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EFFECTS OF HYDROCOOLING ON THE POST-HARVEST CONSERVATION AND QUALITY OF SPRING ONION

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Abstract

Spring onion is one of the most used and traded vegetables in the world, essentially with a seasoning nature, it presents high perishability and susceptibility to water loss, which reduces its useful life, making it necessary to use post-harvest techniques, aiming to decrease its metabolic activity and extend its shelf life. The hydrocooling method, which consists of the immersion of the product in a mixture of water and ice, presents itself as a good alternative for the removal of the field heat and to favour the humidity of horticultural goods. The goal of this paper was to check the effects of hydrocooling on the post-harvest conservation and quality of spring onion, aiming to determine the best application time at 5ºC. The method showed efficient, especially on the control of mass loss and on the commercial visual aspects, with the most indicated time of 10 minutes.

Keywords:

Pre-cooling, Hydrothermal treatment, Vegetables.

Introduction

Spring onion is part of the Alliaceae family and is essentially a seasoning plant and widely grown in the country, being present in practically every Brazilian households. Due to its high perishability and susceptibility to water loss, it is necessary to use post-harvest techniques, aiming to decrease its metabolic activity and extend the useful life of the product, both on the shelf (benefiting the producer or the trader) and in the fridge (benefiting the consumer). The hydrocooling method presents itself as a good alternative for the conservation of horticultural goods, because it also reduces the field heat and decreases the metabolic processes, responsible for the senescence, also reducing humidity loss. Thus, the goal was to check the efficiency and the effects of hydrocooling as a pre-cooling technique on the post-harvest conservation and quality of spring onion and to determine its best exposure time to hydrocooling at 5ºC.

Results and Discussion

Pre-cooling was performed by immersion in crushed ice and water at the proportion of approximately ⅓ (v/v) at a temperature of 5ºC. With 5 distinct treatments: T1 - Control: no hydrocooling; T2 - Hydrocooling at 5ºC for 5 min; T3 - 10 min; T4 - 15 min; T5 - 20 min. Physicochemical analyses of fresh mass loss, total soluble solids (TSS), total titratable acidity (TTA), TSS/TTA ratio, index of chlorophyll, respiratory rate, and darkening index were performed. Besides, analyses were performed through the Biospeckle and the visual methods as for the quality, checking the occurrence of symptoms indicating quality loss.

Regarding the analyses which presented significant differences among the treatments, the mass loss data gathered throughout the storage days (Fig. 1) show the efficiency of hydrocooling applied to spring onions on the mass loss control, with the 10-min application treatment as the best option with an accumulated mass loss of 16.01%, resulting almost 10% lower than the untreated sample (T1).

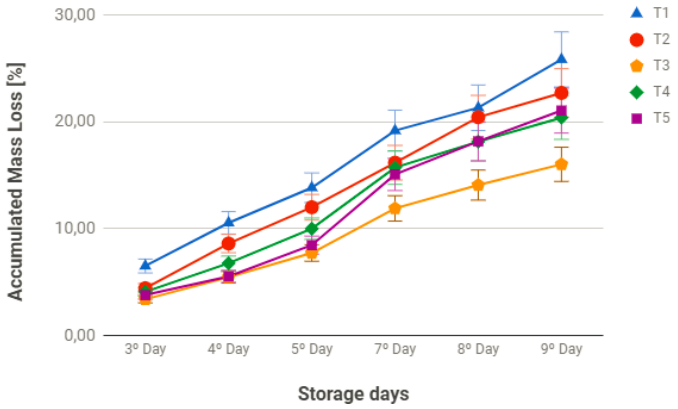

Figure 1. Accumulated mass loss in spring onions under different treatments during storage.

The mass loss of leafy vegetables causes an accelerated quality decrease, with withering and wrinkling as its main indicating factors, being possible to accelerate the deterioration through the increase of the reaction rate, especially catabolic (TRAVASSOS et al. 2017). Significant changes were observed on the visual aspects of the spring onions concerning the withering and wrinkling, with samples T3 (10 min) keeping attractive to consumption during storage (Fig. 2).

Figure 2. Visual aspect of the spring onion samples under different treatments along the 9 storage days.

Conclusions

Hydrocooling showed efficient for the post-harvest conservation of spring onions mainly on the mass loss control and on the commercial visual aspects, with the most indicated time of 10 minutes.

TRAVASSOS, A.P. et al. Hidroresfriamento na conservação pós-colheita de cebolinha. Revista Brasileira de Agropecuária Sustentável (RBAS), v.7, n.2, p.46-51, Junho, **2017**.