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Pressurized water extraction of soybean isoflavones

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The extraction and analysis of soybean isoflavones represents an increasing interest because there are bioactive compounds with several in-vitro beneficial properties and effects on menopausal symptoms. Isoflavones are commonly extracted with organic solvent which is not suitable for food. Subcritical water conditions can be achieved in pressurized liquid extraction which allows the extraction of a wider range of compounds towards less polarity. This study provides a new way for the extraction of isoflavones using Accelerated Solvent Extraction (ASE) to evaluate the potential of pressurized water. A three levels Doehlert experimental design was conducted and surface methodology permitted to determine the effect of temperature, static time and amount of soy flour or soybean protein isolate on isoflavones extraction. The optimal conditions conducted to a high extraction yield of 85%. The amount of introduced material in the ASE cell was the overriding factor to achieve high yields with the different materials and secondly temperature with less influence. A larger proportion of proteins in the second material lowered the isoflavones yield to 63%. This study showed that a high water extraction yield of isoflavone was possible without organic solvents and provided information about the influence of proteins.

Biography

Moras Benjamin is a PhD student working at the Laboratory of Agro-Industrial Chemistry of Toulouse in France specialized on the extraction and purification of natural compounds. He is graduated in Master's degree "Phytoressources" from "Universite Claude Bernard de Lyon". His research works focused on the purification of proteins and polyphenols for food applications from two major crops which are soybean and rice. Extraction of isoflavones from soybean represents an important challenge in this project. A study on the optimization of the ethanolic extraction of soybean isoflavones have been presented in two congresses: at the 9th International Conference on Renewable Resources & Biorefineries in Antwerpen in Belgium and at the "XIVe congres de la Societe Française de Genie des Procèdes". As an eco-friendly process the pressurized water extraction was also studied.

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