Annals of Arid Zone 31 (2) 161-162 1992

Salinity – Ethylene Interaction on Activities of Enzymes of Nitrogen Metabolism in *Paspalum scrobiculatum* Linn

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Paspalum scrobiculatum Linn. – commonly known as 'KODRA' is found growing in some parts of arid region which possess supra-optimal concentration of salts. Salinity affects some of the key enzymes of plant metabolism (Sankhla et al. 1982).Since, no information is available as to the effect of salinity and ethylene on metabolism and tolerance mechanism of this minor millet, an attempt has been made in this study.

Seedlings of *P. scrobiculatum* were raised as described earlier (Choudhary & Bohra 1988). The test solution consisted of concentrations described in Table 1. Aerial parts of 5 day old seedlings were used for the assay of glutamate pyruvate transaminase (GPT), glutamate oxalacetate transaminase (GOT), glutamate dehydrogenase (GLDH) as described by Sankhla and Huber (1974). Nitrate reductase (NR) was extracted using the procedure of Wray and Filner (1970) and assayed with NADPH/NADH as electron donor. Proline was determined by the method of Bates *et al.* (1973).

Increasing concentrations of salt and ethylene releasing substance 'CEPA' (2-chloroethyl phos-

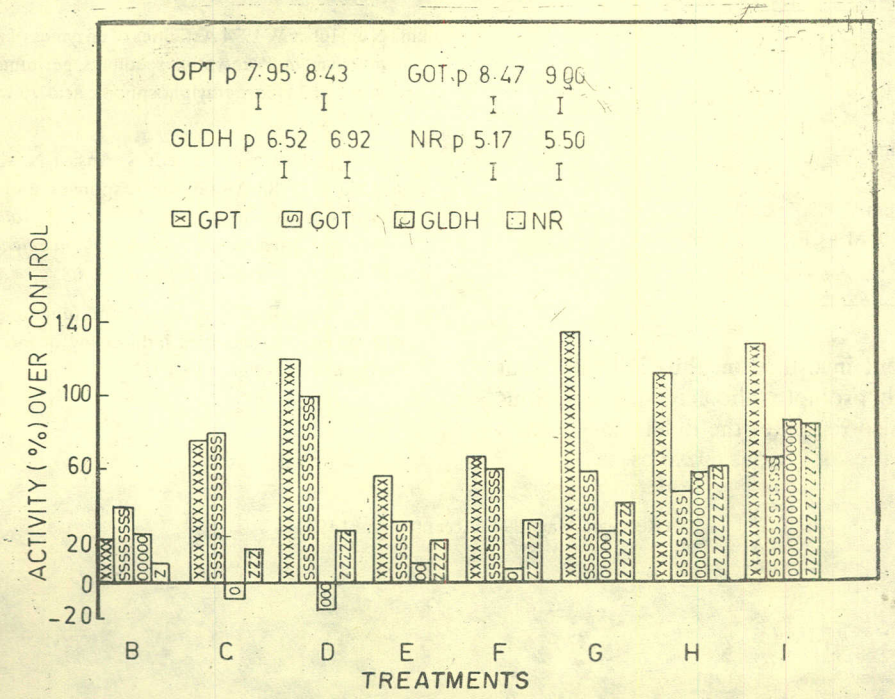

Fig. 1 Effect of salt and CEPA on the metabolic activities of GPT, GOT, GLDH and NR in *P. scrobiculatum.*

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phoric acid) individually and in combination promoted the activity of GPT, NR, and GOT (Fig.1) and content of proline (Table 1). The magnitude of increase, however, varied amongst the treatments. An increase in GLDH was observed at low levels of salt, CEPA and CEPA + Salt, but higher salt levels (C and D treatments) showed inhibitory effect. Eder *et al.* (1977) reported the inhibitory effect of salts on GLDH.

An increase in the level of proline with salt and CEPA treatments (Table 1) is in accordance with the results of Garg et al. (1984) but contrary in respect of NR Activity which is further increased with salt and CEPA combination. Sankhla et al. (1983) reported the promotory effect of salt and CEPA on NR activity in several plants.

Table 1 *Effect of salt and CEPA on the free proline content*

Treatment	Free Proline content (% of control)
A – Control	100
B – NaCl 1.71 X 10^{-3}M	145
C – NaCl 8.55 x 10^{-3} M	179
D – NaCl 1.71 x 10^{-2} M	232
E – CEPA 60 ppm	142
F – CEPA 120 ppm	161
G – CEPA 240 ppm	184
H – NaCl 8.55 x 10^{-3}M + CEPA 120 ppm	274
I–NaCl 8.55 x 10^{-3}M + CEPA 240 ppm	294

The present investigation thus indicates that CEPA not only promotes the activities of various enzymes but also regulates the deleterious effects of salt on activities of various enzymes.

Acknowledgements

Thanks are due to Head, Department of Botany, University of Jodhpur, Jodhpur for laboratory facilities and CSIR, New Delhi for financial support.

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(Received May 1990 Accepted April 1992)