

Exploring the Benefits and Applications of Culinary Bliss: Edible Coating

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SUMMARY

Edible coating technology offers a viable way to preserve fresh produce's freshness. Fruits with non-active coatings have their internal environments changed because the exchange of gasses and water is impeded. These coatings can also incorporate additives like antioxidants or anti-microbial for additional benefits. Common materials for edible coatings include proteins, lipids, and polysaccharides, offering a sustainable approach in food industry.

INTRODUCTION

In today's world, where food safety, preservation and sustainability are paramount concerns, edible coatings have emerged as a promising sector. Food Products are naturally highly perishable, and their quality quickly degrades. In this case, the type of packaging determines how effectively food attributes are preserved. A key factor in reducing post-harvest losses include moisture loss, ripening, and physio-chemical losses is edible coating. The use of edible coating offers hope for extending shelf life while maintaining product quality. These innovative coatings, often made from natural materials, offer a range of benefits for both consumer and food industry.

Edible Coating

Edible coatings are packaging materials made from natural polymers, which are applied on the product by immersion. They are also safe for consumption directly with the product. Edible coatings can function as carriers of food additives, such as anti-browning, antimicrobial, coloring, flavoring, nutrition and seasoning agents (Artiga-Artigas *et al*, 2017; Kumar *et al*, 2020; Valencia-Chamorro *et al*. 2011). They are thin layers of edible materials applied to the surface of various food products. These coatings serve multiple purposes, including extending shelf life, improving sensory attributes, and enhancing overall food quality. Requirements of Edible films and coatings include the stability under high relative humidity, efficient water vapor, oxygen and carbon dioxide barrier, good mechanical properties, adhesion to the fruit, pleasant to taste, colourless and tasteless, physico-chemical and microbiological stability, reasonable cost (Olivas and Canovas, 2007). They can be applied through various methods such as dipping, spraying, or brushing, depending on the food product and desired outcome.

Composition of Edible coating

- Natural polymers: Many edible coatings are derived from natural polymers like cellulose, starch, and chitosan. These materials create a protective barrier around the food, preventing moisture loss and oxidation.
- Protein based coatings: proteins like gelatin and whey protein isolate can be used to create coatings with excellent film forming properties. These coatings are often used to for meat and seafood products.
- Lipids: Edible fats and oils, such as beeswax and cocoa butter can be used to create coatings. These lipid based coatings are particularly effective for chocolates and confectionary products.
- Polysaccharides: Natural polymers like starch, cellulose and pectin, are often used as the base materials for edible coatings. These polysaccharides provide structural integrity and adhesion to food surface.

Benefits of edible coatings/films

Moisture barrier

These films prevent moisture loss, aroma loss or water uptake by the food material or even penetration of oxygen which produces a good storability condition for these food products, Edible coating enhance the texture and improves the product appearance and prolong the shelf life by creating semi-permeable barriers. (Emamifar and Bavaisi 2020) developed a bio-nano composite coating with sodium alginate and nano-ZnO and applied it on strawberry.

Ethylene scavenger and Oxygen scavengers

Ethylene control in storage time plays a significant role in extending the shelf life of the fresh produce. The presence of oxygen can have considerable detrimental effects on some packaged fresh food products. Some edible films have been found to contain some oxygen scavengers and humidity control systems which play an important role in reducing gases contributing to the spoilage of fruits and vegetables.

Applications of edible coating

- **Nutrient Retention:** Coatings can help retain the nutritional value of foods by minimizing nutrient degradation during storage.
- **Preservation and shelf life Extension:** These coating create a barrier that reduces moisture loss and inhibits the growth of spoilage microorganisms, thus preserving the freshness of the product for a longer period.
- **Enhanced Appearance:** Edible coatings are employed to improve the visual appeal of food items. They can make vegetables appear fresh and bright, hence, enhancing their marketability.
- **Flavour and Aroma Enhancement:** Edible coatings can be used to impart specific flavours in confectionery and snack industries.

CONCLUSION

Edible coating technology offers a viable way to preserve fresh produce's freshness. Fruits with non-active coatings have their internal environments changed because the exchange of gasses and water is impeded.

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