

Aqueous formulations of 1*H*-cyclopropabenzene modulate ethylene production and fruit quality in Japanese plums

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Abstract

The efficacy of aqueous formulations of 1*H*-cyclopropabenzene (BC) containing different adjuvants to retard ethylene production and maintain fruit quality of Japanese plums (*Prunus salicina* Lindl. cvs. 'Angeleno', 'Fortune' and 'Tegan Blue') following 25 d and 40 d cold storage (1 °C) was evaluated. Plum fruit were sprayed with different solutions of 2 µM BC (i.e., aqueous solutions containing distilled water only or 5 % ethanol or 0.02 % Tween® 20 or 5 % β-cyclodextrin) or fumigated with 1 µM BC at ambient temperature. Plum fruit without any treatment were regarded as control. Regardless of the cultivars tested, all formulations of BC remarkably suppressed the ethylene production, while the fumigation was most effective treatment, when compared to control. Effects of BC on fruit firmness, weight loss and all other fruit quality parameters varied among formulations and cultivars. The fruit treated with BC had lower total anthocyanins levels than control whilst, total phenolic content and total antioxidant capacity did not differ significantly. BC solutions prepared containing 5 % ethanol or 0.02 % Tween® 20 outperformed other BC aqueous formulations in impeding production of ethylene and maintaining quality of cold stored Japanese plums.