



## Effect of Proline on growth, yield, nutrient and amino acid contents of barley (*Hordeum vulgare* L.) irrigated with moderate saline water

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**Abstract:** Two field trials were carried out in the Research Farm of Faculty of Agriculture, Cairo University, Wady El-Notron Province, El Behaira Governorate, Egypt during two successive winter seasons of 2010-2011 and 2011-2012 to study the effect of different concentrations of proline on some growth parameters, yield and yield attributes and some chemical constituents of barley irrigated with moderate saline water under sandy calcareous soil conditions. The results showed that plant height, fresh and dry weight of plants/m<sup>2</sup>, succulence and leaf area were significant positively affected by increasing the proline concentration from 0 to 100  $\mu$  mol. Moreover, 50  $\mu$  mol hemin concentrations recorded the highest values in most studied characters with significant differences as compared with control plant (zero hemin). Plant grown under salinity stress (zero hemin) contained greater concentrations of Ca, Na, Mn and Zn elements while, the hemin treatment up to 75  $\mu$ mol resulted in significant reductions of some macro and microelements. Such reduction was parallel to the increase in Mg up to 100  $\mu$ mol. Increasing hemin concentrations significantly increased all yield attributes and economic yield (kg/fed) as compared with control plant (0 hemin). The highest recorded values of number of spikelets/spike and 100 grain weight were recorded when 75  $\mu$  mol hemin was applied as compared with other concentrations. The results showed that the proline concentration was decreased nearly to the half of that occurred when barley plants treated with 100  $\mu$  mol of hemin indicating the mitigative and protective role of hemin in counteraction salinity of irrigation water. Generally we could conclude that, hemin act as plant growth regulators in alleviating harmful effects of salinity stress.

**Key words:** Barley, Salinity, proline, Growth, Yield, Mineral content, Amino acids.