

Shelf life of fresh in-hull pistachio in perforated polyethylene packaging

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Abstract

Fresh pistachios are highly desirable foods with vast nutritional values, but perishable in cold storage. Effect of polyethylene packaging with four perforation levels (0, 0.5, 1 and 1.5%), storage time (harvest, 30 and 60 days) and their interaction were investigated on pistachio cultivar 'Ahmadaghai'. Weight declined by time and perforation level. 1.5% better inhibited hull browning and decay. Chilling injury was not observed. 1 and 1.5% revealed higher hull firmness on 60th day. 0 and 0.5% better preserved kernel firmness and lipids on 30th day, but 1 and 1.5% were better for 60-day storage. 1.5% preserved kernel chlorophyll and hull carotenoid. At 30th day, 0% perforation revealed more hull anthocyanin, while at 60th day 0.5 and 1% better preserved anthocyanins. Ion leakage, malondialdehyde and hydrogen peroxide increased in hulls by time and by perforation level. Hull PPO activity increased overtime especially in 0 and 0.5% perforation. POD activity showed an increasing trend, and 1.5% revealed higher POD activity. Kernel antioxidant activity increased in nonporous packs on 30th day and in perforated packs on 60th day. Kernel phenolics decreased on 30th day followed by an increase on 60th day, and 1.5% perforation could maintain this trait. Kernel flavonoids remained stable after 30 days, with an increase in 1% perforation on 60th day. Hue angle of hulls did not change. Hull chroma and lightness declined overtime. 0 and 0.5% were more effective in keeping chroma on 30th day. Lower and higher perforation levels are suggested for 30 and 60 days respectively.