



### Abstract

Exogenously applied proline or potassium (K) ability to ameliorate the adverse influences of irrigation with saline (NaCl; 120 mM) water in wheat plants (*Triticum aestivum* L.) was studied using a controlled pot experiment. Twenty-day-old plants were irrigated with saline water in combination with spraying plants with proline (10 mM) or K (6 mM K<sub>2</sub>O in K<sub>2</sub>SO<sub>4</sub>) until plants reached 50 days in old at which experiments were terminated. Except for increasing K<sup>+</sup> content and K<sup>+</sup>/Na<sup>+</sup> ratio with K application and elevating proline content with proline application, either proline or K foliar application not affected all other tested parameters. On the other hand, salt stress significantly reduced growth characteristics (length, fresh and dry weights of plant shoot), photosynthesis efficiency (chlorophylls and carotenoids contents, and performance index), K<sup>+</sup> content, K<sup>+</sup>/Na<sup>+</sup> ratio and catalase (CAT) activity, while significantly increased the contents of Na<sup>+</sup>, Cl and osmoprotectants and non-enzymatic antioxidants (free proline, total soluble sugars, ascorbic acid; AsA and glutathione; GSH), and the activity of antioxidant enzymes (superoxide dismutase; SOD, ascorbate peroxidase; APX and glutathione peroxidase; GPX). However, foliar application of proline or K for salt stressed plants alleviated the adverse effects of salt stress in wheat plants by increasing salt tolerance in plants through further increases in the activity of antioxidant enzymes and endogenous contents of proline and K, in addition to recovering plant growth. The results of this study recommend using either proline or K as foliar spray to wheat plants when grown under salt stress conditions.