

**Title** Essential oil amended coatings as alternatives to synthetic fungicides in citrus postharvest management

**Author** Wilma du Plooy, Thierry Regnie and Sandra Combrinck

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#### **Abstract**

A new approach to the control of postharvest pathogens, while maintaining fruit quality, has been implemented by the application of essential oil amended coatings to citrus. This approach eliminates the need for synthetic fungicides, thereby complying with consumer preferences, organic requirements and reducing environmental pollution. *In vitro* studies indicated that the essential oils and some of the terpenoid components tested were active against *Penicillium digitatum*. In a series of subsequent semi-commercial and commercial trials, *Mentha spicata* and *Lippia scaberrima* essential oils, as well as pure (*d*)-limonene and R(-)-carvone were incorporated into a variety of commercial citrus coatings. These amended coatings were applied postharvest to 'Tomango' oranges in the absence of the standard fungicide dip. Excellent disease control was achieved with the amended coatings, while measured quality parameters indicated that overall fruit quality was maintained. Moreover, moisture loss was decreased significantly in fruit treated with essential oil enriched coatings. The efficacy of amended coatings as a viable alternative or supplement to existing fruit protection strategies was demonstrated in a commercial trial.