The Use of Yeast to Prevent Fungal Diseases in Horticultural Produce

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Currently the control of fungal diseases in horticultural produce is managed through the heavy use of fungicides, yet this presents numerous concerns regarding the environment and health in general. Therefore, research needs to be conducted in order to find a suitable method of prevention with none of these harmful risks. In this study, a variety of natural yeasts isolated and purified from carrot and grape samples were identified using the API 20 C AUX strips and tested for their bio-control properties for the prevention of Botrytis cinerea (i.e., gray mold) and Penicillium expansum (i.e., green mold). The identified yeasts were inoculated along with different concentrations of these fungal spores during a series of in vitro and in vivo tests. The yeasts Rhodotorula mucilaginosa 2 and Candida famata were able to prevent B. cinerea growth evidenced by the Spread Method during the in vitro tests. This was confirmed again during the in vivo tests on actual produce as C. famata significantly decreased the size of the lesion diameters by nearly 70% after 3 days when compared to the control. The yeasts themselves had no negative effects on the fruit either. C. famata was able to produce inhibitory zones on average 21.5 mm in diameter seen during the Spot Method, which indicates that it has bio-control effects against B. cinerea. This therefore results in potential applications in the future, by using a natural substance that has no damaging consequences on the environment, human, or animal health to replace harmful fungicides and pesticides.

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