Impact of packhouse treatments on the peel microbiome of mandarin fruit (cv. Orr)

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Postharvest Biology and Technology, Volume 176, June 2021, 111519

Abstract

Citrus fruit are highly susceptible to infection by several fungal pathogens during postharvest storage. Therefore, harvested citrus fruit receive a series of treatments in the packhouse such as initial drenching, washing and disinfection, immersion in heated solutions of chemical fungicides and waxing that also include fungicides to reduce the inoculum load, eradicate existing infections and protect the fruit from subsequent infections. However, little is currently known about the impact of these packhouse management practices on the naturally-occurring microbiota of citrus fruit. The present study provides a comprehensive information on the effects of packhouse treatments on the peel microbiome of mandarin fruit (cv. Orr). Results revealed significant shifts in the diversity of both bacterial and fungal community, particularly after hot chemical-drench treatment. Notably, the packhouse treatments did not show significant effect on the relative abundance of *Penicillium* in the peel tissue, which are, the most common postharvest pathogen of citrus fruits. Results of our study at this particular packhouse suggest that the initial drenching treatment had a lesser impact on the peel micrbiome, while hot chemical drenching and waxing treatments significantly altered the fruit peel microbial diversity.