Title The effect of modified atmosphere packaging (MAP) on shelf life and quality attributes of "Malas e Torsh" pomegranate fruit

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Abstract

The efficiency of Modified Atmosphere Packaging (MAP) to control decay and maintain quality of "Malas e Torsh" sweet-sour pomegranate fruits was evaluated. Fully ripened pomegranate fruit were picked from an orchard at Saveh Research Station and transported on the same day to the packaging facility of the Food Science Department, University of Tehran. Fruit were separated into 9 groups and stored for up to 4 months at 2 and 6°C and 85-90% relative humidity (RH) in air (control treatments) and in modified atmospheres of 5% O_2+5% CO_2 + 90% N_2 and of 5% O_2 + 10% CO_2+ 85% N_2 in LDPE (Low Density Polyethylene) and PP (Polypropylene) packaging materials. One of the groups subjected to hot water treatment (46°C for 2 minutes) before packaging. Quantitative and qualitative characteristics of fruit samples including weight loss, PH, titratable acidity (TA), pomegranate husk and aril moisture amount, firmness, total soluble solids (TSS), juice color intensity, fungal decay and sensory analysis were determined at 30 day intervals during storage. Modified atmosphere of 5% O_2+5% CO_2 + 90% N_2 at 6°C and 85-90% relative humidity (RH) is an adequate treatment to prolong storage life and marketability of "Malas e Torsh" pomegranate fruits for up to 4 months, whilst minimizing weight loss, risk of fungal decay and maintaining postharvest quality attributes. Application of hot water (46°C for 2 minutes) reduced the incidence of latent fungal infections in treated samples.