

# Characterization of new yeast isolates collected from different fruits in Tunisia and biocontrol activity against *Penicillium expansum* on apples

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Journal of Plant Pathology 103: 1169–1184. 2021.

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## Abstract

Biological control of fungal pathogens by antagonistic yeasts is increasingly becoming a valid strategy for a sustainable crop production and bioformulates are available on the market in some countries. However, in tropical and subtropical areas little research has focused on selection and development of local biocontrol yeasts adapted to such environments. To this aim, several yeasts were collected from the carposphere of different fruits in various locations in Tunisia. Representative isolates, selected for their fruit source and morphological characteristics, were identified by analysing their ITS regions and assayed for their biocontrol activity against the postharvest pathogen *Penicillium expansum* on stored apples, in comparison with three Italian yeast isolates already studied in depth as biocontrol agents. The selected yeasts were further characterized considering some important phenotypic features such as tolerance to abiotic stresses (oxidative, osmotic and UV-light stress), growth at different temperatures, compatibility with common agrochemicals and capacity to produce biofilm. Among the new investigated yeasts, seven isolates displayed a high biocontrol protection of apples from *P. expansum* (from 50 to 96% rot reduction). The most effective isolates were *Cystobasidium minutum* L3aid and *Rhodotorula* sp. Or1, reducing *Penicillium* rot of apples by 96% and 88%, respectively. These isolates and others, however, with good biocontrol activity, also showed remarkable resistance to environmental stresses and compatibility with common agrochemicals. Therefore, the selected isolates are worthy of further studies aimed at setting up new formulates to be used in biological or integrated control of fungal diseases of fruit and vegetables.