



## Effect of packaging type and chitosan edible coating on the physico-chemical and sensory characteristics of Royal Greenhouse cucumber during storage conditions

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**Introduction:** In Iran, the main problem in greenhouse cucumber production and post-harvest shelf life is short due to the application of traditional packaging and storage methods. This research was carried out in order to investigate on the effects of packaging type and chitosan edible coating on the physicochemical and sensory characteristics of Royal Greenhouse cucumber during storage conditions, in order to prevent of Royal greenhouse cucumber postharvest losses.

**Materials and methods:** Royal greenhouse cucumbers placed inside the three-layer plastic bags of PE/PA/PE and the effect of different chitosan coating (0, 0.5 & 1 %), concentration of oxygen (3, 12 & 21%), storage temperatures (5, 15 & 25 °C) and storage time (3, 12 & 21 days) on cucumber quality and shelf life was studied. The quality of cucumber samples was evaluated by weight loss, firmness retention, surface color development ( $L^*$ ,  $a^*$ ,  $b^*$ ), shrinkage and sensory evaluation (taste and freshness).

**Results and discussion:** The obtained results showed that firmness and organoleptic properties decreased with increasing temperature and time storage, while weight loss and shrinkage was increased, that Leading to loss of cucumber samples quality during storage. Increasing of chitosan coating to 0.5% also showed a beneficial effect on physicochemical and sensory characteristics of the samples during the storage time compared to the control fruit, but by increasing it to 1%, decreased the quality of the final product. The results showed that using modified atmosphere packaging and storage at low temperatures can be in addition to the slow breathing fresh cucumbers from softening and prevent moisture loss the maintenance of cucumber. MAP packaging leads to keeping cucumber green and quality properties compared to the control samples. The optimum condition was obtained at chitosan coating 0.5 %,  $O_2$  concentration 8.5 %, storage temperatures 9°C and storage time of 14 days. At this optimum point maximum of firmness,  $L^*$ , taste, freshness and minimum of shrinkage, weight loss and  $a^*$  were found to be 10.4 (N), 48.9, 4.35, 4.5, 6.25 %, 2.75 % and -37.28 respectively.

**Keywords:** Greenhouse cucumber, MAP, Chitosan, Shrinkage, Sensory properties.

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