

Title Characterization of *Rhodotorula glutinis* and *Pichia onychis* isolates with potential as biopesticides for controlling *Botrytis cinerea*

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Abstract

Antagonistic microorganisms are affected by abiotic factors such as pH, temperature UVB radiation and A^w when they are applied to the phyllosphere or undergo a formulation processes. However, the selection and design of a correct formulation and manufacturing process, could contribute to solve this problem. In this sense, three isolates of *Pichia onychis*, Lv027, Lv297 and Lv315 and three isolates of *Rhodotorula glutinis*, Lv316, Lv317 and Lv318 were characterized by determining the effect of pH, temperature, UVB radiation and A^w on growth. The biocontrol activity against *Botrytis cinerea* in blackberry flowers and cells stability under storage conditions were measured when biomass was dried or suspended in an isotonic solution. A^w and UVB radiation were the most limiting factors, when A^w was reduced to 0.94 yeast growth reduction of 80% was observed. The growth of *P. onychis* strains was inhibited completely by UVB, while *R. glutinis* strains showed a growth inhibition between 16 and 42%. Temperatures between 5 and 37°C and pH between 3 and 9 did not affect yeasts growth. The highest stability was obtained for all yeasts, when cells were suspended in the isotonic solution. All evaluated yeasts reduced the incidence of *B. cinerea* between 11 and 81% in comparison with the control (90% incidence). However, isolate Lv316 of *R. glutinis* was selected to continue with a biopesticide development process as an aqueous formulation due to its high biocontrol activity (disease incidence of 18%) and tolerance to the UVB radiation.