Profile Analysis: New Method to Elucidate Chemical Structures of Saponin in Soybean

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ABSTRACT

Soybean [*Glycine max*(L.) Merr.] contains not only large amount of nutritional components but also a number of health functional components, of which soyasaponin is one. To evaluate the health promoting functions caused by soyasaponins, easy and reliable method is required to qualify and quantify them. Soyasaponin purification and instrumental analysis (MS, UV, IR and NMR analysis) are necessary to elucidate the chemical structures of soyasaponin. But, NMR analysis needs more than 40mg of purified sample and it takes a lot of time. In this presentation, we show new method "profile analysis" to elucidate the chemical structures of soyasaponins without NMR data. Profile analysis combines TLC, LC-PDA/MS/MS and genetic analysis. Firstly, presence of saponin components is recognized by TLC analysis. Secondly, elution time, UV spectrum, molecular mass and MS/MS fragmentation patterns of each soyasaponin components were obtained by LC-PDA/MS/MS. The next, finding out the gene combination, which control soyasaponin compositions. Combing all the data, we get the most reasonable answer to explain the chemical structure of soyasaponins. It has the advantage of requiring a small amount of sample and saving time.

Keywords: soybean; saponin composition; soyasaponins; LC-PDA/MS/MS; profile analysis