The Effect of Calcium Applications on Kiwifruit Quality Preservation during Storage

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INTRODUCTION

It is known that calcium play a significant role in maintaining quality in a number of different fruits. The pre and postharvest application of calcium salts has been used successfully in many fresh fruits to reduce loss of firmness and to slow down the ripening process (Souty et al., 1995). Retaining and controlling postharvest kiwifruit ripening is of a great commercial importance to be able to feed continuously the market.

Gerasopoulos et al. (1994) and Xie et al. (2003) reported the benefit of preharvest calcium chloride and calcium chelate application on retaining kiwifruit firmness through storage. Postharvest dipping kiwifruit on calcium solutions was also reported (Antunes et al., 2005).

The objective of the present work was to study the effect of calcium preharvest application in two different forms (CaCl_2 and CaO) and CaCl_2 application postharvest on the quality preservation of ‘Hayward’ kiwifruit during storage.

RESULTS

Kiwifruit vines (cv. ‘Hayward’) grown in an orchard in Northwest Portugal were sprayed with 0.03% CaCl_2 (Antistip) or 0.03% CaO (Chelal) at one, three and four months before harvest. Control did not have any treatment.

Fruits were harvested in the first half of November, separated by size and stored at 0ºC. Half fruits from each calibre were dipped for 2 min in a solution of 2% CaCl_2 and the other half did not have any treatment.

Treatments were identified as follow: T1 = control (no Ca spraying); T2 = kiwifruit sprayed with 0.03% CaCl_2; T3 = kiwifruit sprayed with 0.03% CaO; T4 = Kiwifruit without any Ca spraying + dipping in 2% CaCl_2 postharvest; T5 = Kiwifruit sprayed with 0.03% CaCl_2 + dipping in 2% CaCl_2 postharvest; T6 = Kiwifruit sprayed with 0.03% CaO + dipping in 2% CaCl_2 postharvest.

At intervals of 15, 60, 120, and 180 days, fruits were analysed for firmness and SSC.

The soluble solids content (SSC) (“Brix) was measured by a hand Atago refractometer. Firmness was recorded by puncture, with a hand penetrometer fitted with a flat 8mm diameter plunger, inserted after skin removal, at the fruit equator to a depth of 7mm.

CONCLUSIONS

• In the present work the marketable production was not affected by treatments. Also we found not important differences in ripening parameters among kiwifruit commercial sizes.
• There was not significant effect on keeping fruit firmness through storage by the application on the vine of 0.03% CaO or 0.03% CaCl_2.
• The concentrations of 0.03% CaCl_2 (Antistip) or 0.03% CaO (Chelal) for kiwifruit vine spraying seem to be too low and higher concentrations should be tried.
• This work suggests that immersion of kiwifruit in 2% CaCl_2 postharvest benefits storage life capacity.
• It was found that the benefit on keeping firmness was better at the end of storage period what is important for the marketing of the fruits.

REFERENCES