

Modified atmosphere packaging of fresh-cut papaya using alginate based edible coating: Quality evaluation and shelf life study

Nazia Tabassum and Mohammad AliKhan

Scientia Horticulturae 259: 108853. (2020)

Abstract

Fresh-cut fruits have been observed to deteriorate more rapidly than the intact ones leading to increased surface browning, textural breakdown and development of off-flavor. These changes can be minimized by the application of a modified atmosphere in the form of an edible coating at low temperature which not only increases shelf life of food products but also is environment friendly. Edible coatings have been reported to provide a semi-permeable barrier to gases and water vapor and also improve mechanical properties, thus delaying the natural senescence, minimizing water loss and keeping the structural integrity of coated product intact. The purpose of this study was to evaluate the quality and shelf life of fresh-cut papaya cubes treated with alginate based edible coatings containing thyme and oregano essential oils in various concentrations (0.5 ml, 1.0 ml, and 2.0 ml) as the lipid component of the coating while the alginate concentration (2% w/v) was kept constant. Papaya cubes were packed in low density polypropylene trays which further prevented loss of water and firmness and stored at 4 °C. The samples were analyzed for physico-chemical changes, gas exchange, microbial stability and sensory quality for 12 days of storage period. Control samples showed greatest water loss and lowest sensory scores. Increasing the concentration of essential oil increased the shelf life as well as the moisture retention capacity but showed negative responses from the sensory panel due to the strong odor of essential oils. Sample containing thyme essential oil (2.0 ml) was unacceptable to the panel due its strong and penetrating odor.