

Cinnamon essential oil incorporated in shellac, a novel bio-product to maintain quality of ‘Thomson navel’ orange fruit

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Abstract

Green mold decay is considered as the main cause of postharvest loss in citrus fruits. With regard to safety concerns, this study was done to evaluate the efficacy of shellac as an edible coating and cinnamon essential oil (CEO) as alternative to synthetic fungicides to maintain quality of ‘Thomson navel’ oranges (*Citrus sinensis* L. Osbeck) inoculated with *Penicillium digitatum* spores. Fruit treated with distilled water (control), 1.5% ethanol (ET), 10% shellac (SH), commercial wax (CW), 0.5% commercial fungicide (Carbendazim), CF + CW, 0.3%, 0.4%, 0.5% and 0.6% CEO, 0.3%, 0.4%, 0.5% and 0.6% CEO + SH, SH enriched with 0.3%, 0.4%, 0.5% and 0.6% CEO (CEOSH) stored at 5 °C for up to 21 days. Fruit decay, weight loss, firmness, ascorbic acid were evaluated at 7 days interval, but scanning electron microscopy (SEM) images and sensory quality were evaluated at the end of storage. Shellac coating (10%) enriched with 0.5% CEO reduced weight loss by 52%, and firmness loss by 38%. The results showed that the incorporation of EOs into shellac could be a suitable treatment for maintenance of citrus fruit quality.