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Development of the Volatile-Producing Fungus Muscodor albus Worapong, Strobel, and Hess as a Novel Antimicrobial Biofumigant
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Abstract

Worldwide growers are seeking for safer alternatives to control soil-borne and postharvest diseases. Chemical fumigants, such as methyl bromide, are currently used because of their high efficacy and yield enhancement. Nevertheless, the adverse environmental and health effects of chemical fumigants have triggered the search for less hazardous options. Muscodor albus, a non-spore forming fungus, produces a volatile compound complex with broad-spectrum antimicrobial activity that could be used as alternative biofumigant to control plant pathogens. Unfortunately, production of biocontrol agents on solid-state fermentation is expensive and may limit the use of a biofumigant in the pesticide market. This may be overcome by using improved fermentation and formulation processes. This study reports the antimicrobial activity, potential use, and development of M. albus as an optimized product for controlling soil-borne, seed-borne and postharvest disease problems, as well as building molds. Its potential as biofumigant with lower use rates resulting from improved fermentation conditions and formulation processes is discussed.

Keywords

Fumigant, postharvest, damping-off, fermentation, formulation, soil.