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DNA Extraction and Species Detection in Gelatin and Gelatin Capsule by Real-Time PCR

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ABSTRACT

The origin of gelatin used in gelatin capsule has always been doubtful as it is not always stated in the labelling. Thus, the halal status of the gelatin is questionable and it becomes a great concern by the Muslims. Gelatin is mainly produced from the skin and bones of pig and cow which undergoes either acid or alkali process. Due to the extreme processing conditions, the DNA may encounter high level of degradation. Further processing of the gelatin into gelatin capsule would make it worst. Hence, the minute amount of DNA contained in the gelatin and gelatin capsule require careful extraction method and sensitive detection. In this work, the extraction method is optimized in terms of DNA concentration, DNA fragmentation and the presence of real-time PCR inhibitor. Following quality assessment of the DNA extracted, both bovine and porcine are detected using species-specific real-time PCR systems based on SYBR Green reaction. The quality of the DNA extracted from gelatin and gelatin capsules are low in terms of DNA concentration. Using real-time PCR, up to approximately 300 bp target sequence can be amplified and successful detection of both species has been achieved.

Keywords : *DNA extraction, gelatin, capsule, real-time PCR*