

Thesis Title : Quantitative Determination and Extraction of γ -oryzanol
in Soap Stock

Thesis Credits : 12

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Abstract

Gamma oryzanol is a valuable constituent in rice bran oil. It is accidentally removed in the neutralization step of the alkaline refining process and concentrates in the soap stock. Thus, the objectives of this study are to develop method for quantitative determination and extraction of γ -oryzanol in soap stock. Partition coefficient (K) of γ -oryzanol between ethyl acetate and soap stock and percent purity of the extracted γ -oryzanol are also studied.

Analysis of the two sequential extractions of the soap stock with ethyl acetate shows that soap stocks contains 2.9 % (dry weight) or 7.6 % (wet weight) of γ -oryzanol. The partition coefficient (K) of γ -oryzanol between ethyl acetate and soap stock (adjusted to pH 9.5) is 4.05 (by UV - spectrophotometric method) and 4.13 (by using reversed phase HPLC, using evaporative light scattering detector (ELSD)). Judging from the K value, about 80% of the γ -oryzanol is extracted with equal volume of ethyl acetate. However, the extracted γ -oryzanol is heavily contaminated with neutral oil and only 25% purity is obtained.

Although hot hexane is a good solvent for the extraction of γ -oryzanol from the soap stock (adjusted to pH 9.5), it is less effective than ethyl acetate about equal 10. Thus hexane may not be suitable for use in extraction of the γ -oryzanol.