**Pectin in kiwifruit: effect of different treatments to delay fruit softening**

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RESUMEN

Kiwifruit is an important fruit because of its flavor, texture and health benefits. It is good source of vitamin C and dietary fiber, and contents other vitamins and antioxidant compounds. Pectin is a dietary fiber that accumulates in the primary cell wall and intercellular tissues of plants, that contributes to maintain the cell wall integrity and the flesh firmness of fruits. Chemically, pectin is a heterogeneous and complex acidic hetero-polysaccharide, that contains mainly a linear backbone of galacturonic acid, with or without methyl-esterified at the carboxyl groups. Kiwifruit cell wall suffers changes during ripening and softening process, as consequence of enzymatic activity and changes in the content and type of pectin, cellulose, lignin and hemicellulose. There are different treatments to delay kiwifruit softening, like the application of 1-methylcyclopropene and phosphites, among others. Therefore, the aim of this work was to study the effect of different treatments to delay the kiwifruit (*Actinidia chinensis* var. *deliciosa* “Hayward”) softening on the content and type of pectin. Four treatments were evaluated a) untreated control (Control), and applications of b) potassium phosphite Afital™ 0,3%V/V (KPhi) 100 days after bloom, c) 1-methylcyclopropene (1-MCP), in 1 dose, 24h postharvest (1 μL.L-1), and d) combination of KPhi and 1-MCP (KPhi+1-MCP). Fruits were harvested at physiological maturity and stored for 5 months (0°C and 90-95% RH); also fruits were maintained for 7 day at 20°C after storage (shelf life). Samples of outer pericarp tissue were frozen and grounded using liquid nitrogen. An aqueous extraction of pectin was carried out using a microwave (700W power, 5 min) from 10 g of sample. Pectin was precipitated with 98% ethanol, and kept cold overnight and then centrifuged. The pellet was washed with ethanol and dried at 60°C to get the pectin %-yield (PY). Pectin was characterized by conductimetric titration to estimate equivalent weight (EW, mg.meq-1), %-methoxyl (ME), esterification degree (DE) and %-anhydrouronic acid (AC). The results showed that PY significantly decreased with the KPhi, 1-MCP and K-Phi+1-MCP treatments. The pectin yield in the 1-MCP-treated fruits was lower than Controls, 0.65 and 1.03%, respectively. The average daily intake of pectin from fruits and vegetables is around 5 g, considering a consumption of them of 500 g per day, changes in pectin yield may affect achieving this intake. EW was similar in Control and KPhi+1-MCP, in average 764.6 mg.meq-1, and was lower for MCP-treated fruits (602.4 mg.meq-1). 1-MCP showed higher ME (5.3 %) than the other treatments (4.3 %). No significant differences were observed in DE and AC between treatments, with an overall mean of 67% and 23% for each variable, respectively. The kiwifruit pectin was classified as high methoxy pectin, DE>50%. The low AC could be due to starch was co-extracted with pectin. These results suggest that products applied to delay softening in kiwifruit can modify the content of pectin as dietary fiber. The changes in EW and ME may modify the mechanisms through which pectin’s have a health benefits.

Keywords: dietary fiber, fruits, ripening, galacturonic acid