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Potential use of fourier transform infrared spectroscopy for differentiation of bovine and porcine gelatins.

ABSTRACT

In order to classify unknown gelatin into their species of origin, a simple and rapid method for the qualitative determination was developed using Fourier transform infrared (FTIR) in combination with attenuated total reflectance (ATR) and discriminant analysis. The spectra were analysed using a chemometric method, principal component analysis (PCA), to classify and characterise gelatin compounds using regions of the FTIR spectra in the range of 3290–3280 cm1 and 1660–1200 cm1 as calibration models. Results from PCA, which were subsequently represented by the Cooman's plot showed a clear distinction between gelatin samples of bovine and porcine origins. This qualitative approach, besides providing a rapid determination of the source of gelatin, may also be established based on a second derivative study of the FTIR spectrum to alleviate any doubt of the gelatin source for applications in the food and pharmaceutical industries.

Keyword: Attenuated total reflectance; Discriminant analysis; Fourier transform infrared; Spectroscopy; Gelatin; Cooman's plot.