

Abstract

The aim of this work was to dissect the role of cell wall cationic composition in chilling-injured nectarine fruit (*Prunus persica* var. *nectarina* Ait. Max cv. Caldesi 2000). Activity of the cell wall-modifying enzymes (polygalacturonase (PG), pectin esterase (PE)), polyuronide content, and calcium and magnesium levels in the cell walls during storage of up to 6 weeks (0 °C, 95% RH) and the corresponding shelf life intervals (1 and 5 days) after removal from cold storage of the nectarine cultivar 'Caldesi 2000' were assayed. Fruit firmness and incidence of chilling injury (CI) symptoms measured as expressible juice and woolliness index were also monitored. As storage period increased, a significant increase of both calcium and magnesium content in the cell wall and pectin matrix without a corresponding increase of uronic acid content of the pectin fraction was observed. Cell wall cationic composition showed a substantial differentiation of soluble and bound forms of calcium and magnesium between 1 and 5 days shelf life after harvest or cold storage. Results indicated a significant increase in sites for cation binding, primarily of calcium, as cold storage period increased. Additionally, a possible involvement of magnesium content in the abnormal ripening of nectarine fruit is discussed.