DIFFERENTIAL SCANNING CALORIMETRY (DSC) ANALYSIS OF PLASTIC MATERIALS IN FRYING OILS

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ABSTRACT

Adding plastics materials in frying oils to make fried foods crunchier among hawkers has been controversial. Generally, low-density polyethylene (LDPE) plastic is safe for food contact. However, when the plastic is heated, it melts and degrades, releasing all its components into the frying oil. Some components in the plastic materials are toxic and may affect human health. Thus, this study aimed to analyse the thermal properties of adulterated frying oils by using Differential Scanning Calorimetry (DSC). Samples of frying oils from homemade fried bananas, homemade fried onions and homemade fried chickens that added with plastic materials were analysed. The exothermic and endothermic changes were then compared with the unadulterated frying oils. The data obtained were further analysed with Principal Component Analysis (PCA) for statistical data visualization. The results found that the DSC is able to differentiate adulterated frying oils and unadulterated frying oils. Future works on the evaluation of frying oils collected from the hawkers would be favourable.

Keywords: Plastics, Frying oils, Palm oil, Differential Scanning Calorimetry (DSC), Principal Components Analysis (PCA)

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