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EFFECT OF NATURAL PGRs ON REGENERATED RICE PLANTLET

S. SUKUL and S. CHAUDHURI
Department of Botany, University of Kalyani, Kalyani - 741 235, W.B., Inda.

Fifty days old calli established from excised embryo of rice seeds regenerated into plantlets on MS medium without any hormone. Tall plantlets with higher number of shoots and leaves were obtained from regenerated plantlets cultured on MS medium supplemented with natural gibberellins extracted from *Lantana camara* L. However, those subcultured on MS medium or MS medium with synthetic gibberellins formed comparatively weak plantlets under similar conditions.

Keywords : Calli; Gibberellins; Regeneration.

Growth factors are essential for induction of callus and subsequent regeneration of plantlets from calli in tissue culture. Rhizogenesis and differentiation of shoots and plantlets from rice callus has been reported from MS medium supplemented with growth factor, such as GA_3, IAA and various other adjuvants[1-5]. Leaves of *Lantana camara,* a common weed with luxuriant growth were found to contain large amounts of gibberellins and auxins. In an earlier study the authors had recorded a stimulatory effect of growth factors extracted from the weed on callus formation and rhizogenesis of rice and a significant increase in the growth and yield of rice with advancement of flowering date by 14 days[6,7]. Information on effect of natural gibberellins on regeneration of rice plantlets is scanty.

Excised embryonic parts of rice cultivar IR - 36 were used as explants for callus culture. These were surface sterilized with 70% alcohol for one minute followed by treatment with 0.1% $HgCl_2$ for 3-5 minutes, rinsed in several changes of sterile distilled water and aseptically transferred to Murashige and Skoog's basal medium[4] containing 2,4-D (2 mg/1).

The cultures were maintained at 25 $\pm$ 4°C and a light source with an intensity of 3500 lux (fluorescent tubes 40W) was used. The light and dark periods consisted of 12 hours each.

Embryo cultures started proliferating within a week and formed a mass of callus. Rhizogenesis took place in the calli cultured on MS + 2,4-D (2mg/1) only after 25 days (Fig. 1).

Fifty days old calli were then subcultured on MS medium without any hormone. The cultures were maintained as mentioned earlier and after 20 days shoot formation was observed.

The regenerated plantlets were then transferred to the following media :
MS (Control), MS + gibberellins (natural, extracted from L. *camara* - 2 mg/l) and MS + GA_3 (synthetic, 2 mg/l).

The cultures were maintained as mentioned earlier.

Tall plantlets with higher number of shoots and leaves were formed in the media supplemented with natural gibberellins as compared to those subcultured in the control and MS + GA_3 (synthetic) (Fig. 2-7).

The results of the present investigation indicates that such naturally occurring growth factors may have an important role to play in stimulating growth and differentiation in plant callus.

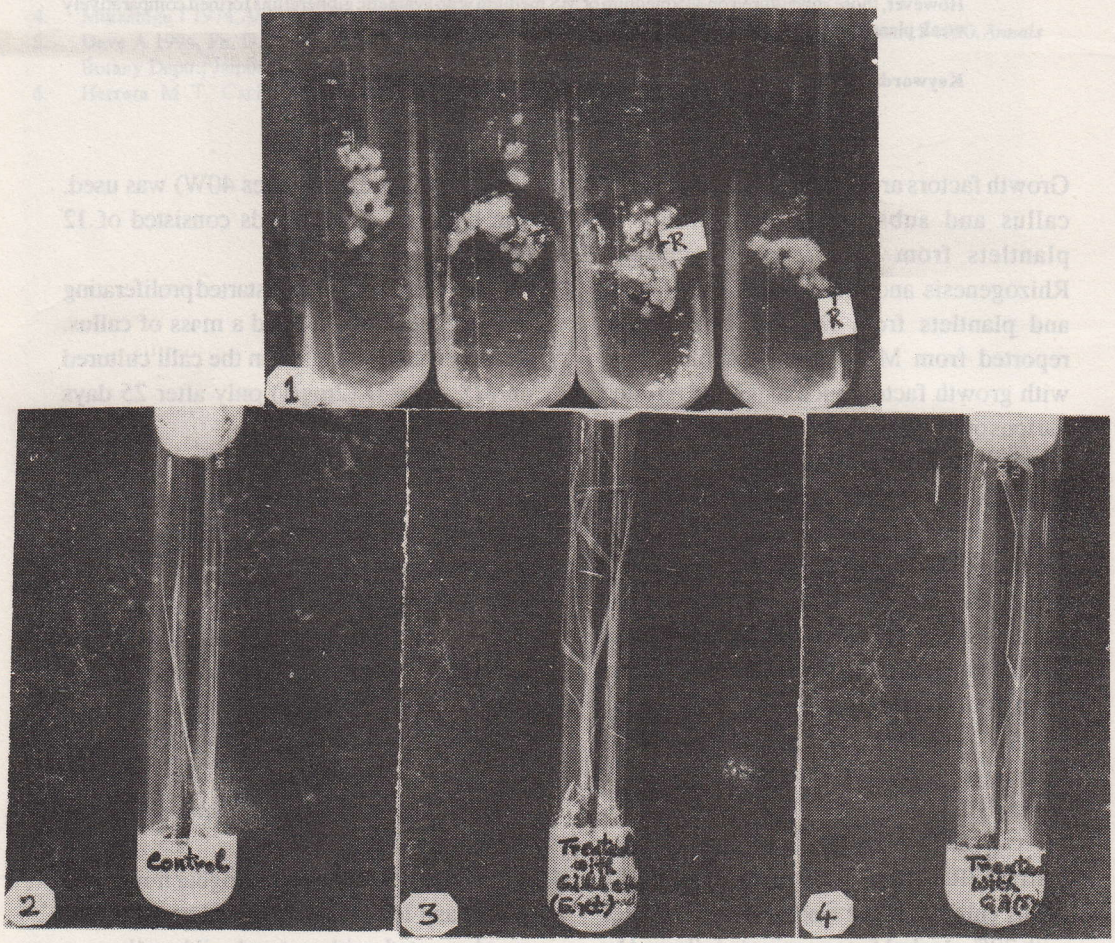

Fig:1. MS + 2,4-D(R=rohizogensis); 2. MS (Control); 3. MS + Gibberellins; 4. MS + GA_3 (Syn.)

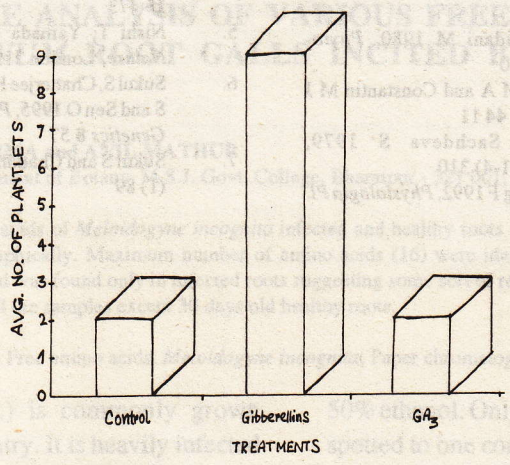

Fig: 5

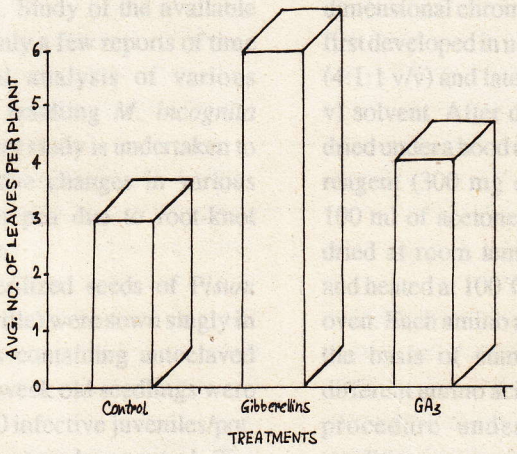

Fig: 6

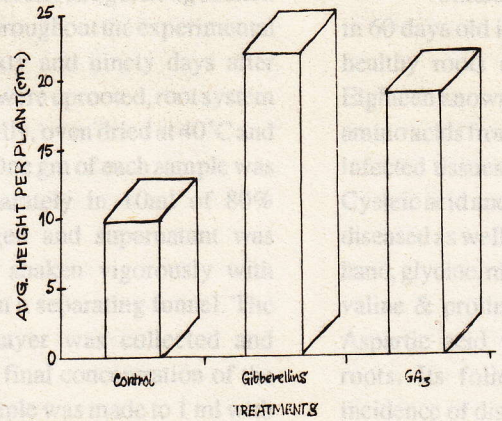

Fig: 7

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