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A comprehensive review on gelatin: Understanding impact of the sources, extraction methods, and modifications on potential packaging applications

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Highlights

- Bovine, porcine and poultry processing wastes are rich sources of gelatin.
- Gelatin sources have impact on the physical and mechanical properties of films and coatings.
- Physical,chemical and enzymatic modifications improve packaging properties of gelatin.
- Modified gelatin films/coating protects food products from physical, chemical and microbial spoilage.

Abstract

Gelatin is one of the most widely used hydrocolloids; mammalian, poultry, and fish wastes are an exciting source for gelatin production. The market size of gelatin will reach 5.0 billion USD by 2025 due to the consumption perspective of gelatin in today's market. The gelatin market is predicted to reach 6.7 billion USD at the end of 2027 with a 9.29 CAGR rate, being a vital constituent of the food, pharmaceutical, cosmetic, and packaging industries owing to its foaming, emulsifying, gelling, and filmogenic properties. In the packaging sector, gelatin-based films and coatings are gaining importance owing to their eco-friendly nature. The gelatin source, amino acid composition, and extraction method play a prominent role in its packaging properties. In order to improve the packaging properties of gelatin further, physical, chemical, enzymatic, and irradiation-based modifications play an significant role. This paper reviews the impact of