TOLERANCE OF YEASTS BIOCONTROL AGENTS TO TEMPERATURE, UV RADIATION AND OSMOTIC STRESS

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Biocontrol became an alternative to control of postharvest decay of table grape, however due to the minimal handling in the packing-house its application is limited to field. Therefore, considering the semi-arid climate of the region of the São Francisco River Valley (Brazil), tolerance to climate must be included in the selection process of biocontrol agents. In this work the yeast isolates L7K and L10, which were previously selected for control of postharvest decay of grapes, were evaluated for their natural tolerance to UV-B light, temperature and low water availability. In a first experiment, isolates were incubated on fruit surface and kept in growth chamber adjusted to temperatures ranging from 6 to 40 °C. In the second experiment, the isolates were inoculated in culture media added with polyethylene glycol (PEG) 6000 in order to achieve osmotic potential from 0 to -20 MPa. In a third experiment, both isolates were grown in culture media containing increasing amounts of PEG 6000 and incubated at temperature ranging from 20 to 35 ºC in order to evaluate their tolerance to multiple stress. In the last experiment the isolates were exposed to increasing doses of UV-B radiation in order to evaluate their natural tolerance to UV. All isolates showed optimal growth around 20-30 ºC and negligible growth from 35 ºC onward. Isolate L10 showed highest resistance to osmolite addition, maintaining high cell counts up to -5 MPa. The surface curves obtained showed that L10 was linearly susceptible to increasing temperature and reduction in water availability in the culture medium. Isolate L7K however, showed a paraboloid surface curve, with high tolerance to the initial combination of temperature and osmolite. Overall, the isolates were highly susceptible to UV exposure, reducing viable cell counts in fruit surface to lower than 50% in the minor radiation dose tested (2,050.0 mJ.cm^{-2}).