Glucosinolates extraction from rapeseed meal using alkaline/ alkanol/water system

邱琪雯、曾耀銘

E-mail: 8402646@mail.dyu.edu.tw

ABSTRACT

The utilization of rapeseed meal protein is mainly inhibi- ted by the presence of glucosinolates. In this study, a series of carefully designed alkaline/alkanol/water extraction system were tested on the high glucosinolates containing Chinese rapeseed meal.The solvent system contained of ammonia or sodium hydroxide as alkaline, methanol or ethanol as alkanol, and a small amount of water. On different extraction conditions, the efficiency of removal extraction is : ammonia - MeOH ＞ NaOH - MeOH ＞ ammonia - EtOH ＞ NaOH - EtOH. After the extraction of 0.04 %(w/w) NaOH in 95 %(v/v) methanol solution followed by 100 % (v/v) or 95 % (v/v) methanol washing, we could get throughfully glucosinolates extraction rapeseed meal. The glu- cosinolates content of the meal was analyzed by Thiourea-UV assay and HPLC method.In addition, we used conductivity and pH value of extraction solution and extracted solution to describe the fate of glucosinolates during the extraction process. Finally, based on the optimal extraction conditions, we did a semi-pilot extraction test on a Kuhni column. The initial results demonstrated the Kuhni column operation could extract 80% glucosinolates in a short period of time with high capacity.

Keywords : Rapeseed meal ; Protein ; Glucosinolates ; Alkaline/Alkanol/Water system ; Extraction

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