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An overview on supercritical fluid extraction for natural compounds

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Abstract

Growing concern for the environment has paved the way for the introduction of "Green Chemistry". Chemical engineers are becoming more and more cautious about the use of organic solvents, and have put great efforts in designing new environmental friendly research protocols. Extraction and isolation of natural compounds from different sources may generate large amounts of organic waste solvents. Supercritical fluid extraction (SFE) has become an important extraction technique in many fields, with the supercritical extraction technique; it is possible to extract sensitive compounds such as natural compounds and avoiding the residual toxic solvent, such as hexane. Besides, the energy costs associated with this novel extraction technique are lower than the costs for traditional solvent extraction methods. The supercritical fluid extraction technology is increasingly replacing many other techniques for extraction the natural products in pharmaceutical, food and chemical industries. Rich botanical resource countries have very high potential to use the supercritical fluid extraction as to make value addition to their export of natural materials in raw formula. The supercritical extraction process can be controlled with co-solvents and additives, which play a role in controlling the polarity of the supercritical solvent, and it could be controlled based on sets of mathematical modeling which can be used in predicting the outcome of an extract. The most commonly used solvent in supercritical fluid is carbon dioxide, it has more advantages of being cost-effective, non-toxic, non-flammable, easily removed from the extract following decompression and because of its low critical temperature, it may be an ideal technique to study the thermally labile compounds.

Biography:

Dr. Mario Kabbour, born in 1982, originally from Syria and has been doing research University Malaysia Perlis for the past 5 years. He is expert in liquid-liquid extraction, supercritical extraction, and thermodynamic models. He has many published papers and books h in the field of Chemical Engineering and Green Engineering. He developed new parameters for thermodynamic models and new techniques for selective extraction for nature.