

Title Control of lemon green mold by a sequential oxidative treatment and sodium bicarbonate
Author Luciana Cerioni, Luisa Rodríguez-Montelongo, Jacqueline Ramallo, Fernando Eduardo Prado, Viviana Andrea Rapisarda and Sabrina Inés Volentini
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Abstract

A sequential oxidative treatment (SOT), using sodium hypochlorite (NaClO) and hydrogen peroxide (H₂O₂) in the presence of a cupric salt inhibited *in vitro* growth and germination of *Penicillium digitatum* conidia, causal agent of citrus green mold. Here, modifications of this SOT were evaluated *in vivo* to control this disease in inoculated lemons. The treatment that consisted of two sequential 2-min baths: one with 200 mg L⁻¹ NaClO followed by a second with 600 mmol L⁻¹ H₂O₂ in the presence of 6 mmol L⁻¹ CuSO₄, resulted in 50% of disease control. When this treatment was combined with a third 2-min bath containing 30 g L⁻¹ NaHCO₃ at 37 °C (SOT-NaHCO₃) and applied at 24 h post-inoculation, green mold incidence was reduced to ~5%. In non-inoculated lemons stored at 5 °C for 45 d, this treatment did not modify the appearance or weight compared to untreated lemons. Furthermore, phenolic content and the oxygen consumption rate in flavedo and albedo tissues were not affected by the SOT-NaHCO₃. The malondialdehyde content in flavedo tissues increased immediately after treatment, but decreased to levels similar to control fruit 2 d later. The SOT-NaHCO₃ combines compounds that are safe to the environment and human health, thus it represent a potential alternative to synthetic fungicides for the integrated control of postharvest diseases.