

Metagenomic data analysis and characterization for the inhibitory effect of a novel *Serratia fonticola* strain against fungicide-resistant *Botrytis cinerea*

Efe Berk Bozkurt¹, Ömür Baysal^{1*}, R. Soner Silme², Anna Marzec- Grzadziel³

¹⁾ Molecular Microbiology Unit in Molecular Biology and Genetics Department in Faculty of Science, Mugla Sıtkı Kocman University, 48121, Mugla, Turkey

²⁾ Center for Research and Practice in Biotechnology and Genetic Engineering, Istanbul University, Istanbul, Turkey

³⁾ Agricultural Microbiology Department in Institute of Soil Science and Plant cultivation, Krancowa 24-100 Pulawy, Poland

*Corresponding author email. omurbaysal@mu.edu.tr

Abstract

Botrytis cinerea is a plant pathogenic fungi showing rapidly development of fungicide resistance in cultivation fields and, changes its own genetic structure. Biocontrol may also reduce negative effects of toxic chemicals, which is harmful to environment and human healthy that is public concern besides its inhibitory effect on the pathogen growth. A novel Gram (-) bacterial strain isolated from soil dispersed on agar plates treated with phenol on 2 days old colonies was used to determine its antibiosis effect on spore suspension of *Botrytis cinerea*. The studies showed restricted growth of the fungi spore around the phenol treated colonies. Afterwards, the selected colonies showing the highest antibiosis effect tested using double-sheet agar bio-assay with the highest and stable suppression on pathogen growth were used. Optimal concentration (CFU/ ml) was determined according to spectrophotometric analysis. MIC concentration and inhibition percentage (%) indicated by 85% inhibition ratio after 3 dpi and 65% at 10 dpi compared to the control. The bacterial strain was identified as *Serratia fonticola* by metagenomics analysis based on 16s rRNA. Our comparative analysis using KEGG pathway database and classification of the genes encoding enzymes playing suppressive role on the pathogen growth will provide new insight for the preparation of effective biopreparate composition and its further application *in vivo* assays.

Key Words: *Botrytis cinerea*, biocontrol, metagenomics, bacteria, antibiosis