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Emerging green technologies for the chemical standardization of botanicals and herbal preparations

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Botanicals, medicinal plants and herbal preparations are often known to contain one or multiple chemical constituents that may have therapeutic purposes. As botanical or multiple medicinal plants can be processed to become a food/health supplement, drug or cosmetics, chemical standardization of botanical is important for their quality control. The different steps for the chemical standardization of botanicals will include selection of a suitable method of extraction and analysis of compounds using separation or spectroscopic method. Traditional extraction methods may be tedious and required the use of higher volume of organic solvent. To reduce or eliminate the usage of organic solvent, emerging green extraction technologies such as supercritical fluid extraction (SFE), microwave assisted extraction (MAE) and pressurized liquid extraction (PLE), pressurized hot water extraction (PHWE) have been developed. The simplification of equipment for PLE and PHWE such as using lower operating pressure is covered. For the analysis of the botanical extracts obtained, analytical techniques such as liquid chromatography (LC) with columns of smaller internal diameters, ultra-performance liquid chromatography (UPLC) and capillary electrophoresis (CE) will propel the move towards a reduction and elimination on the usage of organic solvents. In addition, LC/MS and CE are noted to provide a solution for the analysis of target compounds in the presence of overlapping peaks in botanical extracts and herbal preparation without the need for additional sample clean-up step. Hence, the selection of the appropriate extraction technologies and analytical techniques is required to form a solvent free solution for the chemical standardization of botanicals.

Biography

Eng Shi Ong has completed his PhD at the age of 30 years from University of Bristol, UK and postdoctoral studies from National University of Singapore. He is an academic staff from Singapore University of Technology and Design. He has published more than 40 papers and 3 invited reviews in reputed journals.

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