Title Biocontrol of postharvest fungal apple decay with *Muscodor albus* volatiles

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Abstract

Muscodor albus, a fungal biofumigant, was tested for control of postharvest fungal diseases on five apple cultivars ('Delicious', 'Golden Delicious', 'Gala', 'Granny Smith' and 'Mclntosh'). Surface-clean fruit were inoculated at 20°C with known fungal pathogens (*Botrytis cinerea, Penicillium expansum and Sclerotinia sclerotiorum*) by placing 20 μL of spore suspension on marked puncture locations on each fruit. Inoculated fruit were exposed to volatiles produced by *M. albus* mycelium growing on rye seeds in sealed glass 4 L jars with air circulation for 24 h. The amount of dry *M. albus*-rye seed culture varied from 0 (control) to 1 g per L of jar volume. Immediately after biofumigation, the fruit were removed, aerated and kept at 20°C until decay occurred. Fumigation of apples for only 24 h with 0.5 g per L with culture of *M. albus* gave complete control of blue mould (*P. expansum*), grey mould (*B. cinerea*) and *S. sclerotiorum* in wound-inoculated fruit. There were no significant changes in fruit quality (i.e., colour values, fruit firmness, total soluble solids and titratable acidity) in treated fruit. There was some evidence of lenticel darkening in 'Golden Delicious' at 1 g/L of dry *M. albus* rye seed culture.