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International Journal of Food Properties Open Access
Volume 22, Issue 1, 1 January 2019, Pages 1673-1683

Fourier transform infrared spectroscopy and multivariate analysis of milk from different goat breeds (Article) (Open Access)

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Abstract

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A deeper understanding of milk composition from different dairy goat breeds would address the potential variance in quality control, as well as to optimize the production process of dairy products. Understanding these parameters will assist in evaluating goat milk quality. This study was designed to identify potential differentiating features the milk from different goat breeds based on fourier transform infrared spectroscopy (FTIR) coupled with multivariate analysis to detect the compositional differences. Eighteen freeze-dried goat milk samples of different breeds (Jamnapari, Saanen and Toggenburg) were analyzed. The results showed a clear discrimination between three different breeds using Partial least square discriminant analysis. The value Q^2 and R^2Y values are 0.981 and 0.958, which means the model exhibited goodness-of-fit and predictive features that would allow milk samples to be segregated by breed reliably. Result of chemical composition show Jamnapari milk was superior in terms of protein, fat and lactose content with values of 3.7%, 4.20%, and 5.30%, respectively, compared to other breeds. These analyses showed that only Jamnapari goat milk is different compared to the other two breeds.

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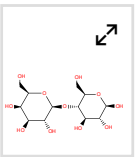
Chemistry database information

Substances



Author keywords

breeds | composition | FTIR | Goat milk | multivariate analysis

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Engineering uncontrolled terms: breeds | Chemical compositions | Compositional difference | FTIR | Goat milks | Multi variate analysis | Partial least square (PLS) | Production process

Engineering main heading: Dairy products

Funding details

Funding sponsor	Funding number	Acronym
Ministry of Higher Education, Malaysia	UPM/700-2/1/TRGS/5535704	MOHE
Ministry of Higher Education		MOHE

Funding text

The authors would like to thank the Ministry of Higher Education (MOHE) of Malaysia for financial suppport [grant number: UPM/700-2/1/TRGS/5535704] and for HICOE research environment (Tropical Agrifood) under the Institute of Tropical Agriculture and Food Security (ITAFoS).

ISSN: 10942912
CODEN: IJFPF
Source Type: Journal
Original language: English
DOI: 10.1080/10942912.2019.1668803
Document Type: Article
Publisher: Taylor and Francis Inc.

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ISBN: 978-012374402-9; 978-012374407-4
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