

Edible packaging based on natural sources for food applications

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Innovations constantly appear in food packaging, always aiming at creating a more efficient quality preservation system while improving foods' attractiveness and marketability. The utilization of renewable sources for packaging materials, such as hydrocolloids from biological origin, is one of the main trends of the food packaging industry. Edible films/coatings have been considered as one of the potential technologies that can be used to increase the storability of foods and to improve the existent packaging technology, helping to ensure microbial safety and preservation of food from the influence of external factors.

In view of these advantages concerning the application of edible packaging solutions, recent developments have been achieved regarding the utilization of new materials. This includes the incorporation of functional components and the study of their influence on relevant properties such as barrier, mechanical and surface properties.

This work reports on the utilization of galactomannans, chitosan, agar, whey protein and collagen in the production of edible films/coatings and the incorporation of materials such as plasticizers, lipids, clays and bioactive compounds. The most important features of these materials are discussed, namely: their structure and applications; physical, chemical, thermal and mechanical properties; transport properties (in particular those related to moisture, oxygen, carbon dioxide exchange through the films/coatings); antioxidant activity when bioactive compounds are incorporated, and finally applications to food products. It is viewed that in a near future tailored edible packaging solutions based on natural biopolymers can be applied to selected foods, partially replacing non-biodegradable/non-edible plastics.

Keywords: edible packaging; polysaccharides, proteins, edible film, edible coating.