Cytological examination of regenerated plants

Introduction:

In vitro culture with rapid regeneration is a new tool in the hands of plant scientists. This regeneration always involves the mitotic multiplication of cells. However, during regeneration the sequential cytological changes are involved. In order to acquaint the undergraduate students with these changes, the project on the "Cytological examination of regenerated plants" was undertaken.

Materials and Methods:

The regenerated tissues of *Arachis hypogea* and root tips of *Allium cepa* were fixed in Carnoy's fluid (3:1 Alcohol and Acetic acid) and preserved in 70% Ethyl alcohol. The materials were hydrolyzed in 1N HCL at 60°C for 10 minutes and stained in 2% Acetocarmine. The slides were observed under the microscopes and data was prepared.

Observations:

The experiments were started using the root tips of *Allium cepa* (Fig. 3 & 4). From those preparations, the mitotic stages mentioned in Fig. 3 & 4

were observed. Thereafter, the slides were prepared from regenerated tissues of of *Arachis hypogea*(Figs. 1 & 2) and cytological stages mentioned in Fig. 5 were observed.



Fig.1 Regenerated tissue of Arachis hypogea Fig.2 Regenerated tissue of Arachis hypogea



Fig.3 Cytological Studies of *Allium cepa* Fig.4 Cytological Studies of *Allium cepa*a) Metaphase, b)Anaphase, c) Telophase, d) Late Prophase, e) Early Prophase



Fig.5 Mitotic stages in Arachis hypogeal

- A. Late Prophase
- B. Early Prophase
- C. Metaphase
- D. Early Anaphase
- E. Late Anaphase
- F. Telophase

Inference:

- 1. Students learnt the technique of callus induction.
- 2. They understood the preparation of materials for cytological studies in *Allium cepa* and *Arachis hypogea*.
- 3. Students have learnt the various cytological growth stages and mitotic activities in both these plants.

The following students were involved in this project.

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