

**Title** *In vitro* comparison of disinfectants and fungicides efficiencies for control of citrus green mold

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### Abstract

Green mold of citrus, caused by *Penicillium digitatum* is one of the most economically important postharvest diseases of citrus in Uruguay. Fungicides like imazalil, sodium ortho-phemyul phenate (SOPP) and thiabendazole (TBZ) – this latest applied only to fruit for internal consumption – are used for disease control. Continuous application of fungicides has led to the appearance of TBZ and imazalil resistant strains and, in a few cases, SOPP resistant ones. In addition, it is well know that the use of fungicides may be risky both for consumer health and for environment. Therefore, it is necessary to increase the efficiency of other measures of control as for example the disinfection. This work aimed to compare the effect of various disinfectants and one fungicide over *Penicillium digitatum* spores viability “*in vitro*”. The products assayed were chlorine-containing compounds, Tecsaclor 100 ppm [stabilized chlorine dioxide], Bac-T 5grs/lit [chloramine-T], sodium hypochlorite 200 ppm, (this latter of traditional use), and ammonia-containing solutions, Tefor 0,2% [didecyl dimethyl ammonium chloride/ alkyl amido propyl dimethyl benzyl ammonium chloride], Sporekill 1000 ppm [didecyl dimethyl ammonium chloride]. The efficiency of fungicide SOPP 10% was also evaluated. For all treatments, a suspension containing  $1 \times 10^6$  spores/ml of a imazalil resistant strain was prepared and directly exposed to each product for either 1, 2 or 4 minutes. Spores were then separated by filtration through a 0.45  $\mu$ m membrane, resuspended in water, plated on PDA and kept at 26°C until colony counting. A significant effect was detected between products, time and in the interaction product – time. The highest efficiency was observed for quaternary ammonia which abolished nearly 100% of the spores for all three exposition times. Exposure to sodium hypochlorite for 2 and 4 minutes eliminated 99.8% and 99.9% of the spores, respectively. All other treatments assayed, including 1 minute exposure to sodium hypochlorite, showed practically no difference from control.