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COLCHICINE FROM THE SEEDS OF *GLORIOSA SUPERBA*

COLCHICINE, an important alkaloid used in the treatment of gout and in plant breeding work for inducing polyploidy, is at present, extracted from the corms of *Colchicum autumnale*, occurring wild in some parts of Europe. Recently, there had been an increase in the demand of this alkaloid but the supplies from the conventional sources had not been sufficient to cope with it. A worldwide search for an alternative plant source is being carried out but no suitable raw material has yet been found. Among the Indian plants the corms of *Colchicum luteum* and the seeds of *Iphigenia stellata* containing 0.25% and 0.9% of colchicine respectively^{1,2} are not available in sufficient quantities to warrant any commercial utilization. *Gloriosa superba* is another plant containing colchicine. Chemical evaluation of a number of tuber samples, however, indicated a very low alkaloid content. On the other hand the ripe seeds of the plant, analysed according to Santavy³, gave a yield of 0.81% of total alkaloids (d.w.b.) and 0.60% of colchicine (d.w.b.). The tubers of the plants from which the seeds were obtained, on similar analysis, yielded 0.57% of total alkaloids and only 0.05% of colchicine. It is evident that the percentage of colchicine in the seeds is more than ten times of that in the tubers.

Gloriosa superba Linn. (Fam.: Liliaceae) is a perennial herbaceous climber, occurring among scrub forests throughout India upto an altitude of 1800 m. It flowers during the months of July and August and the ripe seeds, borne in capsules 5 to 6 cm long, can be harvested towards the end of September. The plant is easily propagated by tuber cuttings. The tuber cuttings, planted in the month of May, sprout in July and the fruits with

ripe seeds are ready for harvest in the first week of October. The plant being a perennial, the fruits can be harvested for a number of years from the same planting, thus ensuring a sustained supply of the raw material to the industry. The high colchicine content accompanied by prospects of good availability from both wild and cultivated sources make the seeds of *Gloriosa superba* a potential commercial source of colchicine in India. Resources survey and cultivation trials have since been taken up for the development of this raw material.

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THE ENDOSPERM ORGANIZATION IN *MICROCARPAEA* R. Br. (SCROPHULARIACEAE)

THE embryology of several genera belonging to the Scrophulariaceae has been examined¹. The genus *Microcarpaea*, however, appears to have remained uninvestigated. The present note deals with the development of endosperm in *Microcarpaea muscosa* R. Br. The material for study was collected from the river Cauvery near Thalakadu, Mysore District.

The development of the female gametophyte in the anatropous, tenuinucellate and unitegmatic ovule conforms to the Polygonum type. Fertilization is porogamous. The pollen tube enters the embryo sac destroying one of the synergids and liberates the two male gametes. Syngamy and triple fusion have been observed. The surviving synergid breaks down soon after double-fertilization. The antipodal cells persist within the confines of the nucellus for some time, in several cases.

The first division of the primary endosperm nucleus is followed by the laying down of a transverse wall. Of the two resulting primary chambers the chalazal one is shorter (Fig. 1). The next division is vertical and it occurs in both chambers. Thus two tiers of two cells each are formed (Fig. 2). The cells of the chalazal tier undergo vertical division to form a tier of four cells, which function together as the chalazal haustorium (Fig. 5). These cells generally acquire dense cytoplasm and their activity ceases during the later part of seed development. The cells do not fuse together and ultimately degenerate as such (Fig. 7, 8).