

Effect of inoculation of *Pseudomonas fluorescens* strain FY32 on some traits in canola cultivars under salt stress in hydroponic system

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Abstract

Plant growth promoting rhizobacteria are known as an alternative to chemical fertilizers, which are able to reduce the harmful effects of non-biological stresses such as salinity and increase soil fertility and crop production. This study was conducted to investigate the effect of inoculation of *Pseudomonas fluorescens* strain FY32 on a number of morphological characters in canola cultivars under salt stress. Thereby, a split split-plot design with three replications was applied in hydroponic cultivation system. Six bacterial inoculated (*Pseudomonas fluorescens* FY32) and non-inoculated canola cultivars were subjected to sodium chloride salt stress at three levels (0, 150 and 300 mM). Based on the ANOVA results, inoculation effects under different salinity levels on canola cultivars, compared to non-inoculated treatments, were statistically significant on plant fresh weight, dry weight of leaf, stem and total plant, leaf area and root length. Also, three-way interaction effects of salinity, bacteria and cultivar on plant height and root volume were significant ($P < 0.01$). Sodium, potassium and proline concentration in leaves and roots of inoculated plants had significant difference with non-inoculated plants at different levels of salinity. The highest rate of proline and potassium ion was observed in canola cultivars inoculated with *Pseudomonas fluorescens* under both salinity levels. It can be concluded that inoculation of canola plants with *Pseudomonas fluorescens* (containing ACC- deaminase gene) could improve their growth and development in case of salinity stress.

Keywords: PGPR bacterium, Rhizobacteria, Proline.

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