

Title Edible coatings: A novel strategy to control postharvest anthracnose and maintain quality of fresh horticultural produce

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Abstract

Fresh fruits and vegetables have relatively short postharvest life. Their storage life is limited by several factors including transpiration, postharvest diseases, increased ripening and senescence. Many storage techniques including low temperature, controlled atmosphere and modified atmosphere storage have been used for retention of freshness of fruits and vegetables. But these processes are capital intensive and costly to run. Synthetic fungicides have also been used for controlling postharvest diseases. However, persistent use of these fungicides has resulted in the emergence of resistant strains and also posed more risks to human beings and environment. Therefore, more emphasis has been given to discover sustainable, non-chemical alternative techniques. A novel approach is the use of edible coatings obtained from waste materials which are biodegradable and environmentally friendly in nature. These can generate a modified atmosphere around the fruit by providing a semi-permeable barrier to gaseous exchange, reduce respiration rate, water loss, and the most importantly approved by US FDA to be used on fresh fruits and vegetables. Gum arabic is a dried gummy exudate from the stems or branches of *Acacia* species. It is the most extensively used hydrocolloid in industrial sector because of its emulsification, film forming and encapsulation properties. Chitosan is another polysaccharide obtained from the exoskeleton of crustaceans, such as shrimps and crabs. It has become a potent alternative treatment for extending storage life and to control decay of fruits and vegetables due to its natural antimicrobial effects and elicitation activities in plant tissues. Therefore, a composite edible coating based on gum arabic and chitosan was developed which presents a simple, inexpensive and effective alternative for controlling anthracnose, enhancing quality and maintaining shelf-life of fresh fruits and vegetables, particularly in cold storage.