

Pectins for developing edible food packaging

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A useful alternative to conventional packaging is edible food packaging that presents a sustainable future. Edible food packaging is designed to be consumed or to get degraded efficiently to prevent environmental pollution. Hence, edible food packaging is being improved through continuous research and innovated employing different substances, such as chitosan, milk proteins, etc. that are environment-friendly, functional and cost-effective. However, films made from fruits and vegetables offer many advantages. They contain a matrix forming polysaccharides and proteins along with bioactive compounds, such as vitamins, polyphenols and carotenoids that contain antioxidant and antimicrobial properties of active packaging material; this helps in keeping food fresh during transport, even for a long time. Pectin, an important component of fruits found mainly in the primary cell wall of citrus fruits, apples, etc. could be used as a component in edible food packaging. Pectin is made up of repeated units of methyl ester galactouronic acids along with arabinose, xylose and galactose. The tensile strength of the pectin can be improved by crosslinking the film with methanol or glutaraldehyde. These films act as a natural barrier between the packaged food and the environment. Pectin films help reduce the respiration rate in fresh fruits or vegetables, and at low pH if pectin films are cross-linked with calcium ions they produce a hard gel, which acts as a water barrier thus keeping the fruits and vegetables hydrated, and maintain their colour, texture and freshness. Pectin coating protects the nutritional property of the foods and stops the oxidation of highly perishable foods thus eliminating the chance of browning, lipid migration and deterioration of food during storage. Pectin films added with glycerol and lactic acid are flexible at room temperature and prevent fungal contamination in food. Applying pectin as a composition of edible food packaging material helps utilisation of raw material with high availability and low commercial value. The development of edible food packaging from fruits and vegetables is a novel way of combining the barrier and mechanical properties of pectin with nutritional and sensory properties.

Keywords: Pectin, Fruits, Polysaccharides, Antimicrobial, Edible food packaging, Vegetables

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