Chapter 9
Development of Edible Food Wrappers:
An Eco-Friendly Approach Towards Sustainability

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ABSTRACT

Edible food wrappers are safe packaging systems that can be consumed with food. Edible packaging developed using natural renewable resources come under the category of bio-based and biodegradable packaging. The main components of edible wrappers include a biopolymer solubilized in a solvent to form film casting solution and certain additives to improve functional characteristics of packaging. Biopolymers are frequently used in food packaging applications due to their flexibility in film formation and biodegradability. The development of green packaging materials utilizing discarded edible materials will be beneficial to confront the challenges associated with traditional packaging systems, attaining sustainability, and fostering recycling in the food industry. Edible food wrappers present a number of benefits over synthetic materials. These packaging systems can replace and possibly strengthen the outside layers of packed items in order to elude moisture loss, flavors, and bioactive components from the foods as well as between them.

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INTRODUCTION

The demand for sustainable packaging solutions has increased tremendously due to increased consumer awareness, environmental concerns and natural resources depletion (Mellinas et al., 2016). Conventional packaging is a significant concern for environmental sustainability begins non-biodegradable and non-renewable (Jeevahan & Chandrasekaran, 2019). Extracting biopolymers from these by-products offers marketable benefits such as non-toxicity, biocompatibility, environmental friendliness and barrier to moisture and gasses (Mellinas et al., 2016). Thus, these raw materials can be utilized to develop renewable and sustainable packaging systems (Petkoska et al., 2021).

Edible food wrappers are safe packaging systems that can be consumed with food. They can be diversified into films or coatings without altering their chemical properties. Films create bags, pouches, and wraps, while coatings are ingested directly (Aguirre-Joya et al., 2018). Selecting the right material and fabrication method depends on the food, and the packaging must have sensory compatibility with the enclosed food (Restrepo et al., 2018).

The components used to engineer food wrappers are intended to be edible, natural, biodegradable, and sustainable that offer a legitimate substitute to traditional packaging with high environmental risks (Wei & Yazdanifard, 2013). These wrappers also carry bioactive substances, adding technical and therapeutic advantages. After use, they naturally decompose in digestion or through composting, reducing waste and environmental harm (Patel, 2019).

COMPOSITION OF EDIBLE FOOD WRAPPERS

The main components of edible wrappers include a biopolymer solubilized in a solvent to form film casting solution and certain additives to improve functional characteristics of packaging as shown in Figure 1 (Teixeira-Costa & Andrade, 2012).

Biopolymers

Bio macromolecules including polysaccharides, proteins and lipids are extensively used as a biopolymer is formation of edible wrappers (Teixeira-Costa & Andrade, 2012). Edible packaging developed using natural renewable resources come under the category of bio based and biodegradable packaging. According to Chen et al. (2019), the selection of packaging materials is relying on food characteristics, intended properties and environmental factors to which wrapped product is expected to exposed during distribution and storage.