of salinity, K plays a decisive role, at least, in maintaining the yield levels at the non-saline control value. In addition, the study also indicates selective ion uptake by wheat. A possible occurrence of dual mechanism[7] may be visualised to operate. The decrease in the yield at higher levels of NaCl and KCl may be due to the relatively higher Cl content ($T_2 - 1{\cdot}45$; $T_3 - 1{\cdot}69$; $T_8 - 2{\cdot}16$ and $T_9 - 2{\cdot}60$ mmhos/cm). This view cannot be ruled out, as there are evidences showing that the damage due to Cl^- is sometimes greater than the damage by Na^+ in both saline and non-saline situations[8, 9]. It is of interest to note that K : Na ratios, in the plant determine the yield level under saline situations, as indicated by a significant positive relationship between grain yield and K : Na ratio. However, more studies are necessary to confirm this viewpoint as also the effect of the other anions associated with K^+.

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CULTURE OF STEM BITS OF *CENCHRUS GLAUCUS* MUDALIAR *ET* SUNDARAJ *IN VITRO*

Excised stem segments of *Cenchrus glaucus* Mudaliar *et* Sundaraj were induced to proliferate into callus mass on Murashige and Skoog[3] basal medium supplemented with organics, 5 mg/l of 2, 4-D and 0·2 mg/l of Kinetin under aseptic conditions. With lower levels of 2,4-D and IAA, root formation was observed. Shoot formation was occasionally induced in the absence of auxin. The entire plantlets could be redifferentiated from the callus.

In Gramineae, although equal importance should be given to important fodder grasses in agriculture-dependent countries like India, tissue culture studies are mainly on cereals. Culture of other grasses *in vitro* has hardly progressed and only rye-grass (*Lolium perenne*)[4] and brome grass (*Bromus inermis*)[2] have been cultured *in vitro* so far. A detailed study on the effect of various growth regulators on grasses is of immense importance in resolving many physiological problems connected with them. *C. glaucus*, an apomict and also an important fodder grass, has not previously been grown as a callus and redifferentiated into plantlet on a completely synthetic culture medium. The present report deals, in short, with the nutritional requirements for the callus formation and plantlet regeneration of *C. glaucus in vitro*.

Shoot bits were excised from the plants maintained in the Departmental Garden, University of Mysore. It was considered desirable to select the 3rd or 4th node from the apex and these were cut uniformly with one lateral bud each. They were surface sterilized with 0·2% $HgCl_2$ for 5 minutes, rinsed thoroughly with sterile distilled water until the last traces of the sterilant were removed, aseptically dried and inoculated horizontally on the synthetic nutrient culture medium, MS + 2,4-D (5 mg/l) + Kinetin (0·2 mg/l), contained in 100 ml capacity Erlenmeyer flasks plugged with non-absorbant cotton wool. The cultures were incubated under diffuse sunlight during daytime and complete darkness during night and at a temperature of 21° C. Kinetin alone was almost inefficient for callus induction. Among the auxins tested (2,4-D, NAA, IAA and IPA) at different concentrations (0·1 mg/l to 10 mg/l), 5 mg/l of 2,4-D efficiently induced callus development. Although NAA could initiate callus proliferation, the growth rate was very slow. For callus induction an optimal 0·2 mg/l of kinetin was essential in addition to an auxin. Callus derived from stem segment was successfully maintained by serial subculture on the same medium used for callus induction. Growth rate of callus declined to a lower level as subculture proceeded.

In the control (basal medium with only organics and no growth regulators), lateral buds only developed into regular branches and remained for a long time without producing callus, nor the roots. Cultures on medium with only reduced supply of auxin (one among 0·1 mg/l of 2,4-D, 1 mg/l of NAA and 2 mg/l of IAA) showed roots with lateral root hairs developed (Fig. 1A). On the other hand callus, when transferred to the same

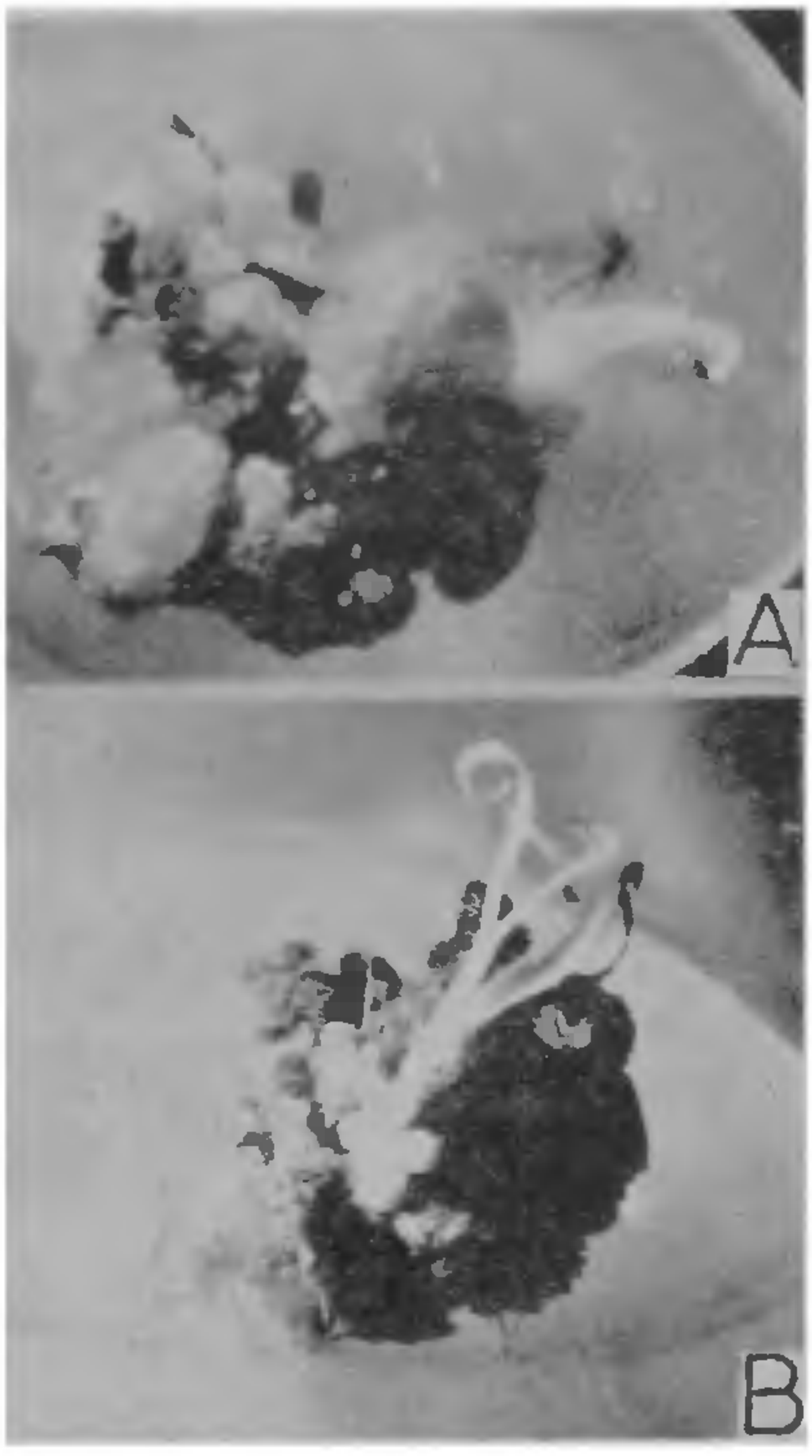

FIG. 1 A–B. A. Callus showing root formation on medium MS + organics and 1 mg/l of NAA. B. Plantlet redifferentiated from the callus showing both roots and shoot.

medium but without auxin and incubated in the light, occasionally redifferentiated to form both roots and shoots (Fig. 1 B), and subsequently the whole plants. Thus it can be concluded that, in *C. glaucus* auxin is one of the most significant key regulators for callus formation and redifferentiation but relatively unaffected by kinetin. Carter *et al.*[1], also reported that oat cultures showed de-differentiation to form large callus at higher concentrations of auxins (225 μmoles/l of 2,4-D and 5700 μmoles/l of IAA) and redifferentiation into large number of shoots and few roots when the callus was transferred to auxinfree medium. Such an auxin-controlled differentiation is also reported in rice, wheat, rye, millets (cited by Yamada[5]) and *Pennisetum mezianum* (unpublished). *C. glaucus*, however, differs from the above cereals in that, redifferentiation is possible only with the fresh callus because the potential for differentiation in *C. glaucus* declined after a few subcultures and could not be enhanced by various auxins and cytokinins supplemented to the medium.

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ALCOHOL DEHYDROGENASE POLYMORPHISM IN *DROSOPHILA ANANASSAE*

Introduction

ALCOHOL dehydrogenase (ADH) is polymorphic[1,2]. It is genetically specified[2]. Variation of ADH activity with different substrates has been studied in *Drosophila melanogaster*[3–6]. The present work reports on the ADH isoenzymes in the adult flies of *Drosophila ananassae* with alteration of the substrates.

Material and Methods

Young adults (3–4 days old) of two inbred geographic strains of *D. ananassae*, namely a_6 and a_{10} were individually homogenized in a glass homogenizer tube (5 ml) containing 0·1 ml of 0·05 M tris-phosphate buffer, pH 9·0 and centrifuged at 14,000 rpm for 10 minutes at 0° C. The supernatant was loaded on the gel. Electrophoresis was performed at 20–24° C for $2\frac{1}{2}$ hours at 25 volts/cm length of the 5% acrylamide gel in 0 05 M tris-phosphate buffer, pH 9·0. ADH activity was recognised by reduced tetrazolium deposition incubated at 37° C for $1\frac{1}{2}$ hours in a solution containing 15 ml 0·05 M tris-phosphate buffer, pH 9·0, 1·5 ml water, 3·8 mg NBT, 1·8 mg PMS, 8·0 mg NAD^+ and 0·2 ml substrate for each gel. We used ethanol, methanol, butanol, *n*-propanol, 2-propanol, octanol, amyl alcohol, allyl alcohol, benzyl alcohol and cyclohexanone as substrates. The scanning of the gels were made using microdensitometer IFO–451 (USSR) by Prof. L. I. Korochkin,