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Isolation of carotenes from palm oil mill effluent and its use as a source of carotenes

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ABSTRACT

Huge amount of palm oil mill effluent (POME) is generated from palm oil industry in Malaysia. POME is highly polluting wastewater which is organic in nature and contains oil and carotenes that need to be treated before discharge. Growing awareness to prevent pollution and increasing importance of carotenes has required POME to be transformed into valuable products. In this study, oil from POME was retrieved by solvent extraction and carotenes were isolated by adsorption chromatography. Synthetic adsorbent with silica-based material was used in the column chromatography. Different types of solvents used in the adsorption chromatography were evaluated on the recovery of palm carotene. Column temperature and oil loading were also studied. Isolation of carotenes from the extracted oil by column chromatography increased the carotene concentration in the oil. Carotene recovery varied from 47 to 92% depending on the chromatographic conditions. Carotene was successfully concentrated to about 70 times of the concentration in the extracted oil by adsorption chromatography process.

Keywords: Palm oil mill effluent; Carotene; Adsorption chromatography; Recovery

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