

Title Improvement in the biocontrol of postharvest diseases of apples with the use of yeast mixtures

Author Juan Calvo, Viviana Calvente, María Edith de Orellano, Delia Benuzzi and Maria Isable Sanz de Tosetti

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Abstract

Mixtures of yeasts were tested for their ability to control *Penicillium expansum* and *Botrytis cinerea* on Red Delicious apple fruits. The occurrence of synergistic or antagonistic interactions between yeast strains in different mixtures was also evaluated. Two strains of *Rhodotorula* (*R. glutinis* SL 1 and *R. glutinis* SL 30) and two strains of *Cryptococcus* (*C. albidus* SL 43 and *C. laurentii* SL 62) were selected for developing yeasts mixtures. The *R. glutinis* SL 1–*R. glutinis* SL 30 mixture exhibited a lower effectiveness than each strain alone, against both moulds. Other mixtures (*R. glutinis* SL 1–*C. albidus* SL 43 and *R. glutinis* SL 30–*C. albidus* SL 43) showed synergism against *P. expansum* but not against *B. cinerea*. The *R. glutinis* SL 1–*C. laurentii* SL 62 mixture was the only mixture which showed synergism against gray mould. There was not any mixture, which showed high effectiveness against both moulds at the same time. Different results could be explained by the dynamics of the population of the yeasts. By using yeast mixtures, it was possible to improve biocontrol without increasing the amount of antagonists applied. The synergism observed could be useful in enhancing biological control.