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Analysis of gelatin adulteration in edible bird's nest using Fourier transform infrared (FTIR) spectroscopy (Article)

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Abstract

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Fraudulent incorporation of cheaper materials such as porcine gelatin into edible bird's nest (EBN) can evolve into a problem for reasons related to religious, allergy, ethical, and legal requirement. Thus, this study aimed to detect porcine gelatin in the processed EBNS by using a combination method of Fourier transform infrared (FTIR) and chemometrics analysis, Principal Component Analysis (PCA). The use of FTIR spectroscopy in food analysis is becoming more attractive because of its cost-effective nature, nondestructive measurements as well as convenience for screening purposes. This method has been established to be useful for adulteration detection and quantification in various food products. However, its application as a sole method is often not reliable as some transitions of the spectrums are very complex or weak, making evaluation difficult. Thus, in this study FTIR data were further analysed with the chemometrics analysis. By considering all the data obtained, chemometrics makes better results feasible. Porcine gelatin exhibited a dominant band at Amide I indicating the adulteration of EBNS with porcine gelatin. The FTIR spectra were analysed using PCA in order to identify the adulteration percentage in the samples. In the assessment of the spiked samples, this method could detect at the minimum of 5% of porcine gelatin in EBNS. This method would be advantageous for ensuring quality of the EBN products in the market. © 2018 Insight Society.

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