Glycerol-based liquid formulation of the epiphytic yeast *Hanseniaspora guilliermondii* isolate YBB3 with multiple modes of action controls postharvest Aspergillus rot in grapes

Murugan Nandhini, Sankarasubramanian Harish, K. Eraivan Arutkani Aiyanathan, Dhakshinamoorthy Durgadevi and Andithevar Beaulah

Journal of Plant Pathology 103: 1253–1264. 2021.

Abstract

Postharvest loss is a major constraint in the production of grapes, both in terms of quality and quantity. In this study, 33 yeasts were isolated from the fructosphere of grapes and tested for their antifungal activity against *Aspergillus* spp., which infects grapes during the postharvest stage. The results revealed that the yeast isolate YBB3 exhibited maximum inhibitory effect against *Aspergillus* spp. in dual plate assay (57% over control). Molecular characterization of YBB3 showed 99.31% identity with *Hanseniaspora guilliermondii*. Wound site colonization of *H. guilliermondii* in grape cv. Thompson Seedless showed 80% inhibition of *Aspergillus* spp. over the control in vitro. YBB3 produced volatile, non-volatile and thermostable compounds, which inhibited the mycelial growth of *Aspergillus* spp. In addition, YBB3 produced killer toxins, which were identified by the presence of blue colour-stained cells. Moreover, glycerol-based liquid bioformulations of *H. guilliermondii* (YBB3) showed maximum inhibitory effect against *Aspergillus* spp. (96%) over the control on inoculated wounded grapes berries. Thus, the yeast isolate *H. guilliermondii* identified and characterized in this study is worthy of further studies for the sustainable management of Aspergillus rot in grapes.