Combining *Brassica* sachets and extracts with thermotherapy against postharvest green mold of orange

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Abstract

Green mold is the major source of postharvest decay in oranges worldwide. The disease, caused by *Penicillium digitatum*, is responsible for severe production losses during transportation, storage and commercialization of the fruits. Although green mold is conventionally managed with synthetic fungicides, the use of these products is frequently associated with the emergence of fungicide-resistant strains and new control strategies are needed. The objectives of this study were to test brassica sachets and extract, combined or not with thermotherapy, for green mold postharvest control in oranges. Initially, the effects of canola and mustard extracts and sachets were tested on *P. digitatum in vitro* and on green mold in inoculated oranges and the best treatments were tested combined with thermotherapy. The best alternative treatments of canola and mustard were compared with the conventional green mold treatment with the fungicide Imazalil. Results demonstrated that fungitoxic volatile compounds were produced by canola and mustard extracts and sachets, reducing *P. digitatum* development *in vitro* and green mold on inoculated oranges. There was no additive effect from the combination of the brassicas treatments with thermotherapy. Sachet treatments showed to be the best alternative control to green mold, mostly the canola sachet which showed the same control as Imazalil on *P. digitatum* sporulation on green mold lesions. Brassica sachets, mainly with canola, produced fungitoxic volatile compounds with great potential as an alternative control for green mold.