

Title Efficacy of postharvest treatments with acibenzolar-S-methyl and methyl jasmonate against *Botrytis cinerea* infecting cut *Freesia hybrida* L. flowers

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Abstract

The known plant defence activators acibenzolar-S-methyl (ASM) and methyl jasmonate (MeJA) were applied as spray and as spray or pulse treatments, respectively, after harvest and evaluated for efficacy against freesia cv. 'Cote d'Azur' flower specking disease caused by the pathogen *Botrytis cinerea*. Lesion numbers on non-inoculated freesia flowers and lesion diameters on attached petals of inoculated flowers were reduced by 1.43, 2.86 and 5.72mM ASM at 5 and 12°C compared with untreated controls. However, ASM was ineffective in reducing lesion numbers and lesion diameters on non-inoculated and on artificially inoculated flowers incubated at 20°C. ASM showed direct antimicrobial activity *in vitro*, significantly reducing *B. cinerea* mycelial growth and conidial germ tube elongation. ASM treatments did not adversely affect the vase life of cut freesia flowers. MeJA applied as postharvest spray or pulse to freesia flowers also tended to suppress *B. cinerea*. MeJA treatments at 12 and 20°C were generally more effective than at 5°C. In contrast to ASM, MeJA usually did not exert direct antimicrobial activity against *B. cinerea in vitro*. MeJA spray treatment leads to an increase in relative fresh weight and a reduction of wilt scores of flowers during the vase life. In contrast, MeJA pulsing at 0.6mM reduced relative fresh weight and vase life of cut freesia flowers compared with untreated controls. Overall, the results suggest a potential role for postharvest ASM spray and MeJA spray or pulse treatments in suppressing *B. cinerea* on cut freesia flowers. However, variable efficacy needs to be overcome before such plant defence activator treatments could be used in commercial practice.

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