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Production of Plant Extracts – from Evolution to Revolution Resource Efficient Manufacturing in Regulated Industries

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Plants come back into focus also of the chemical industry in a time of increasing impact for sustainability and environmental compatibility. Plant constituents substitute basic chemicals of petrochemical origin more and more. The first step for preparing the desired natural constituents is always an extraction. Today the central aim for research and development of extraction procedures are careful, efficient and successful processes. Only this will guarantee the necessary high quality and attractive economic efficiency in the use of plant extracts. In the last years, process design as well as optimization of existing processes is supported by modeling the unit operations. Therefore, model parameters must be determined in lab scale [1].

On the other hand, new principles in the research are generated, which allow a rapid screening of possible conditions for extraction in the view of basic proceedings, solvents, temperatures and pressures. So also the complex character of plant extracts is considered, which is determined by the multicomponent mixture existing of the group of the interesting constituents and also the side-fractions. The extraction process has to guarantee that side-fractions are not critical in the following use of the plant extract. For that all problematic fractions should not be extracted which will be achieved by selective extractions. [2, 3] Concepts and cost structures for further product purification will be discussed with regard to innovative resource efficient manufacturing technologies. [4]

In addition, the activities of the German Dechema/ProcessNet working group on “plant-based extraction – products and processes” are presented and thereby opened for any participation. [5]

Literatur

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[3] Tegtmeier, M. (2012). Plant Extraction: Key Technology for Sustained Use of Bio-Ressources; Chemie Ingenieur Technik 84 (6)

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[5] http://www.processnet.org/en/Plant+based+Extracts+_+Products+and+Processes-p-222.html