**Usability of extraction techniques for practical applications**

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Bio-refining is a newly evolving branch that focuses on the development of separation methods for recovery of valuable substances, e.g. from plant biomass or also for the processing of bio-waste from agricultural production or food industry.

Two ways of separating the monitored components from the solid matrix into a liquid solvent and concentrating them were tested. The first one was the extraction using Soxhlet's apparatus, a highly efficient multistage process. The second more gentle process was a single-stage extraction in a stirred system at room temperature in an absence of light under inert atmosphere.

The aim of the study was the development of extraction procedures for the isolation of carotenoids, especially lutein, from medicinal plants (*Calendula officinalis, Tagetes sp.*), the obtaining of fragrances from *Magnolia × pruhoniciana* blooms, or the separation of waxes from *Miscanthus* *sp.* stalks. From the waste biomass, the residual fresh marc after vine grapes pressing was processed to obtain resveratrol and other substances with antioxidant activity, or essential oils. The goal was to propose a procedure for the wasteless treatment of plant material or the acquiring of health-benefitial substances suitable as dietary supplements for human and/or animal application.

**Acknowledgement**

*Financial support of the Technology Agency of the Czech Republic the Competence Centre BIORAF (project No. TE01020080) and the National Competence Centre Biocirtech (project No. TN010000048) is acknowledged.*