

Title Control of *Penicillium digitatum* (green mold) by sodium bicarbonate in lemon fruit in Tucumán (Argentina)

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Abstract

Argentina is the main lemon producer of the world and 95% of its production is grown in Tucumán Province. Citrus green mold caused by *Penicillium digitatum* Sacc. is the most important postharvest disease during export season. Normally its control is based on the use of chemical fungicides; however, the continuous use of benzimidazole and imidazole brought about the appearance of resistant strains of *P. digitatum* since 80 s and 90 s, causing serious control difficulties. The use of these fungicides is restricted because its negative effects on environment and health as well as the development of fungicide resistance. Consequently, world trends are moving toward the reduction of pesticide use. The objective of this work was to determine the effectiveness of sodium bicarbonate (SBC) and its mixtures as a safe alternative of citrus green mold control. Lemon fruits were inoculated on the two opposite sites along the equatorial line using a pounce previously dipped in a suspension of 1×10^6 spore/ml. Subsequently the fruits were dipped during 1 minute in SBC at 2 and 3% in water, with or without the addition of 200 ppm sodium hypochlorite, at ambient or 36°C temperature, and at different times (e.g. 0, 1, 2, 4 and 24 hours) after the inoculation. Fruit were then stored for 7 days at 20°C and 90% of relative humidity (RH). Fruit damages were evaluated as % of incidence and severity (0-5 grade). Results indicated that the best treatment corresponds to the mixture of 3% SBC + 200 ppm of hypochlorite in water at ambient temperature and 24 hours after the fruit inoculation, with lower values of incidence and severity of green mold. Results show that SBC and its mixtures can be used as safe alternative of chemical fungicide uses.