Biochem. Cell. Arch. Vol. 9, No. 2, pp. 265-272, 2009 | *ISSN 0972-5075*

MODULATION OF MANGANESE TOXICITY BY GIBBERELLIC ACID IN *PISUM SATIVUM* L.

Savita Gangwar[a], Vijay Pratap Singh[b] and Jagat Narayan Maurya[a*]

[a] Department of Plant Science, M.J.P. Rohilkhand University, Bareilly - 243 006, India.
[b]Ranjan Plant Physiology and Biochemistry Lab, Department of Botany, University of Allahabad, Allahabad -211 002, India.
*e-mail: jagatmjpru@rediffmail.com

(Accepted 30 September 2009)

ABSTRACT – Present study deals with effects of manganese (Mn; 50, 100 and 250 µM) and gibberellic acid (GA; 10 and 100 µM) alone and together on growth and nitrogen assimilation in pea seedlings. Manganese at all its doses and 100 µM GA alone and together significantly reduced growth, protein and nitrogen contents and concomitantly induced accumulation of ammonium ions compared to control. However, detrimental effects of Mn and 100 µM GA were higher in root than shoot. Manganese at all its doses and 100 µM GA alone and together significantly inhibited glutamine synthetase and glutamate synthase activity (except 50 µM Mn alone for GOGAT) while reverse trend was noticed for glutamate dehydrogenase. The inhibition in enzyme activity was higher in root than shoot. Contrary to this, 10 µM GA marginally stimulated growth of pea seedlings. Furthermore, 10 µM GA significantly minimized detrimental effects of Mn on growth and nitrogen assimilation and thus, an amelioration against Mn toxicity noticed. This study suggests that 10 µM GA can be used to improve metal tolerance of economically valuable crops.

Keywords : *Pisum sativum*, gibberellic acid, manganese, nitrogen assimilation, amelioration.