The Multifunctional Shockproof Packaging for Longer Shelf Life of Climacteric Fruits

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Popularity in climacteric fruits consumption both within the country and as exporting produce has brought our interest in carrying out this research. The objective of this work is to develop multifunctional shockproof packaging materials which possess anti-fungal, shock absorbing, and freshness lengthening properties for post harvesting storage and transportation. The packaging was made from cellulosic materials obtained from pulps of bamboo leaves and corrugated. The composite of this cellulose-based packaging was prepared by addition of several components. Natural rubber latex was added to modify shock absorbing property. In addition, activated carbon was also put in to help absorb ethylene gas released from fruits to deter ripening process. Moreover, an extract from long pepper a natural plant widely found in South East Asia was added to improve anti-fungal activity as tested upon Colletotrichum gloeosporioides. All these factors had been shown to retain the freshness of climacteric fruits during storage and transport. These packaging can also be molded into various shapes. It was shown that shockproof package loaded with ca. 6,000 ppm of long pepper extract exhibits highest anti-fungal property. Overall, the shockproof composite exhibited shock absorbing degree comparable to that of commercially available polystyrene. At the experimental conditions of 13 degree Celsius and 90 ± 5% relative humidity, it was shown that the shelf life of mangoes could be lengthened up to 18 and 21 days.

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