

## Rapid Detection of Porcine and Bovine Gelatins in Dental Prophylaxis Pastes Using Fourier Transform Infrared Spectroscopy

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**Objectives:** To rapidly detect the presence of porcine or bovine gelatins in dental prophylaxis pastes used in Malaysia by using Fourier Transform Infrared Spectroscopy (FTIR).

**Materials and methods:** Four commonly used dental prophylaxis paste brands in Malaysia were collected and labelled A, B, C, and D. Pure porcine and bovine skin gelatins were used as controls. Gelatin extraction was carried out using acetone precipitation method. The extracts were then placed in the FTIR Perkin Elmer spectrometer for less than 5 minutes. All spectra were recorded within  $4000 - 400 \text{ cm}^{-1}$  wavenumber with  $4 \text{ cm}^{-1}$  resolution under 40 scans. The results were analysed by comparing the samples' spectra with the controls'. The data were subjected to discriminant analysis using The Spectrum<sup>TM</sup> Software.

**Results:** Sample A and porcine gelatin spectra had similar peak at  $2163 \text{ cm}^{-1}$  while sample B showed similarity to bovine gelatin at the range of  $4000 - 2000 \text{ cm}^{-1}$ . Detailed analysis of the spectrum patterns of sample C in the area between  $1600-1400 \text{ cm}^{-1}$  and  $3600-2800 \text{ cm}^{-1}$  indicated an appearance of similar peaks to porcine gelatin. On the other hand, the spectrum of sample D at the range of  $1800-1200 \text{ cm}^{-1}$  was similar to that of bovine gelatin.

**Conclusion:** Bovine and porcine gelatins in dental prophylaxis paste can be rapidly detected using FTIR.

**Keywords:** *porcine gelatin, bovine gelatin, FTIR.*