Effect of endophytic fungus, *Piriformospora indica*, on growth parameters and activity of antioxidant enzymes of rice (*Oryza sativa* L.) under salinity stress

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Abstract

Abiotic stress including salinity is the major limiting factors of growth and crop production in arid and semiarid regions. The endophytic fungus, *Piriformospora indica* has a pronounced growth-promoting activity and also increases plant resistance to environmental stresses including salinity, drought and plant pathogens. In order to study, experiment was conducted in completely randomized block design with three replications and with two levels of *p.indica*-inoculated and non-*p.indica*-inoculated rice (control) and four levels of NaCl (0, 100, 200 and 300 mM). This research deals with the potential of *P. indica* to improve growth parameters of rice (*Oryza sativa* L.) and increase its resistance to salt stress with base on increasing of antioxidant enzyme activities. Our study demonstrated *P.indica* significantly increased growth parameters for example shoot and root biomass, Relative Water Content (RWC), proline content and activities of antioxidant enzymes such as glutathione reductase (GR), ascorbate peroxidase (APX), catalase (CAT), superoxide dismutase (SOD) and in contrast, decreased malondialdehyde (MDA) content (produced from peroxidation of membrane lipids) in *p.indica*-inoculated than non-*p.indica*-inoculated rice under all of salt stress conditions. So our results showed that *P. indica*-induced protection of *O.sativa* against salt stress could be mediated by antioxidant enzymes.

Keywords: Antioxidant Enzymes, *Piriformospora indica*, Rice (*Oryza sativa*), Salt stress