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Identification of pig adulterant in mixture of fat samples and selected foods based on FTIR-PCA wavelength biomarker profile (Article)

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Abstract

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Authenticity is an important issue in food industry. Tampering the authenticity of food product involves the adulteration of products with certain material. Various authentication techniques for detection of adulteration have been developed in line with the advent of current technology. Of particular interest, Infrared (IR) spectroscopy; a rapid and non-destructive technique allowing the screening of a large number of samples has been shown to be able to detect pig derivatives in meat products. Following this, the present study aims to identify pig adulteration in different mixture of fat samples and some selected food; based on wavelength biomarker obtained from FTIR coupled with PCA analysis. Twenty-six fats at two frequencies along the graph (1236 and 3007 nm) were studied including samples representing Non Halal Food A (NHFA) fat, Halal Food A (HFA) fat and Non Halal Food B (NHFB) fat. At wavelength 1236 and 3007 nm along the spectrum; NHFA, HA and NHFB fat samples were easily identified at visibly good distance compared to other fat samples. The first two samples; NHFA and NHFB were located very close to PF (Pig Fat) indicating that NHFA and NHFB samples contained pork fat while HA was located closer to CF, indicating that the sample possibly contained chicken fat. To this end, FTIR coupled with PCA has been shown to be a powerful tool to detect adulteration in meat products and as such can be recommended for authentication purposes. © 2018 Insight Society.

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