Edible films and coatings: from novel materials to nanotechnological applications

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The food industry constantly seeks new strategies to increase the storability of foods and to improve the existent technology. In the last years, edible coatings/films have been considered as one of the potential technologies that can achieve those objectives, ensuring the microbial safety and the preservation of food from the influence of external factors.

Significant innovations constantly appear in food packaging, always with the objective of creating a more efficient quality preservation system while improving foods' attractiveness and marketability. One of the main worries while developing such innovations is the use of renewable sources for the packaging materials, such as hydrocolloids from biological origin, and the incorporation of functional ingredients that can be used e.g. as antioxidants and antimicrobial agents.

Our work until the present moment has involved most of the important features of this technology, namely: materials (new sources of raw materials for the production of edible coatings/films were sought and the materials were characterized); properties of the coatings/films (physical, chemical, thermal, mechanical and transport properties - in particular those related to moisture, oxygen, carbon dioxide exchange through the coating/film - were evaluated); incorporation of active compounds (natural antimicrobials and antioxidants were incorporated); applications to food products and its consequences in e.g. the extension of their shelf life.

Finally, nano-engineered coating and films are being developed, and a report will be given on that subject with the latest developments achieved in our lab.