

Design of carotenoids extraction process from crude palm oil using green solvent

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Carotenoids are the importance minor valuable components in crude palm oil (CPO). Carotenoids offer different nutritional functions and human health benefits. Several methods were proposed to recovery these components from different sources. Recently, green solvent extraction becomes an attractive method for producing the edible products because of the non-denatured extract without contaminants. This work aimed to develop a process for green solvent carotenoids extraction from crude palm oil using Aspen Plus software. The process consists of degumming process and extraction process. CPO was degummed using water. The proper water/CPO ratio for degumming process is 2.05. Ethanol was used as green solvent. The effects of various extraction parameters including extraction temperature, solvent:oil ratio, number of extraction stage on the carotenoids recovery were studied. The optimum operating conditions for carotenoids extraction were: extraction temperature, 40°C; solvent:oil ratio, 1:1; number of extraction stage, 2 stages.

Keywords: Carotenoids; Crude palm oil; Green solvent extraction; Process design

