Maximum inhibition in seed germination was 8% in mustard.

Inhibition of aflatoxin production through salicylic acid and salicylaldehyde has been reported by Gupta *et al.*[12] Earlier some common phenolics including ferulic acid were found to be effective in inhibiting the production of aflatoxins as well as the growth of *A. parasiticus* in liquid culture[13]. The results of the present investigations indicate that ferulic acid can be used as a preventive agent on cereals and oil-seeds against aflatoxin production by *A. parasiticus* which had no toxic effect on seed germination.

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INDUCTION OF POLLEN EMBRYOIDS IN *SOLANUM TORVUM* SWARTZ

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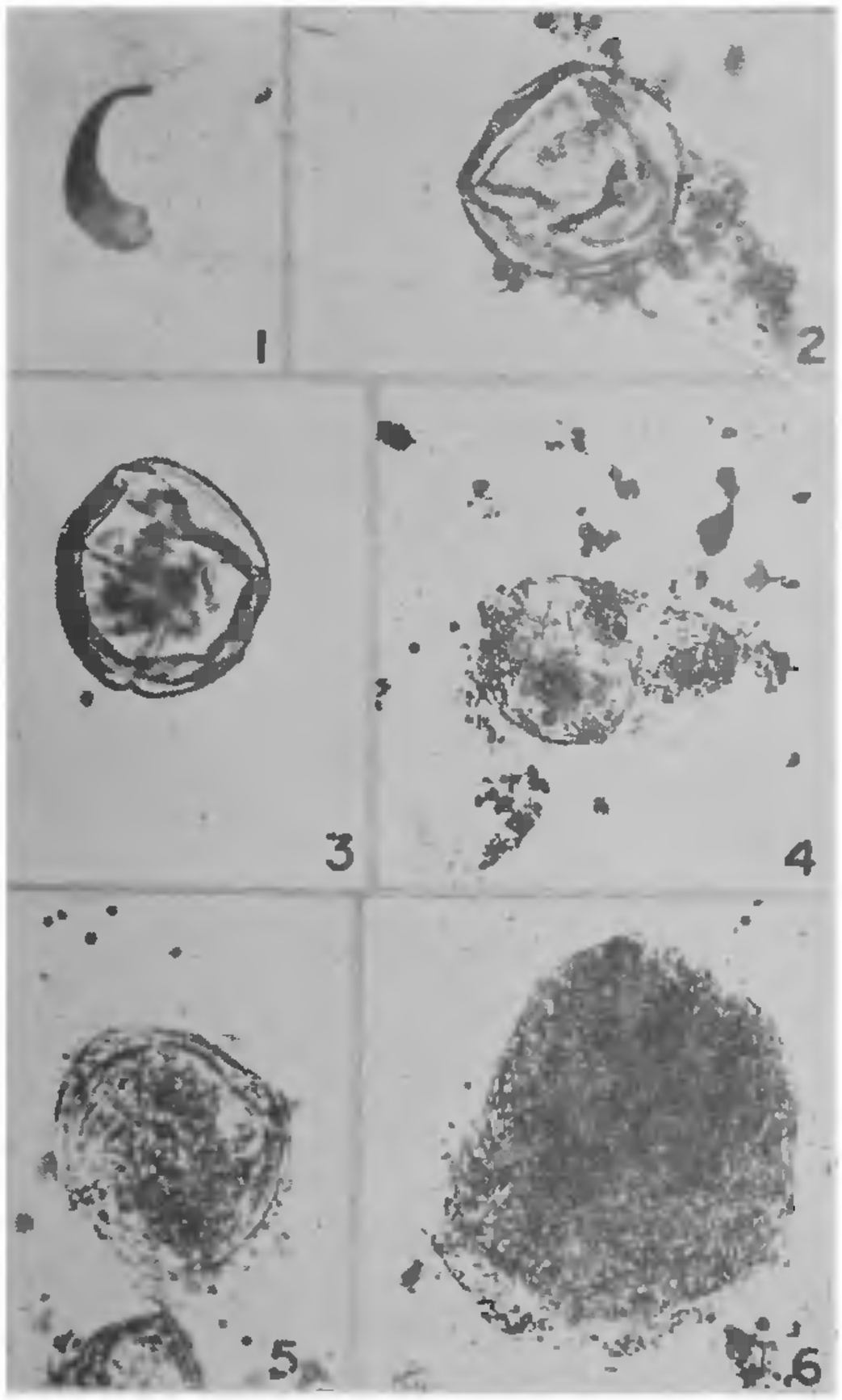
Haploid plants are of great importance in basic genetic research and in recent plant breeding technology[1]. Induction of haploids has been achieved in several species of different families but chiefly from the members of family Solanaceae[2,3]. Nevertheless, no proper attention has been paid towards genetic improvement of some highly medicinal but wildly growing shruby plants of Solanaceae family. Therefore, the present work has been undertaken to produce haploids from *Solanum torvum* Swartz which is medicinally important solanaceous shrub.

Young buds were collected from wildly growing plants of *Solanum torvum*. Anthers having uninucleate microspores were dissected from the buds of 4·5 to 5·0 mm in length and pale green in colour and inoculated aseptically after proper sterilization of Murashige and Skoog's medium[4] supplemented with 2,4-D and kinetin in different concentrations separately and in combination of the two. The cultures were maintained at 25 + 1° C under low light intensity.

Anthers containing uninucleate microspores and cultured on MS medium supplemented with 2,4-D and kinetin were found most responsive. Though the frequency of embryonic anthers was found related to the nature of the media and the concentration of supplements, the maximum per cent frequency of embryoid forming anthers was 8 and 20 in media supplemented with 4 ppm of 2,4-D and kinetin respectively. But in combination of both the chemicals at the same concentration, the frequency got reduced to five. Nevertheless, in latter supplement, 21% anthers ruptured and gave rise to compact gray white calli, whereas in the former two supplements, the calli production was very poor and only 2–4% anthers ruptured and gave rise to small quantities of calli in several weeks.

Callusing took place by rupturing the side walls of the anthers whereas embryoids by swollen anthers (Fig. 1). Swelling and rupturing started within two weeks of culture, in responsive anthers. Cytological observations showed that 4-nucleate embryoids were formed by repeated division of uninucleate microspores (Fig. 2). The mitoses leading to the formation of 4-nucleate structure was symmetrical (Fig. 3). Further development in this 4-nucleate embryoids took place in two different ways. In some cases, cross-wall developed and 4-celled embryoids with prominent



FIGS. 1–6. Fig. 1. A swollen anther after 2 weeks of culture × 7·5. Fig. 2. Second mitosis in microspore forming the 4-nucleate embryoid × 1,177. Fig. 3. Four prominent nuclei at the time of formation of cross-walls × 1,050. Fig. 4. Pear-shaped embryoid with prominent nuclei and cross-walls × 830. Fig. 5. Eight-nucleate embryoid without the formation of cross wall × 925. Fig. 6. Multinucleate embryoid with ruptured wall of microspore × 654.

nuclei were formed with one end broader and other narrower (Fig. 4). However in some other cases 4-nucleate embryoids underwent repeated divisions and formed multinucleate embryoids (Figs. 5 and 6) and the size of the responsive microspores got increased.

Positive indications for the development of haploid embryos in *S. torvum* have been recorded. Efforts are being made to develop such embryos into plantlets.

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INDUCTION OF THE PERFECT STATE OF *CYLINDROCLADIUM QUINQUESEPTATUM*

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A SEVERE leaf blight disease caused by *C. quinqueseptatum* Boedijn *et* Reitsma on clove (*Eugenia caryophyllata* L.) was found to be widely prevalent in many parts of Kerala, India, which has earlier been reported by Wilson *et al.*[5] Seedlings and two to three year old plants are more prone to infection which is severe during monsoon. Infection of clove by this fungus was first reported in 1941 from Indonesia by Sloof[4], quoted from Boedijn *et* Reitsma[1].

Figueiredo and Namekata first recorded the perfect state of the causal organism as *Calonectria quinqueseptata* from Brazil[2]. Since the disease is found to be very destructive to the clove cultivation in this part of the country, a search was made for the natural occurrence of *C. quinqueseptata*. Various methods were also tried to artificially induce its perfect state. Its natural occurrence could not be observed, but the following method of artificial induction gave positive results.

Small twigs, 0·5–1·0 cm thick of clove, cashew, (*Anacardium occidentale* L.) and annona (*Annona squamosa* L.) were cut into bits, 8 to 10 cm long. Three to four of these bits were taken in 250 ml conical flasks containing 10 ml distilled water. The bark of the twig was slightly injured, sterilized for 15 minutes at 1·05 kg/cm^2. The sterilized bits were then inoculated by placing actively growing mycelium containing conidia of the fungus on the injured areas. Inoculated flasks were incubated at room temperature (28 ± 2° C) and periodically examined for the presence of perfect state of the organism. The perfect state of the fungus, *viz.*, *Calonectria quinqueseptata* was obtained from all the three twigs tried after 7 days of incubation. Irrespective of the hosts, the measurements were found to