A. precatorius bears close resemblances to those of Phaseoleae in possessing para-mesogenous stomata and short clavate glandular hairs. Hence the present study on the stomatogenesis and the hairs substantiates the contention of Venkateshwarlu and Seshavataram and other previous workers[1] and suggests the removal of the genus *Abrus* from the Vicieae and its inclusion in the Phaseoleae.

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INDUCED TETRAPLOIDY IN CURVED SPINE MUTANT OF *SOLANUM KHASIANUM* CLARKE

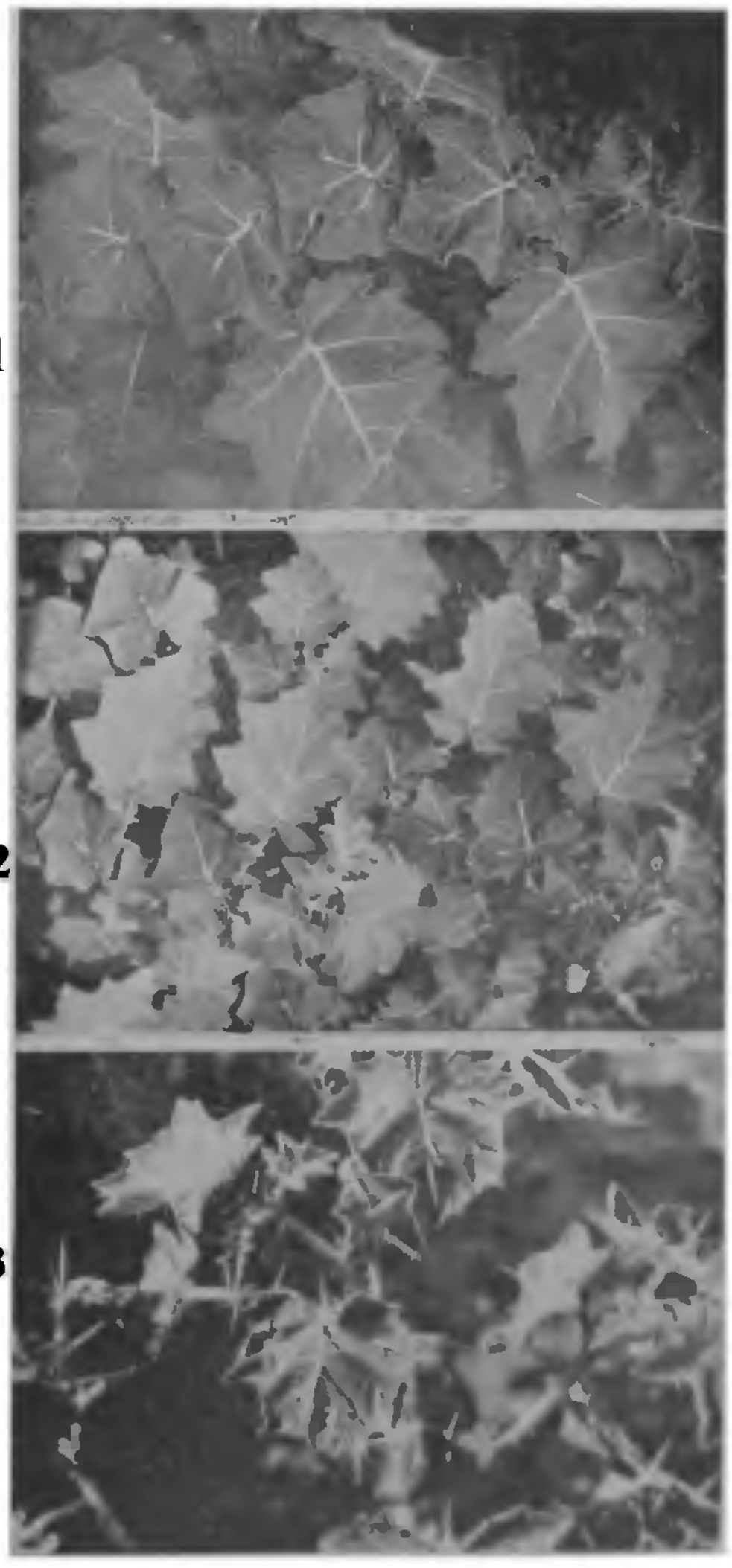
THE importance of *Solanum khasianum* for its high solasodine content has been recognised by several workers[1-3]. However, its large-scale cultivation by pharmaceutical industries, manufacturing steroid hormones, is restricted because of the occurrence of spines on the plant parts.

Exploitation of this medicinal plant would be more economical, if a variety having less spines and higher solasodine content is developed. Attempts were made in this direction by using mutagenic agents such as colchicine and gamma-rays.

Isolation of a mutant, which had thick curved and blunt spines, in γ-irradiated population was reported earlier[4]. This curved spine mutant was used for obtaining tetraploids by colchicine. Seedlings (100) were treated by 0·1% colchicine as described by Janaki Ammal and Bhatt[5].

Cytological studies of leaftip cells revealed 25% of the treated plants to be initially tetraploids. However all of them excepting two proved to be mixoploids. These two C_1 plants maintained tetraploidy ($4n = 48$) as evidenced from PMC studies. They possessed thick, dark leaves, bigger flowers than the control and bigger pollen grains which were 25% fertile. Fruits (10), obtained from these two tetraploids, had poor seed setting, and low germinability of these seeds gave only five C_2 plants.

Variation in the number of spines per leaf—1–5 compared to 5–10 in the control—was noticed in C_2 and C_3 generations of mutant tetraploids (Figs. 1, 2 and 3). Similar variations were observed in the tetraploids obtained from unirradiated controls[5]. It may be emphasised that the spineless tetraploids did not bear flowers. Some of them with the reduced the number of spines had a few flowers which did not set fruits. These observations suggested a probable association of spinelessness with sterility, since spiny tetraploids were reasonably fertile.



FIGS. 1–3. Fig. 1. Control. Fig. 2: Mutant: Fig. 3. Tetraploid mutant.

TABLE I

Improvement in fertility of curved spine mutant tetraploids

Generation of tetraploidy	No. of plants	Pollen fertility %	Av. No. of fruits per plant	Av. No. of seeds per fruit	Germination %	Wt./fruit g
Control (Diploid)	10	100	118	220	100	3·10
Curved spine mutant (Diploid)	17	100	186	200	90	3·41
C_1	2	25	5	2·5	20	0 95
C_2	5	50	10	41·0	35	1·45
C_3	25	70	93	75 0	48	2·35

This suggestion got further support when a spineless mutant obtained in irradiated population produced no flowers. Another mutant which had very much reduced spines, produced a few flowers and very small fruits (0·95 g/fruit). Due to poor seed setting and germination, it was lost in C_3 generation (unpublished data)[6].

Contrary to all the observations, mutant tetraploids with reduced number of spines, which were more curved than those in the diploid controls, have shown marked improvement in their fertility during C_2 and C_3 generations. Table I shows that pollen fertility increased from 25% to 70% while fruit setting increased from 5 to 93. The number of seeds per fruit also showed remarkable increase from 2·5 to 75, so also germinability of these seeds. Similar trend, evidenced in fruit size and weight, indicates that further efforts in improving and selecting a suitable tetraploid mutant may be rewarding.

The fruits of mutant and tetraploids are being analysed for their solasodine contents, while C_4 generation studies are in progress.

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EFFECT OF RED AND FAR RED ILLUMINATIONS ON THE GERMINATION OF SPORES OF TWO BLUE-GREEN ALGAE

THE effect of red and far red radiations on various morphogenetic processes is well known in the case of higher plants, ferns, bryophytes and green algae. In blue-green algae light dependent morphogenetic changes in the developmental cycle of *Nostoc* were studied by Lazaroff[1] where red light was shown to be connected with photoinduction and green light, not far red with photoreversal. In the present work we have shown the involvement of red and far red wavelengths during the germination of spores (akinetes) of two blue-green algae.

Materials and Methods

Anabaena sp. and *Anabaenopsis arnoldii* have been isolated from the brines of Sambhar salt lake of Rajasthan. The culture medium (SS medium) contained dipotassium hydrogen phosphate 0·348 g, potassium nitrate 0·2 g, Sambhar salt crystals 10 g, Sambhar soil extract (4% w/v in distilled water) 10 ml and total volume made up to 1 litre. Iron was added as Fe-EDTA complex[2], 3 mg/l and trace element solution supplied was that of Fogg[3], 1 ml/l. The pH of the medium was adjusted to 7·0 for *Anabaena* sp. and 8·5 for *A. arnoldii*, before autoclaving.

Clonal cultures of the algae were raised from single spores plated on agarized SS medium. Algae were generally grown in liquid medium illuminated continuously by 40 w daylight fluorescent lamps, at 28° C ± 2. Whenever spores were required, material from liquid cultures was spread on agar surface and incubated in light. Within 7–10 days or so, all the vegetative cells of the filaments developed into spores. The plates with fully formed