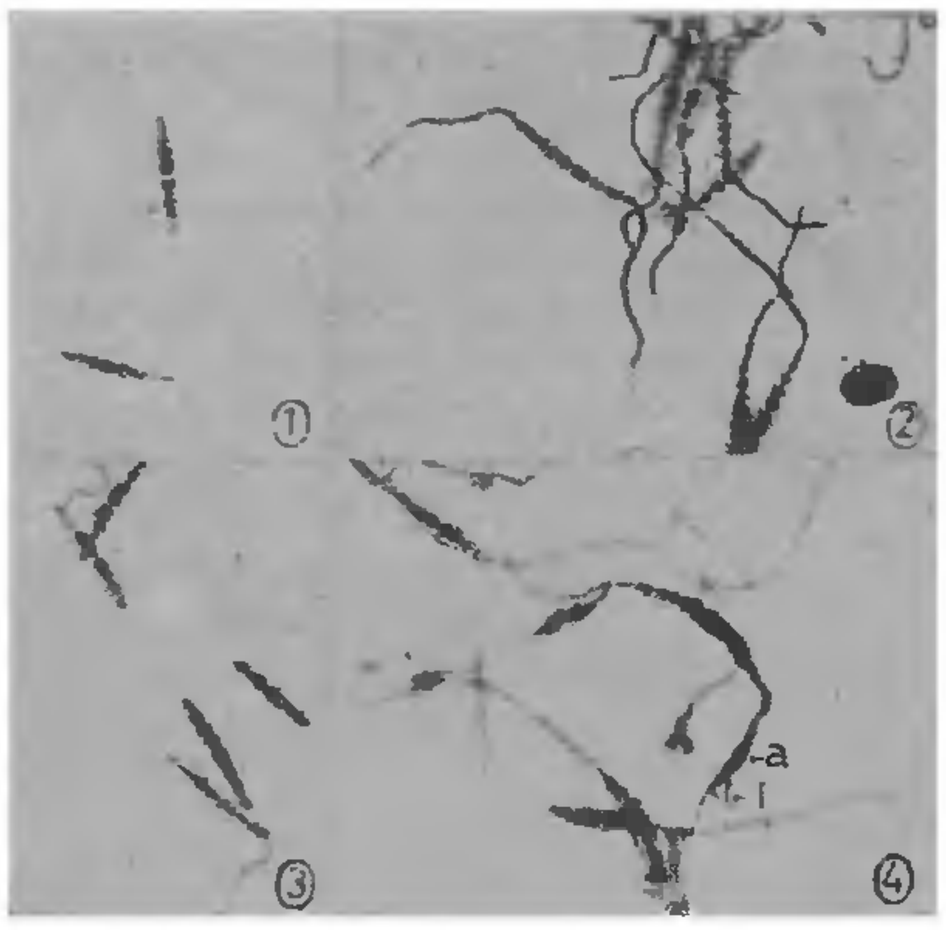
surfaces in order to establish themselves[7,8]. On the onset of flowering, pollen grains get deposited on the leaf surfaces, and serve as an additional source of nutrients for both the saprophytes and facultative pathogens[2]. If saprophytes are able to utilize the pollen nutrients and increase in numbers rapidly, they inhibit the increase of disease both by depleting the nutrients and also by their antagonistic activites[2,7,8]. If, on the other hand, the infection spots as well as conidia of the facultative pathogens are present on the leaf surfaces in sufficient numbers at the time of flowering, and can utilize the pollen nutrients more rapidly than others, then the severity of the disease will be increased[2,6]. This is the reason for the rapid increase of leaf blight infection of sorghum after flowering.



FIGS. 1–4. Germination of conidia of *Drechslera turcica*, × 100. Fig. 1. Control (4 h), Fig. 2. Pollen (4 h), Fig. 3. Control (8 h). Fig. 4. Pollen (8 h).

(*a*—appressorium; *i*—infection hypha.)

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DIFFERENTIAL RESPONSE OF CHROMOSOMES OF YOUNG AND ADULT TISSUE TO CHEMICALS

THE effects of mutagenic agents and specially of alkylating compounds on plant chromosomes are well worked out[1]. No data are available on differential response of chromosomes of meristematic and differentiated nuclei to the action of mutagens. In this laboratory, 2, 4-dichlorophenoxyacetic acid (2,4–D) has been found to induce division in differentiated nuclei[2] and the level of action too has been worked out[3]. Ethylmethane sulphonate (EMS) is one of the very potent mutagens and its mutagenic effect has been reported by several authors[4]. The present investigation gives the comparative effect of EMS on meristematic and differentiated nuclei when followed and preceded by 2,4–D treatment.

Germinating bulbs of *Allium cepa* with roots 20 mm long were placed in two different tubes containing (1) EMS—0·01% and (2) 2,4-D—0·01% solution. After 24 h, a few roots (about 10 mm long) were cut from the bulbs and fixed in acetic ethanol (1 : 2). Then the bulb of the tube (1) with the remaining roots was put into a third tube containing 0·01% 2, 4-D soln. and the bulb with the remaining roots from tube (2) was put into another tube containing 0·01% EMS soln. After 24 h, the rest of the roots (about 10 mm long) were cut and fixed in acetic ethanol. Staining was performed with the usual aceto-orcein schedule. Each root was cut into two parts—meristematic and differentiated (5 mm away from the tip) and squashed in 45% acetic acid. The results obtained are summarised in Table 1.

In addition to condensation, stickiness and diplochromatids, one of the significant effects of EMS on meristematic tissue is the formation of chromosome bridges. Such aberrations in meristematic tissue are significantly reduced if the application of EMS is followed by 2, 4-D treatment. No such bridges were recorded when the tissue was treated with 2, 4-D prior to EMS application. These results indicate that 2, 4-D might protect the chromosomes against the damage caused by the mutagen (EMS). It is also likely that 2, 4-D instead of acting directly on chromosomes may combine with EMS making the latter ineffective against chromosome damage. Thus no such aberrations could be recorded when 2, 4-D preceded EMS treatment. This is likely due to accumulation of

TABLE I

Frequency of division and abnormalities in diffferent regions of the roots of Allium cepa

		Division	Bridge	Condensation	Diplochromatids	Polytenic and polyploid nuclei
EMS	t_1	4·84	2·19	2·59	0·59	..
	t_2	No division				
–do– 2, 4–D	t_1	3·47	0·74	0·89	1·33	..
	t_2	No division				
2, 4-D	t_1	4·86	0·10	2·03	1·72	..
	t_2	5·66	..	1·46	8·14	2·21
–do– EMS	t_1	4·03	..	4·00	0·57	..
	t_2	4·15	..	12·66	4·09	1·99

t_1 = meristematic region ; t_2 = differentiated region

sufficient 2, 4-D in the tissue which combines with the EMS molecules after application of the latter.

However the interaction of 2, 4-D and EMS in relation to the induction of division shows a different picture. With 2, 4-D, the differentiated tissue shows a high degree of polyploid and polytenic nuclei. If 2, 4-D treatment is followed by EMS application the frequency of such nuclei is considerably reduced indicating the retarding effect of EMS on induction of division by 2, 4-D in differentiated tissue.

The two sets of data on the meristematic and differentiated regions indicate the differential response of of nuclei to the effect of mutagenic and other compounds which are either growth promoters or afford protection against damage.

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INDUCTION OF GERMINATION IN *SOLANUM*

THE present authors experienced considerable difficulty in germinating the seed of *Solanum viarum* Dunal syn. *S. khasianum* var. *chatterjeeanum* Sengupta during the course of its cytogenetic study. Although the percentage of germination varies between 12% and 74%, in most of the cases, it does not go beyond 58%. Sometimes, the period of germination varies from 2 to 6 months. Occasionally, the seed remains dormant for months together in the soil, while the usual period of dormancy is found to be only one month. Not a single seed has been found to germinate on the moistened filter paper in petridishes at room temperature.

Well known methods as removal of testa, temperature variation and treatment with hormones as well as vitamin (ascorbic acid) were tried but of no avail. Moreover, no relationship between the germination and seasonal variation was observed. In view of the above difficulties, experiments were performed so as to find out a suitable method for getting good percentage of early germination.