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Food packaging is one of the areas where developments are being made based on nanotechnological solutions, e.g. through the development of edible nanofilms and nanocoatings, in particular under the form of edible nanolaminates. The base materials are essentially the same: polysaccharides, proteins and/or lipids. Polysaccharide- and protein-based films/coatings provide good barriers to O₂ and CO₂, but are very permeable to water vapour; in turn, lipid-based films/coatings provide excellent barriers to water vapour but have a limited resistance to other gases and have low mechanical resistance. The use of successive nano-layers of materials will provide a) better physical stability in aggressive environments; b) better chemical stability to active compounds which may be incorporated into these structures; and c) improved control of the release rates of such compounds.

Applications of this technology are envisaged e.g. for the enhancement of the safety of manufacturing processes, for the encapsulation of functional food ingredients, and in systems providing the integration of sensing, localization, reporting and remote control of food products.

At the current state of knowledge, many of these applications may be difficult to adopt commercially because they are either too expensive or too impractical to implement at an industrial scale. This means that there is much room for research and development in this area.

A final word of caution is needed: in many cases the effects of nanotechnological systems in the human body are still unclear. This means that using nanotechnological applications in foods must be justified essentially by their advantages, which must be clearly perceived by the consumer. Not doing so will undermine consumers' trust on this emerging technology, eventually hindering its success in future applications.

Keywords: nanofilms; nanocoatings; nanoemulsions; functional compounds.