

Title Control of postharvest botrytis fruit rot of strawberry by volatile organic compounds of *Candida intermedia*

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Abstract

A study was conducted to identify volatile organic compounds or volatiles produced by *Candida intermedia* strain C410 using gas chromatography–mass spectrometry, and to determine efficacy of the volatiles of *C. intermedia* in suppression of conidial germination and mycelial growth of *Botrytis cinerea* and control of Botrytis fruit rot of strawberry. Results showed that, among 49 volatiles (esters, alcohols, alkenes, alkanes, alkynes, organic acids, ketones, and aldehydes) identified from *C. intermedia* cultures on yeast extract peptone dextrose agar, two compounds, 1,3,5,7-cyclooctatetraene and 3-methyl-1-butanol, were the most abundant. Synthetic chemicals of 1,3,5,7-cyclooctatetraene; 3-methyl-1-butanol; 2-nonanone; pentanoic acid, 4-methyl-, ethyl ester; 3-methyl-1-butanol, acetate; acetic acid, pentyl ester; and hexanoic acid, ethyl ester were highly inhibitory to conidial germination and mycelial growth of *B. cinerea*. Inhibition of conidial germination and mycelial growth of *B. cinerea* by volatiles of *C. intermedia* was also observed. Meanwhile, results showed that incidence and severity of Botrytis fruit rot of strawberry was significantly ($P < 0.01$) reduced by exposure of the strawberry fruit to the volatiles from *C. intermedia* cultures or *C. intermedia*-infested strawberry fruit. These results suggest that the volatiles of *C. intermedia* C410 are promising biofumigants for control of Botrytis fruit rot of strawberry.