Market, trends and applications of phytoextracts produced by supercritical CO₂

M. Klasik, N. Igl, A. Wuzik

NATECO₂ GMBH & Co. KG, Auenstr. 18-20, 85283 Wolnzach, Germany
contact@NATECO₂.de, Phone: (+49) 8442-660, www.NATECO₂.de

Introduction
NATECO₂ installed the first industrial plant for CO₂ extraction already over four decades ago. In the meantime a great variety of natural substances are refined using supercritical (sc) CO₂ in tons scale as well as numerous R&D trials have been conducted. But next to the classical extraction process also new applications and trends for critical fluids appear on the market to gain high-valuable phytoextracts.

Market figures
Actually approx. 170 companies are engaged in scCO₂ processes and the global market is increasing. The preferred fields of application can be found in the food & beverage, cosmetic and pharmaceutical industries. Thus for the scCO₂-extraction of plant materials a growth rate of over 25 % from 2013 to 2018 is predicted, whereas alternative extraction technologies show significant lower rates.

Trends and applications
Due to ongoing globalization, purification procedures gain more and more importance and the reduction of pesticides or odors by scCO₂ is of increasing interest. Additionally individual customer requirements are rising and therefore product diversity, supplementary certifications and services are essential. Consequently tailor-made solutions can be generated by using new technologies and coupling their respective capabilities adapted to product or process requirements.

Accordingly the application of ultra-high pressure of around 1000 bar enables the economic extraction of up till now challenging plant ingredients. Thus antioxidants like the carotenoid luteine from calendula, anti-inflammatory triterpenes from barks or even anti-cancerogenic polyphenols from hops become extractable. Also continues rectifications or the creation of well defined powders are economically realizable by using novel critical fluid technologies.

Conclusion
Detailed market figures and data based on actual studies and internal long-lasting industrial experience of using supercritical fluids will be presented in the respective lecture. Furthermore innovative technologies related to scCO₂, their field of application and first results will be demonstrated.