

Polymers and nanotechnology, the new face of bioactive edible coatings

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Polymer-based edible coatings were designed to extend the shelf life of foods by controlling intrinsic and extrinsic parameters. In addition, a coating reduces microbiological damage that affects total quality, which in turn causes high economic losses during post-harvest storage.

Although polymer coatings with natural bioactive agents have confirmed their effectiveness in improving sensory, nutritional and microbiological safety attributes, they need to be improved in their water vapor permeability barrier and mechanical properties. Nanotechnology emerges as a possible alternative and innovative approach to solve these deficiencies in conventional packaging, thus it also is being applied in edible coatings.

In this review, different types of innovative edible coatings are described. They include polymers with incorporated bioactive agents, some plasticizers used to obtain particular properties and nanostructure features. In addition, the main nanotechnological approaches to produce nanocoatings and nanocomposites that have better features for the extension of the shelf life of foods are listed.

Finally, the commercial viability of polymers used in edible coatings and nano-coatings/composites is addressed, emphasizing their application in perishable horticultural products, since it was estimated that the market of postharvest treatment of fruits and vegetables would reach a value of 1.17 billion dollars in 2017, and it will reach 1.67 billion dollars by the year 2022.

Keywords edible coatings; nanotechnology; nano-coatings;

References

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