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Rapid detection of gelatin in dental materials using attenuated total reflection fourier transform infrared spectroscopy (ATR-FTIR) (Conference Paper)

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Abstract

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The presence of gelatin is not limited to food products but has also been found in pharmaceuticals. Most dental materials available in Malaysia are imported from other countries and might contain gelatin which is a protein derived either from porcine, bovine or other animal sources. Authentication of gelatin is crucial due to religious and health concerns. Therefore, this study aimed to detect gelatin in dental materials using ATR-FTIR. Forty two samples of dental material were purchased from dental suppliers and detection was done using ATR-FTIR. The spectrum from each sample was compared against standard bovine and porcine gelatin. Experimental dental paste containing bovine and porcine gelatin at concentrations of 5, 10, 15 and 20% were also prepared for quantification analysis. The results showed that gelatin was present in nine out of forty two samples of dental materials but the species of origin was not confirmed. Meanwhile, in the experimental bovine and porcine dental paste, it was seen that as the concentration increased, the intensity of the absorption of Amide group also increased. Thus, ATR-FTIR can be utilized as a reliable tool to detect gelatin in dental materials and other pharmaceuticals. © Published under licence by IOP Publishing Ltd.

Reaxys Database Information

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Indexed keywords

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Compendex keywords: Amide groups ATR FTIR Attenuated total reflection Fourier transform infrared spectroscopy Dental paste Health concerns Malaysia Quantification analysis Rapid detection

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