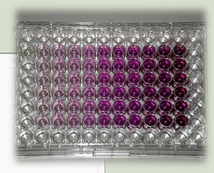
Development of laboratory scale protocols

Phytochemical investigation

- Initial assessment of chemical content
- Development of methodology for the analysis of:
  - volatile components
  - non-volatile components
- Identification of pure compounds

Evaluation of biological properties

- Antimicrobial activity
- Antioxidant activity
- Anti-ageing activity
- Skin-whitening activities
- Anti-inflammatory activity
- Cytotoxicity



Pilot scale production

- Preparation of extracts and enriched extracts at a pilot scale
- Preparation of promising compounds at pilot scale
- Formulation of cosmetic ingredients
- Feasibility study

EXANDAS experimental workflow

Novel processes based on eco-friendly technologies for the efficient extraction, purification and transformation of active ingredients, as well as the complete chemical characterization and biological evaluation of produced extracts and pure compounds that can be commercially exploited. Optimization and scaling up of these procedures, as well as formulation using emerging technologies will lead to the development of novel final products.

The implementation of **EXANDAS** aspires to develop a successful and sustainable international and intersectoral collaboration model, which will contribute to the innovation potential of Europe for the most effective exploitation of natural resources and the development of novel cosmeceuticals and food supplements

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