

# SUPERCRITICAL FLUID PROCESSES FOR THE EXTRACTION OF SUBSTANCES WITH BIOLOGICAL ACTIVITY OF NUTRACEUTICAL, COSMETIC, PHARMACEUTICAL INTEREST

**Innovations and Benefits** - Application of extractive technologies, through the use of supercritical carbon dioxide, to vegetable matrices and/or waste from the agri-food industry (e.g. officinal plants, flower cultivation, algae, industrial plants, processing wastes from tomato, artichoke, citrus fruit, grapes, etc.) for the recovery of biomolecules for nutraceutical and/or pharmaceutical and cosmetic use.

**Use** - Treatment of vegetable matrices and/or waste from agro-industrial production for the recovery of high purity fractions and/or molecules to be potentially used in nutritional, pharmaceutical and cosmetic applications. Obtaining natural products free from organic residues and with greater functional characteristics for pharmaceutical (galantamine, limonene, etc.) and/or nutritional uses (lycopene, astaxanthin, rutin, stevioglycosides, hemp oil, etc.). Recovery of bioactive molecules without the use of organic solvents.

### Applications and ongoing Activities -

RD&T activities in collaboration with SMEs of the sector and with public and private Research Institutions both through Commissioned Research and Joint Projects in reply to regional, national and EU calls. Among the ongoing activities, the extraction of oil from grape seeds, of oil with a high content of omega-3 and omega-6 from hemp or of galantamine and oil from parts of plants and seeds, of active principles from officinal plants, from algae, from bran and other plant matrices. To these RD&T activities, the assessments on the technical-economic feasibility of the process on a pre-industrial scale are enclosed.

