

**Title** Physical and antimicrobial properties of banana flour/chitosan biodegradable and self sealing films used for preserving Fresh-cut vegetables

**Author** Natcharee Pitak and Sudip K. Rakshit

**Citation** LWT - Food Science and Technology, Volume 44, Issue 10, December 2011, Pages 2310-2315

**Keywords** Banana flour; Chitosan; Biodegradable; Edible; Sealable films

### **Abstract**

Kluai Namwa is a local species of banana grown in Thailand. Flour made from this banana was mixed with chitosan, a by product of the shrimp industry, for casting films as it has valuable characteristics including antimicrobial effects. Utilization of excess banana available in high season and chitosan can from the waste crustacean shells could help reduce waste while making available a value added product. Banana/chitosan films were produced using 0.5–2 g banana flour and 0.5 g chitosan in 100 ml aqueous solution. Film water vapor permeability, tensile properties, solubility and morphology were investigated. The composite yellowish film exhibited great water permeability of 38.81–41.66 g mm/m<sup>2</sup> day kPa. Tensile strength and elongation were in the range of 5.19–14.22 MPa and 1.64–2.59%, respectively while the solubility obtained was 40.90–64.21%. The presence of starch in the composite film makes possible water soluble and sealable bags or wraps, while the presence of chitosan gives them the antimicrobial property. The composite bags were found to protect asparagus, baby corn and Chinese cabbage against *Staphylococcus aureus* activity by serving as a good barrier and as a antimicrobial agent. With these properties the edible bag with its contents can be processed together during food preparation making its use very convenient.