

Edible fruit coating materials for post-harvest shelf life improvement

Absence of postharvest treatment, traditional storage on farms, infestation of microorganism and pests, non-availability of processing methods are the responsible factors for the highest rate of postharvest losses in fruit and vegetable in India. Due to limited availability of cold chain facilities especially during storage and transportation, development of coating materials to prolong the shelf life of fruits and vegetables is the high priority in this research area.

The present invention relates to development of non-toxic and edible composite coatings based on wheat straw hemicellulosic polysaccharide (WP) and fatty acid derivatized oat bran polysaccharides (FAOP). The studies on functional properties suggested WP-SAOP (SAOP: stearic acid-oat bran polysaccharide esters) films significantly reduced the water vapor permeability (~67%), produced higher tensile strength and film transparency.

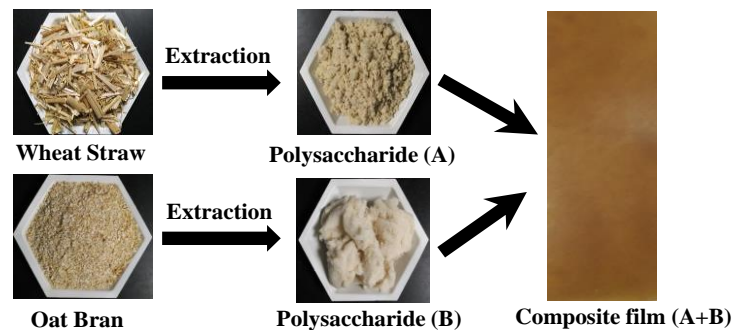


Fig.1. Polysaccharides extracted from (A) Wheat straw and (B) Oat bran and (A+B) film coatings for post-harvest applications.

The 1% WP-SAOP composite emulsion (w/w 60:40) was further used for surface coating on various perishable fruits (Peach). The determination of the post-harvest qualities of the coated fruits suggested 1% WP-SAOP coating formulation significantly reduced fruit weight loss, softening and reduced ripening index compared to non-coated and commercially available shellac coated fruits. The fruit coating technology is simple and can be applied even in the farm level, so that spoilage during transportation and marketing is reduced.



Fig.2. Images of un-coated peaches (A) and coated with 1% surface coating formulation (B) after 6 days at 20°C and 80% relative humidity.