



Management of Postharvest Fruit Softening and Quality of Peach by Calcium Chloride

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Background and Objectives

Peach is a versatile fruit and is rich in vitamin C, vitamin A, and phenolic compounds that are good sources of antioxidants. Being climacteric fruit, after harvest, rapid fruit softening of peach fruit pulp results in rapid fruit ripening and limits its postharvest life with poor quality. This is mainly due to increased activities of cell wall hydrolyzing enzymes. CaCl₂ binds with cell wall components, making less accessible to cell wall hydrolyzing enzymes. Moreover, it delays the ripening of fruits, possibly through hindering rapid deterioration of cell wall, and maintains better postharvest quality. The aim of the study was to manage rapid fruit softening and quality of 'Flordaking' peach by the postharvest application of CaCl₂ during ripening.

Methodology

'Flordaking' Peach fruit of uniform size and maturity, free from any disease and insect attack were harvested from a commercial orchard of Khushab. These were sorted, pre-cooled and transported to PRTC. Harvested fruit were treated with aqueous solution of CaCl₂ (Control, 2%, 4% and 6%) were analyzed during ripening (on daily basis upto day-4) at ambient conditions (25±1 °C, 60-65% RH).

Results

Postharvest application of higher dose of CaCl₂ significantly reduced ethylene production, respiration rate, fruit weight loss, fruit softening (Fig.1 A-D), activities of cell wall enzymes (pectin methyl esterase, endo-1,4-β-D-glucanase, endo-polygalacturonase and exo-polygalacturonase) (Fig. 2 A-D). Moreover, peach fruit treated with CaCl₂ retained higher vitamin C, antioxidant scavenging activity (ASA), phenolics contents and activities of enzymatic antioxidants viz. superoxide dismutase, catalase and peroxide enzymes (Fig. 3 A-F). These quality attributes were enhanced by the application of CaCl₂ in peach fruit during ripening as compared to untreated fruit. The peach fruit treated with postharvest application of 6% CaCl₂ exhibited the best fruit quality as compared to other concentrations and untreated fruit.

Acknowledgements

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Conclusions

Postharvest application of 6% CaCl₂ reduced the postharvest fruit softening and maintained the fruit quality of peach during fruit ripening.

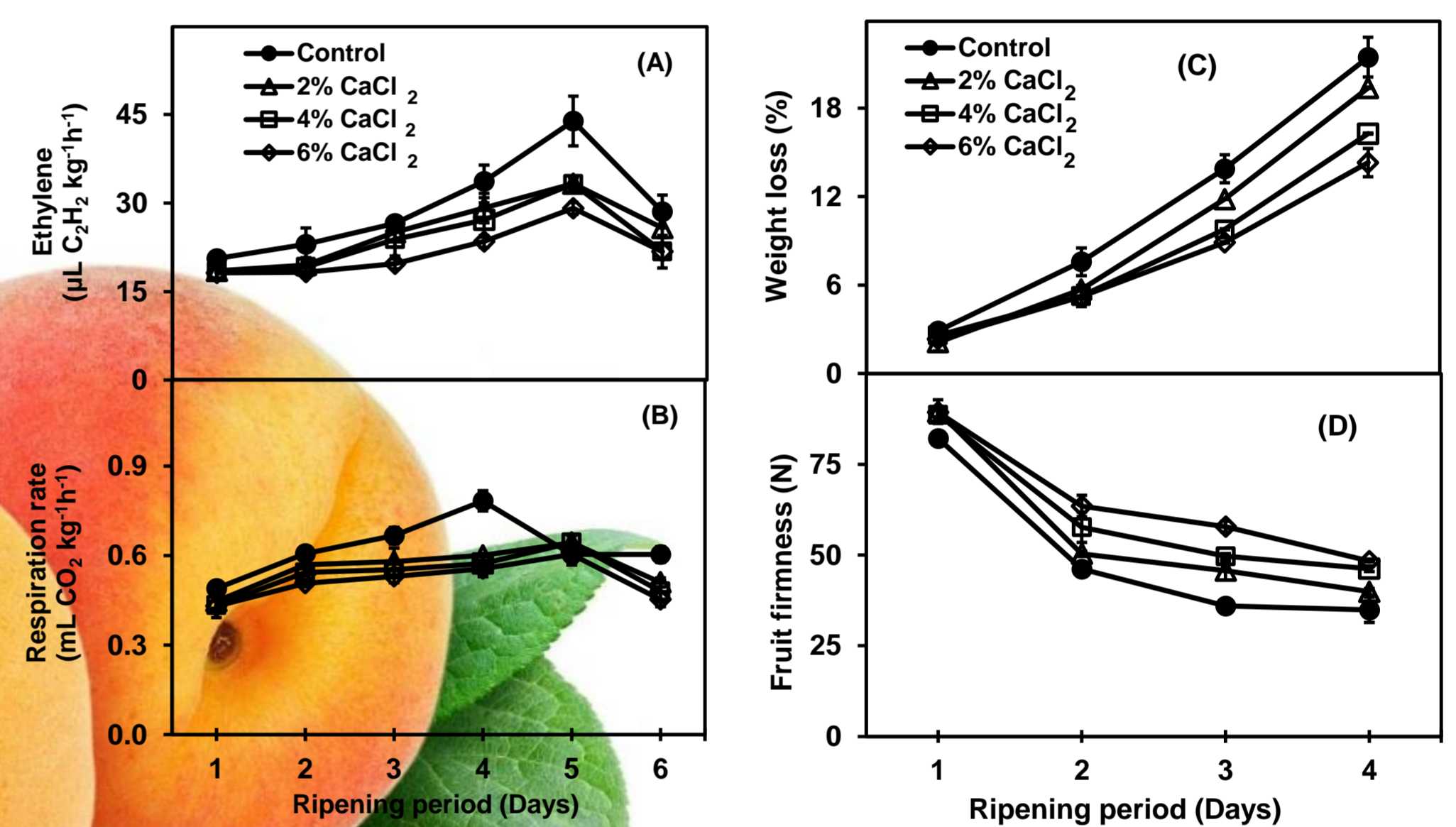


Fig 1: Effect of postharvest application of CaCl₂ on ethylene production, respiration rate, fruit firmness and weight loss of peach fruit.

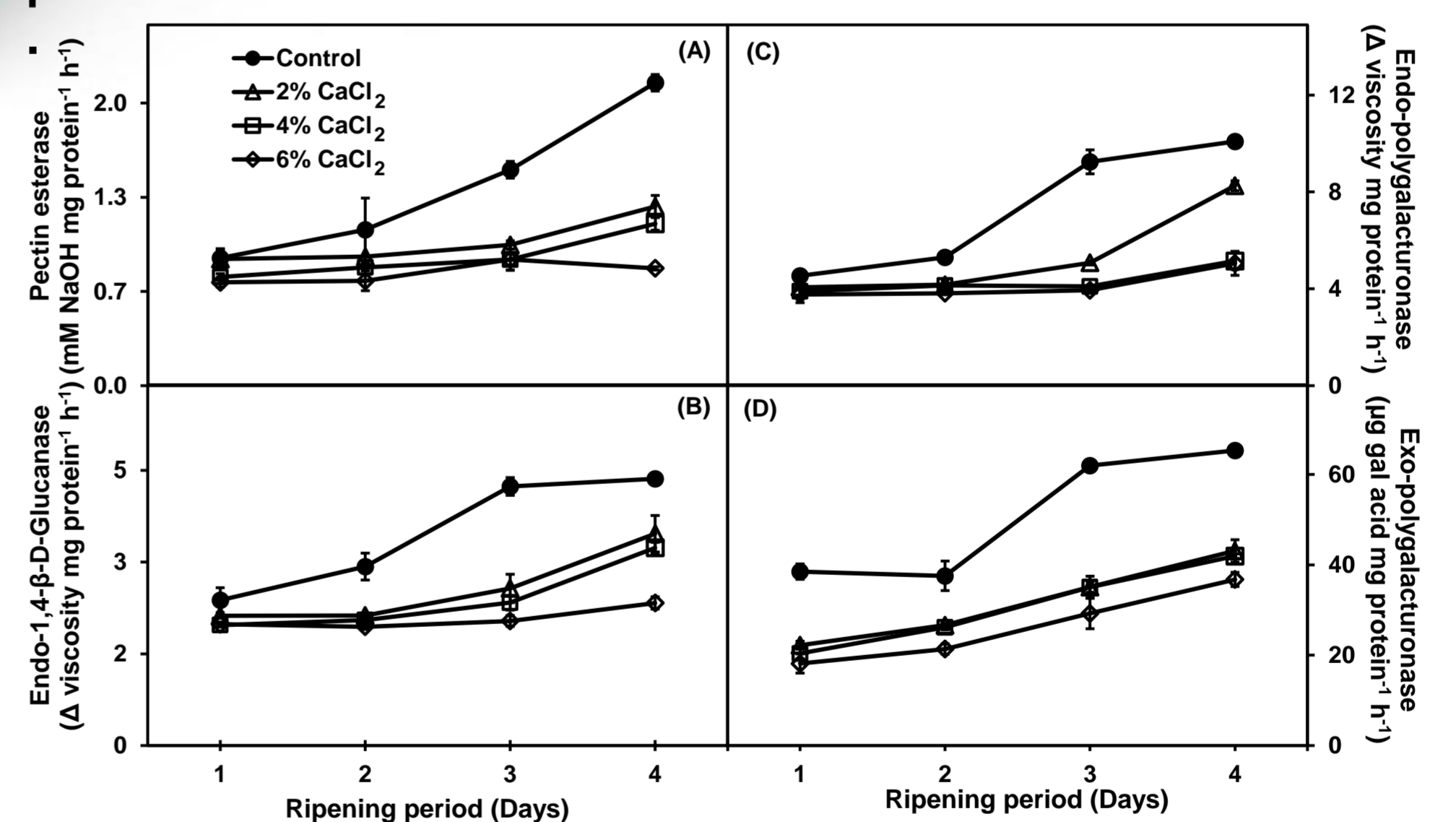


Fig 2: Effect of postharvest application of CaCl₂ on activities of cell wall hydrolyzing enzymes of peach fruit.

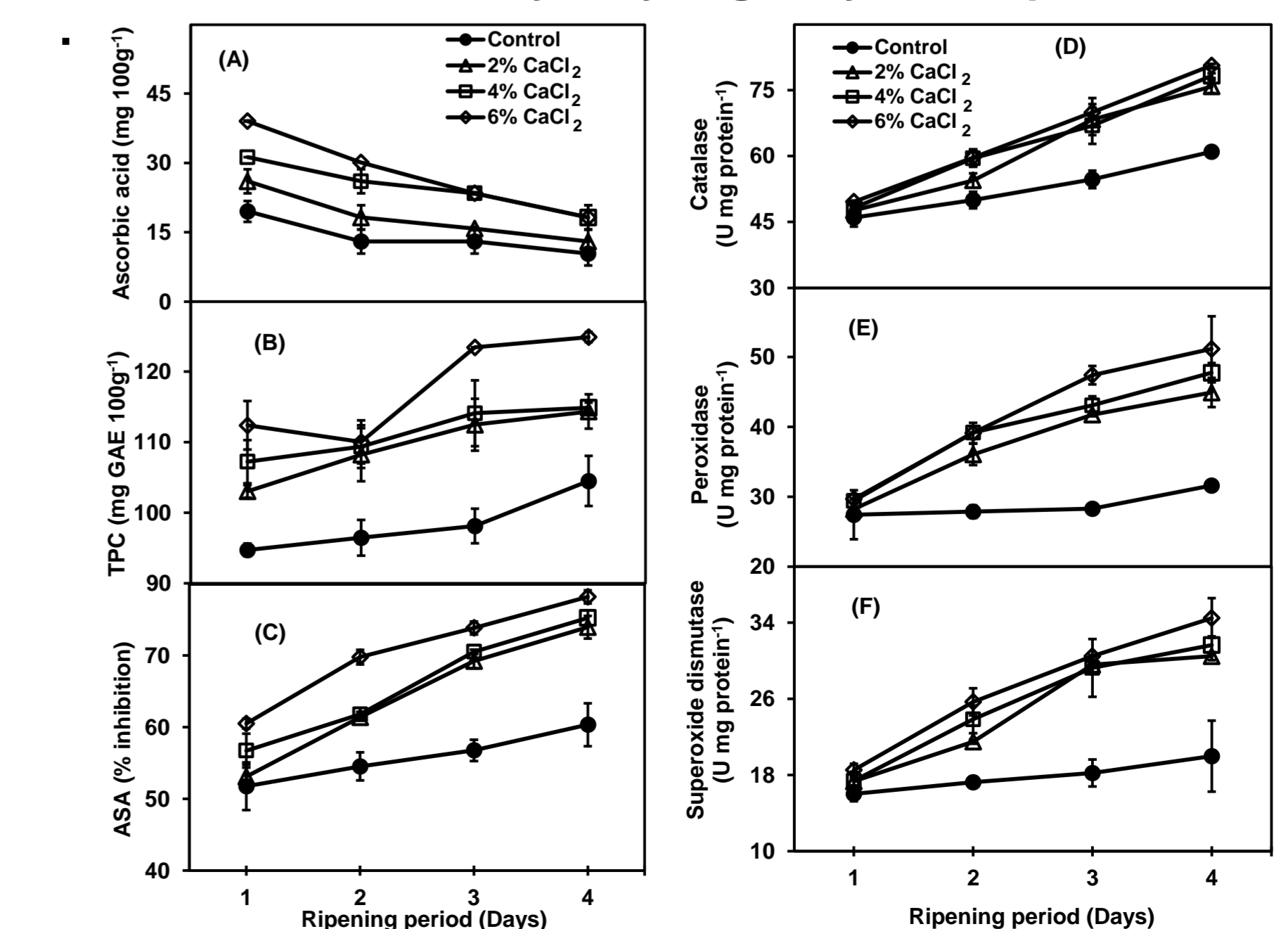


Fig 3: Effect of postharvest application of CaCl₂ on anti-oxidative attributes of peach fruit.