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FOLIAR NECTARIES IN *ERYTHRINA STRICTA* L.

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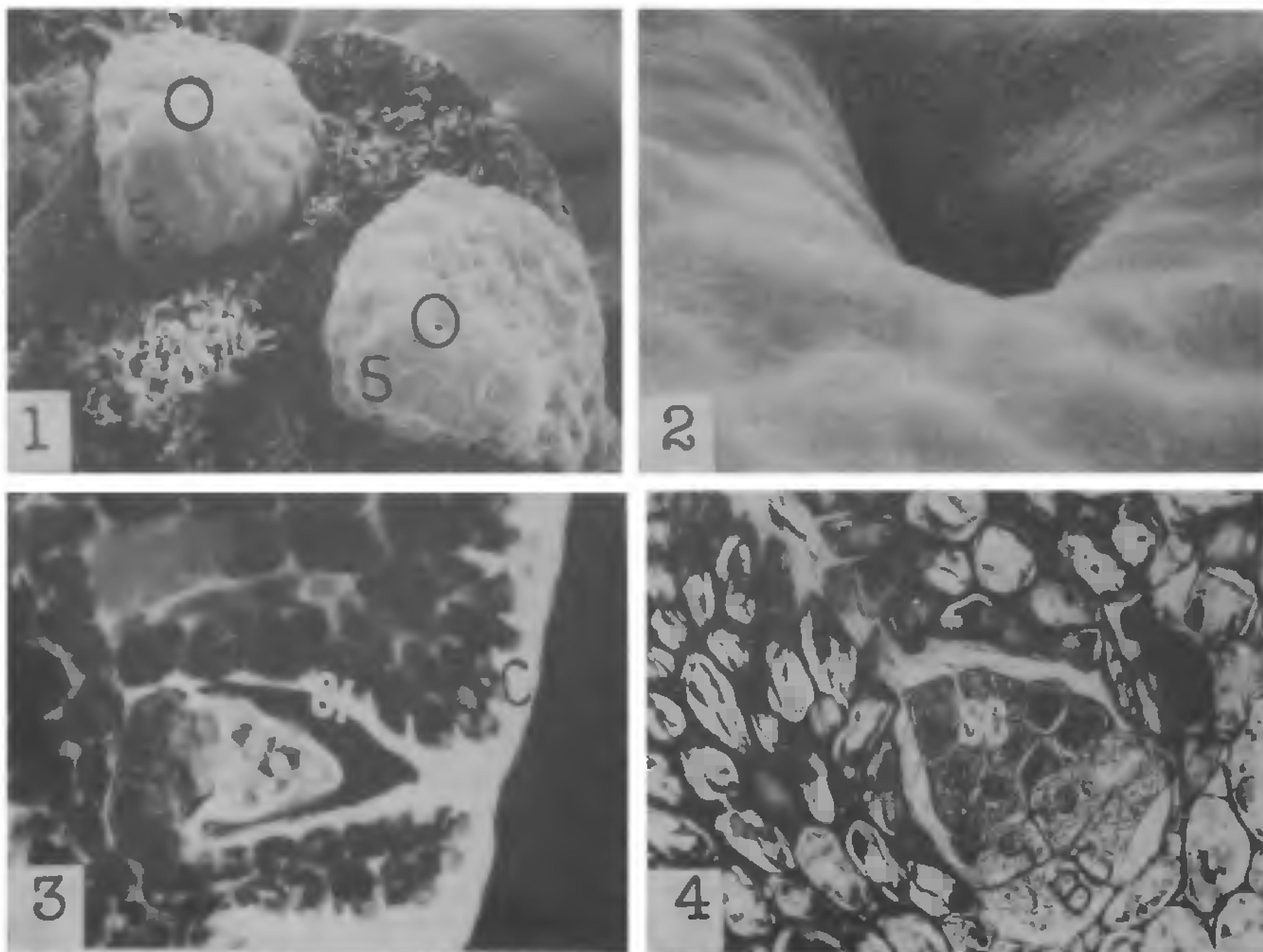
EXTRAFLORAL nectaries in the genus *Erythrina* have been studied by several workers[1–4]. Reports on extrafloral nectaries[5–7] show that they are helpful in reducing herbivore activity. The present study describes the structure, secretion and function of stipellar nectaries in *Erythrina stricta*.

FAA fixed materials were used for paraffin embedding and sectioning. For scanning electron microscopic (SEM) studies, materials were dehy-



Figures 1–4. Morphology and anatomy of foliar nectaries of *Erythrina stricta*. **1.** SEM micrograph showing a pair of stipels (Note the pores (circled)) (× 250); **2.** SEM of a pore (× 5000); **3.** Fluorescence micrograph of a section of a stipel showing the thick cuticle and cuticular insulation to the wall of the pore (× 550); and **4.** Bright field micrograph showing the pyramid-shaped nectary with large basal cells, stalk cells and secretory cells (× 570). (BC, Basal cell; C, Cuticle; CI, Cuticular insulation; S, Stipel; SC, Secretory cell; ST, Stalk cell).

drated through a graded ethanol series, coated with gold–palladium and observed in a Cambridge Stereoscan S_4-10 electron microscope. Autofluorescence micrographs were taken on a Carl Zeiss epifluorescence microscope with UV-range filters.

Two pairs of stipels occur on the pinnately trifoliate leaves, one at the petiolule–rachis junction of the first two leaflets and the other at the petiolule–rachis junction of the terminal odd leaflet. SEM observation reveals the presence of 25–30 minute pores distributed mostly at the top of the stipel mound (figure 1). The stipel is composed of parenchymatous tissues, the outermost of which is covered by a thick cuticle (figure 3), interrupted by pores (figure 2). The pore leads to a cavity through an orifice at the base of which is a pyramid-shaped nectary. The whole structure resembles an inverted funnel (figure 4). The wall of the cavity shows cuticular insulation (figure 3). The nectary has three distinct regions, viz. two large basal cells, two stalk cells and 8–14 secretory cells. Peak secretion occurs in the early morning hours and late evening hours. Both aggressive and non-aggressive ants are found foraging on the foliar nectary. The aggressive type of ant was identified as *Camponatus* sp. But the two types never occur together.

Aggressive ants nesting on *E. stricta* offer protection to the plant, for it is a well-known fact that the aggressive behaviour of ants is most pronounced near the nest and can be induced at a food source[8]. But these ants nesting on the leaves cause mild damage to the chlorophyll, since the leaf surface is not exposed to light for a long time and at times the abaxial surface of the leaf is directly exposed to sunlight causing an increase in transpiration. So with respect to aggressive ants on *E. stricta*, a strict symbiotic relation does not seem to exist. The non-aggressive ants nesting in the dried wood are not harmful to the plant.

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MICROPROPAGATION IN DIPLOID INDIAN SQUILL (*URGINEA INDICA* KUNTH.)

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INDIAN squill, a perennial bulbous plant of Liliaceae, contains the cardiac glycosides scillarin A and proscillarin b, and sterols[1]. It has been used since ancient times as a cardiac stimulant and a diuretic. The commercial use of Indian squill as a source of glycosides and sterols is economically not feasible owing to the extremely low rate of asexual multiplication. An earlier report on *in vitro* propagation of Indian squill[2] describes a complex and time-consuming method for regeneration of plantlets via callus culture. The purpose of the work reported here was to develop a simple and rapid method of *in vitro* propagation, through adventive plantlet formation, similar to those reported for other bulb-producing species[3,4].

Diploid Indian squill (*Urginea indica* Kunth.) bulbs were collected from Dona-Paula (Goa) seashore. The dried and outer scales of the bulbs were discarded and the bulbs were washed for one hour under running tap water. These bulbs were then surface-sterilized with 0.1% (w/v) mercuric chloride for 5 min, washed thrice with sterile distilled water, dipped in 95% ethanol and flamed over spirit lamp under sterile conditions. Outer scales from the bulbs were removed and the inner core was cut horizontally into explants of about 1 cm diameter and 0.5 cm thickness. The explants obtained from the lower half of the bulb were termed basal and those obtained from the upper half distal. The explants were placed for one week on basal medium and only those which were found to be free from visible contaminants were used in further experiments.