Mohammad Kamal et al., J Food Process Technol 2016, 7:8(Suppl)
http://dx.doi.org/10.4172/2157-7110.C1.042

Fluorescence spectroscopy allows to discriminate between camel milk according to mild heat treatment

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Camel milk is considered one of the main components for human nutrition in several countries of the world, since it: i) contains all essential nutrients; and ii) has a great biological value due to the higher levels of antimicrobial components such as lysozyme, lactoferrin, immunoglobulins, and so on. Camel milk is mostly consumed in the fresh state. Its preservation can be achieved following the application of heat treatments (e.g. pasteurization, sterilization) that could have influences on both nutritional and functional properties of milk proteins. In the present study, the potentiality of front-face fluorescence spectroscopy coupled with chemometric tools was studied to characterize changes in camel milk following thermal treatments in the 55-75°C temperature range. Nicotinamide adenine dinucleotide (NADH), fluorescent Maillard reaction products (FMRP) and vitamin A fluorescence spectra were recorded on camel milk. Using the principal component analysis (PCA), the vitamin A spectra allowed to discriminate partially between samples according to heat treatment and time. The best results was obtained by using common components and specific weights analysis (CCSWA) applied to the 3 spectral data sets, since a clear differentiation between camel milks according to temperature and time of heat treatment was obtained. It could be concluded that front-face fluorescence spectroscopy coupled with chemometric tools has the potential as a rapid and non-destructive analytical technique for the characterization at the molecular level of changes occurred in camel milk by low thermal treatment.

Biography

Mohammad Kamal has obtained his Master of Science in Regulation Physiology in 2013 from Brest University. He integrated Charles Viollette Institute in 2013, where he is conducting his PhD by studying the rheological properties and molecular structure of camel milk by spectroscopic techniques.

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