Thesis Title Effects of Drying Methods and Storage on Properties of Carotenoids from Crude Palm Oil

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ABSTRACT

Drying of oil soluble carotenoids extracted from crude palm oil was carried out by adsorption of carotenoids extract on non-sticky rice, sticky rice and tapioca flours. The optimum condition was using sticky rice flour at the weight ratio of flour to carotenoids of 10:4 in which the maximum carotenoids retention of 97.44 % and the a_w of 0.41 was obtained. Drying of carotenoid emulsion was studied by adsorption on non-sticky rice, sticky rice and mungbean flours, followed by drying with vacuum dryer or microwave-vacuum dryer. The optimum condition was using the weight ratio of mungbean flour to carotenoids emulsion of 2:1 with microwave-vacuum drying at 720 W for 15 minutes. The carotenoids recovery and a_w were 75.00 % and 0.52, respectively.

Storage the dried powders of oil soluble carotenoids and carotenoids emulsion in aluminum foil bag at 30 ^oC for 6 months resulted in decreasing of beta-carotene by 7.55 and 11.43 %, respectively. While storage at 23 to 80 % relative humidity (RH) and at 30 ^oC for 3 months showed grater decreasing of beta-carotene at higher RH ($p \leq 0.05$). To extend the shelf-life, the powders of oil soluble carotenoids and carotenoids emulsion should be kept at RH less than 54.70 and 60.13 %, respectively. All samples of dried carotenoids had total microorganisms, mould and yeast counts within the standard levels for dried food.