

Effect of potassium permanganate on some postharvest characteristics of tomato 'Chonto' fruits (*Solanum lycopersicum* L.)

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Abstract

The tomato is a highly perishable climacteric fruit whose ripening processes are fast. Ethylene absorbers composed of a mixture of clay and potassium permanganate (KMnO_4) are a good alternative to eliminate ambient ethylene during the storage of fruits and vegetables. For KMnO_4 to be effective, it must be adsorbed to a vehicle (or carrier) that forms a solid absorber, easily manageable and which increase the effective contact area. The objective was to evaluate the effect of KMnO_4 on the behavior of some postharvest physical characteristics of the 'Chonto' tomato. We used a completely randomized design to evaluate three doses of zeolite (0.5, 1.0 and 1.5% based on fresh weight) and three concentrations of KMnO_4 (0.5, 1 and 1.5% based on fresh weight), plus one control treatment. The fruits were selected in the field and harvested at maturity 1 (100% green) with an average firmness of 50.93 Newton (N), 4.47 of °Brix, and total titratable acidity (TTA) of 1.11%; and therefore a maturity index of 4.01. Then, the fruits were stored in the postharvest laboratory at the National University of Colombia at room temperature (18°C and 85% relative humidity) for 28 days in commercial TPT packaging (Thermoformed polyethylene terephthalate); physicochemical variables were evaluated. The treatment with zeolite clay 1% + KMnO_4 1% showed the lowest fresh weight loss, meanwhile in the zeolite 1.5% + KMnO_4 0.5% treatment, the fruits exhibited greater firmness values. The lowest value of total soluble solids was presented with zeolite 1% + KMnO_4 1.5%, while the highest acidity was seen in the zeolite 1% + KMnO_4 0.5% treatment. Ethylene absorbers composed of zeolite and KMnO_4 retard the ripening of 'Chonto' tomato fruits.