

EFFECT OF PACLOBUTRAZOL ON AMINOTRANSFERASES, PROTEIN AND PROLINE CONTENT IN *ERUCA SATIVA* Var.T-23 SEEDLINGS

RUCHI MATHUR and S.P. BOHRA

Stress Physiology Laboratory, Department of Botany, Jai Narain Vyas University, Jodhpur-342 001, India.

One week old seedlings of *Eruca sativa* var T-23 treated with different concentrations of Paclobutrazol showed an increase in the activity of GPT, GOT and proline in normal seedlings as well as seedlings subjected to thermal stress. However no significant change was seen in protein content in controlled as well as thermally stressed seedlings.

Keywords : *Eruca sativa*; Paclobutrazol; Aminotransferases; Protein; Proline thermal stress.

Paclobutrazol is a member of triazole type of plant growth regulator which constitutes an active class of synthetic growth retardants. The compound acts atleast in part by suppressing the synthesis of gibberellins. Accordingly the effects of paclobutrazol on plants are reversed by gibberellin application (Wample and Culver, 1983; Lee *et al.*; 1985; Wang and Steffens, 1985). Paclobutrazol reduces stem elongation in many species although the extent of growth inhibition may vary (Davis *et al.*, 1983).

Eruca sativa var T-23 belongs to family Brassicaceae. It's an important fodder and oil yielding crop of Rajasthan. An attempt was made to study the effect of paclobutrazol on GPT, GOT, protein and proline content in one week old seedlings of *Eruca sativa*.

Eruca sativa var T-23 seeds were grown in 9 cm petriplates at 28°C. These seeds were treated with different concentrations of paclobutrazol (10 ml) in each petriplates. The concentration of

paclobutrazol used were 0.05, 0.1, 0.5, and 1 ppm respectively. A corresponding set of *Eruca sativa* seedlings treated with different concentrations of paclobutrazol were subjected to a temperature of 40°C for half an hour. No significant changes were seen in seedlings treated with 0.05 and 0.1 ppm of paclobutrazol over control so the seedlings treated with 0.5 and 1 ppm paclobutrazol were assayed further for enzymatic activities. GPT (Glutamate Pyruvate Transaminase) and GOT (Glutamate Oxaloacetate Transaminase) were assayed according to Bergmeyer (1974), proline content was assayed according to Bates *et al.* (1973) and protein by Bradford (1976). Enzymatic activities are expressed in mg/g fresh wt. The experiments were performed in triplicates and repeated twice.

With an increase in concentrations of paclobutrazol there was an increase in the enzymatic activities of GPT and GOT (Table 1) in both normal and thermally stressed seedlings. The enzymatic

TABLE 1
EFFECT OF PACLOBUTRAZOL ON GPT AND GOT, PROTEIN AND PROLINE CON-
TENTS IN ERUCA SATIVA SEEDLINGS

Parameter	ppm	Amount	(mg/gm fresh wt)
		Normal	Thermal stress
GPT	Control	1.65	2.55
	0.5	1.83	3.05
	1	2.05	2.35
GOT	Control	2.0	2.20
	0.5	2.16	2.65
	1	2.35	2.85
Protein	Control	1.21	1.25
	0.5	1.18	1.13
	1	1.25	1.28
Proline	Control	0.00175	0.0018
	0.5	0.0020	0.00425
	1	0.0031	0.0085

activity of GPT and GOT was high in all thermally stressed samples than their corresponding concentrations of normal ones. No significant change was found in the protein content (Table 1) either in increasing concentration of paclobutrazol over control in normal seedlings or in thermally stressed seedlings. However there was a remarkable increase in proline content (Table 1) of thermally stressed seedlings compared to normal ones.

Paclobutrazol treated plants may be less susceptible to both low (Frogatt *et al.*, 1982; Lee *et al.*, 1985) temperature damage. In addition to being better able to withstand water stress, paclobutrazol treated plants appear to be more tolerant to a number of stresses. Plants treated with paclobutrazol typically use less

water than untreated plants (Steffens *et al.*, 1983; Wample and Culver, 1983; Steffens and Wang, 1984; Wang and Steffens, 1985). It has been suggested that treated plants are better able to withstand drought conditions.

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