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Fresh strawberry (*Fragaria × ananassa*) and jamun (*Syzygium cumini*) fruit physico-chemical, antioxidative and organoleptic quality management by organic acid application

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Abstract

Fresh fruits contribute significantly to global nutritional security. However, fresh horticultural produce especially fruit is highly perishable and the global postharvest losses account for 30 to 40%. The reduction in postharvest losses can appreciably contribute to food and nutritional security for the growing world population. Quinic acid (QA) and oxalic acid (OA) are natural organic acids found in plants. However, the pre-harvest and postharvest treatment of QA and OA are limited in fresh fruit and warrants further investigation. Keeping in view the benefits of these acids, an integrated study was executed to explore the pre-harvest and postharvest application of QA and OA on strawberry (*Fragaria × ananassa* cv. Chandler) and jamun (*Syzygium cumini* cv. Desi) fruit physico-chemical, antioxidative and organoleptic attributes at shelf. The study comprised of three independent experiments, experiment-I & -II investigated pre-harvest and postharvest OA-application (0, 0.5, 1 and 2 mM) on jamun fruit quality, while experiment-III examined postharvest application of QA (0, 0.25, 0.5 and 1 mM) on strawberry fruit quality. All the treated fruit were kept at ambient conditions (25 ± 2 °C and 60–65% RH) and were investigated for physico-chemical, antioxidative and organoleptic quality attributes on daily basis. The results revealed that application of higher OA dose (both as pre-harvest and postharvest treatment) significantly decreased the jamun fruit physical losses [weight loss, fruit skin colour L, a, b, skin shriveling and disease occurrence and respiration rate], significant higher biochemical [total soluble solid (TSS), titratable acidity (TA) and vitamin C] and anti-oxidative parameters [total antioxidants, total phenolic contents (TPC), anthocyanin, activity of superoxide dismutase (SOD) enzyme] as compared to untreated fruit at shelf. Similarly, 1 mM-QA strawberry fruit exhibited significantly lower fruit weight loss, ethylene production, respiration rate, and higher fruit firmness, juice pH, anthocyanin contents, vitamin C, total antioxidant, TPC and SOD enzyme activity as compared to untreated fruit. Resultantly, pre-harvest and postharvest treatment of both OA and QA significantly retained the postharvest quality of fresh strawberry and jamun fruit at ambient conditions.

Keywords: Organoleptic attributes, physiological quality