Title The role of competition for iron and cell wall degrading enzymes in mechanism of action of postharvest biocontrol agents

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Abstract

The role of competition for iron and production of cell wall degrading enzymes by the antagonists *Metschnikowia pulcherrima* MACH1 and *Aureobasidium pullulans* PL5 against *Botrytis cinerea, Monilinia laxa* and *Penicillium expansum* were studied on postharvest fruits. In presence of lower concentration of Fe^{3+}, MACH1 showed higher biocontrol activity. In absence of Fe^{3+}, MACH1 exhibited the highest antimicrobial activity, but sufficient Fe^{3+} enabled the disappearance of the activity, suggesting that competition for iron played a key role in the biocontrol activity of MACH1 against the pathogens. In Lilly-Barnett minimal salt medium with the fungal cell walls of the pathogens as sole carbon source, PL5 produced exo-chitinase, endo-chitinase, and ®-1,3-glucanase. The extracted crude enzymes produced by the antagonists showed a high activity in inhibiting the growth of the pathogens in vitro. Our results showed that competition for iron was the main mode of action of MACH1 and that production of chitinase, glucanase were involved in the biocontrol activities of PL5.