

Document details

[< Back to results](#) | 1 of 1[Export](#) [Download](#) [Print](#) [E-mail](#) [Save to PDF](#) [Add to List](#) [More... >](#)[View at Publisher](#)International Journal on Advanced Science, Engineering and Information Technology [Open](#)[Access](#)

Volume 8, Issue 6, 2018, Pages 2355-2359

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

Jamalludin, N.H.^a [✉](#), Tukiran, N.A.^b [✉](#) [👤](#)^aDepartment of Biotechnology, Kulliyah of Science, International Islamic University Malaysia (IIUM), IIUM Kuantan, Kuantan, 25200, Malaysia^bInternational Institute for Halal Research and Training (INHART), International Islamic University Malaysia (IIUM), Level 3, KICT Building, Jalan Gombak, Selangor, 53100, Malaysia

Abstract

[View references \(18\)](#)

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 becomes 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.

SciVal Topic Prominence ⓘ

Topic: Nests | Birds | Nest EBN

Prominence percentile: 76.786 ⓘ

Author keywords

Edible bird's nest (EBN)

Fourier transform infrared (FTIR) spectroscopy

Gelatin

Halal

Principle Component Analysis (PCA)

ISSN: 20885334

Source Type: Journal

Original language: English

Document Type: Article

Publisher: Insight Society

Metrics ⓘ [View all metrics >](#)

PlumX Metrics

Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

Cited by 0 documents

Inform me when this document is cited in Scopus:

[Set citation alert >](#)[Set citation feed >](#)

Related documents

Enzyme immunoassay for the detection of porcine gelatine in edible bird's nests

Tukiran, N.A. , Ismail, A. , Mustafa, S. (2015) *Food Additives and Contaminants - Part A Chemistry, Analysis, Control, Exposure and Risk Assessment*

Determination of porcine gelatin in edible bird's nest by competitive indirect ELISA based on anti-peptide polyclonal antibody

Tukiran, N.A. , Ismail, A. , Mustafa, S. (2016) *Food Control*

Differentiation of bovine and porcine gelatins in processed products via Sodium Dodecyl Sulphate-Polyacrylamide Gel Electrophoresis (SDS-PAGE) and principal component analysis (PCA) techniques

Nur Azira, T. , Amin, I. , Che Man, Y. (2012) *International Food Research Journal*[View all related documents based on references](#)

References (18)

[View in search results format >](#) All[Export](#)[Print](#)[E-mail](#)[Save to PDF](#)[Create bibliography](#)

- 1 Lin, J.R., Dong, Y., Zhou, H., Lai, X.P.
'Identification of Edible Bird's Nest by Electrophoresis
(2006) *World Science and Technology/Modernization of Traditional Chinese Medicine*, pp. 30-32. Cited 8 times.

Find more related documents in
Scopus based on:

Authors > Keywords >

-
- 2 Wu, Y., Chen, Y., Wang, B., Bai, L., han, W.R., Ge, Y., Yuan, F.
Application of SYBRgreen PCR and 2DGE methods to authenticate edible bird's nest food

(2010) *Food Research International*, 43 (8), pp. 2020-2026. Cited 45 times.
doi: 10.1016/j.foodres.2010.05.020

View at Publisher

-
- 3 Guo, L., Wu, Y., Liu, M., Wang, B., Ge, Y., Chen, Y.
Authentication of Edible Bird's nests by TaqMan-based real-time PCR

(2014) *Food Control*, 44, pp. 220-226. Cited 17 times.
doi: 10.1016/j.foodcont.2014.04.006

View at Publisher

-
- 4 Ismail, A.M., Aina, A., Hashim, D.M., Amin, I.
'Using amino acids composition combined with principle component analysis to differentiate house and cave bird's nest
(2013) *Current Trends in Technology and Science*, pp. 363-366. Cited 3 times.

-
- 5 Tukiran, N.A., Ismail, A., Mustafa, S., Hamid, M.
Enzyme immunoassay for the detection of porcine gelatine in edible bird's nests

(2015) *Food Additives and Contaminants - Part A Chemistry, Analysis, Control, Exposure and Risk Assessment*, 32 (7), pp. 1023-1028. Cited 6 times.
<http://www.tandfonline.com/toc/tfac20/current>
doi: 10.1080/19440049.2015.1039605

View at Publisher

-
- 6 Tukiran, N.A., Ismail, A., Mustafa, S., Hamid, M.
Determination of porcine gelatin in edible bird's nest by competitive indirect ELISA based on anti-peptide polyclonal antibody

(2016) *Food Control*, 59, pp. 561-566. Cited 12 times.
doi: 10.1016/j.foodcont.2015.06.039

View at Publisher

-
- 7 Cebi, N., Yilmaz, M.T., Sagdic, O.
A rapid ATR-FTIR spectroscopic method for detection of sibutramine adulteration in tea and coffee based on hierarchical cluster and principal component analyses

(2017) *Food Chemistry*, 229, pp. 517-526. Cited 24 times.
www.elsevier.com/locate/foodchem
doi: 10.1016/j.foodchem.2017.02.072

View at Publisher
-

- 8 Miaw, C.S.W., Assis, C., Silva, A.R.C.S., Cunha, M.L., Sena, M.M., de Souza, S.V.C.
Determination of main fruits in adulterated nectars by ATR-FTIR spectroscopy combined with multivariate calibration and variable selection methods
(2018) *Food Chemistry*, 254, pp. 272-280. Cited 12 times.
www.elsevier.com/locate/foodchem
doi: 10.1016/j.foodchem.2018.02.015
View at Publisher
-
- 9 Jiménez-Carvelo, A.M., Osorio, M.T., Koidis, A., González-Casado, A., Cuadros-Rodríguez, L.
Chemometric classification and quantification of olive oil in blends with any edible vegetable oils using FTIR-ATR and Raman spectroscopy
(2017) *LWT - Food Science and Technology*, 86, pp. 174-184. Cited 29 times.
<http://www.elsevier.com/inca/publications/store/6/2/2/9/1/0/index.htm>
doi: 10.1016/j.lwt.2017.07.050
View at Publisher
-
- 10 Hashim, D.M., Man, Y.B.C., Norakasha, R., Shuhaimi, M., Salmah, Y., Syahariza, Z.A.
Potential use of Fourier transform infrared spectroscopy for differentiation of bovine and porcine gelatins
(2010) *Food Chemistry*, 118 (3), pp. 856-860. Cited 122 times.
doi: 10.1016/j.foodchem.2009.05.049
View at Publisher
-
- 11 Ma, C.-Y., Rout, M.K., Mock, W.-Y.
Study of oat globulin conformation by Fourier transform infrared spectroscopy
(2001) *Journal of Agricultural and Food Chemistry*, 49 (7), pp. 3328-3334. Cited 33 times.
doi: 10.1021/jf010053f
View at Publisher
-
- 12 Silverstein, R.M., Webster, F.X., Kiemle, D.J.
(2005) *Spectrometric Identification of Organic Compounds United States of America*. Cited 15 times.
John Wiley & Sons, Inc
-
- 13 Avula, B., Smillie, T.J., Wang, Y.-H., Zweigenbaum, J., Khan, I.A.
Authentication of true cinnamon (*Cinnamomum verum*) utilising direct analysis in real time (DART)-QToF-MS
(2015) *Food Additives and Contaminants - Part A Chemistry, Analysis, Control, Exposure and Risk Assessment*, 32 (1), pp. 1-8. Cited 17 times.
<http://www.tandfonline.com/toc/tfac20/current>
doi: 10.1080/19440049.2014.981763
View at Publisher
-
- 14 De Luca, M., Terouzi, W., Ioele, G., Kzaiber, F., Oussama, A., Oliverio, F., Tauler, R., (...), Ragno, G.
Derivative FTIR spectroscopy for cluster analysis and classification of morocco olive oils
(2011) *Food Chemistry*, 124 (3), pp. 1113-1118. Cited 73 times.
doi: 10.1016/j.foodchem.2010.07.010
View at Publisher
-

- 15 Nemati, M., Oveisi, M.R., Abdollahi, H., Sabzevari, O.
Differentiation of bovine and porcine gelatins using principal component analysis

(2004) *Journal of Pharmaceutical and Biomedical Analysis*, 34 (3), pp. 485-492. Cited 76 times.

www.elsevier.com/locate/jpba

doi: 10.1016/S0731-7085(03)00574-0

[View at Publisher](#)

- 16 Gayo, J., Hale, S.A.
Detection and quantification of species authenticity and adulteration in crabmeat using visible and near-infrared spectroscopy

(2007) *Journal of Agricultural and Food Chemistry*, 55 (3), pp. 585-592. Cited 39 times.

<http://pubs.acs.org/doi/pdf/10.1021/jf061801%2B>

doi: 10.1021/jf061801+

[View at Publisher](#)

- 17 Chambery, A., del Monaco, G., Di Maro, A., Parente, A.
Peptide fingerprint of high quality Campania white wines by MALDI-TOF mass spectrometry

(2009) *Food Chemistry*, 113 (4), pp. 1283-1289. Cited 36 times.

doi: 10.1016/j.foodchem.2008.08.031

[View at Publisher](#)

- 18 Lee, D.-S., Noh, B.-S., Bae, S.-Y., Kim, K.
Characterization of fatty acids composition in vegetable oils by gas chromatography and chemometrics

(1998) *Analytica Chimica Acta*, 358 (2), pp. 163-175. Cited 125 times.

<http://www.journals.elsevier.com/analytica-chimica-acta/>

doi: 10.1016/S0003-2670(97)00574-6

[View at Publisher](#)

📍 Tukiran, N.A.; International Institute for Halal Research and Training (INHART), International Islamic University Malaysia (IIUM), Level 3, KICT Building, Jalan Gombak, Selangor, Malaysia; email:aziratukiran@iium.edu.my

© Copyright 2019 Elsevier B.V., All rights reserved.

[< Back to results](#) | 1 of 1

[^ Top of page](#)

About Scopus

[What is Scopus](#)

[Content coverage](#)

[Scopus blog](#)

[Scopus API](#)

[Privacy matters](#)

Language

[日本語に切り替える](#)

[切换到简体中文](#)

[切换到繁體中文](#)

[Русский язык](#)

Customer Service

[Help](#)

[Contact us](#)

We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the use of cookies.