

Abstract

The aim of this study was to dissect the physicochemical aspects of cell wall components in relation to chilling injury symptoms, expressed as flesh browning and postulated as internal breakdown in the present study, in a non-melting peach cultivar (*Prunus persica* L. Batsch, cv. Andross) during ripening after 4 weeks cold storage at 5 °C. Uronic acids, neutral sugars and cellulose contents were assayed in order to determine the correlation between them and flesh browning. Cation distribution in cell wall material and activities of pectin-modifying enzymes were also monitored. Uronic acid content was higher in both water-soluble and -insoluble pectin fractions in sound peach fruit compared to fruit with internal breakdown symptoms. The chilling-injured fruit were characterized by 26% higher content in total neutral sugars compared to sound fruit, which was mainly attributed to increased galactose, arabinose and glucose contents, whereas tissue derived from sound fruit had a 27% higher cellulose content compared to chilling-injured tissue. Decreased activities of both polygalacturonase and pectin methyl esterase, accompanied by decreased levels of cation binding in the cell walls, primarily of calcium, were recorded in the brown-fleshed tissue. Since the examined tissues originated from fruit subjected to common storage treatments, differences reported here are related to the development of internal breakdown symptoms.