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TORAL GLANDULAR HAIRS OF *CASSIA AURICULATA* L.

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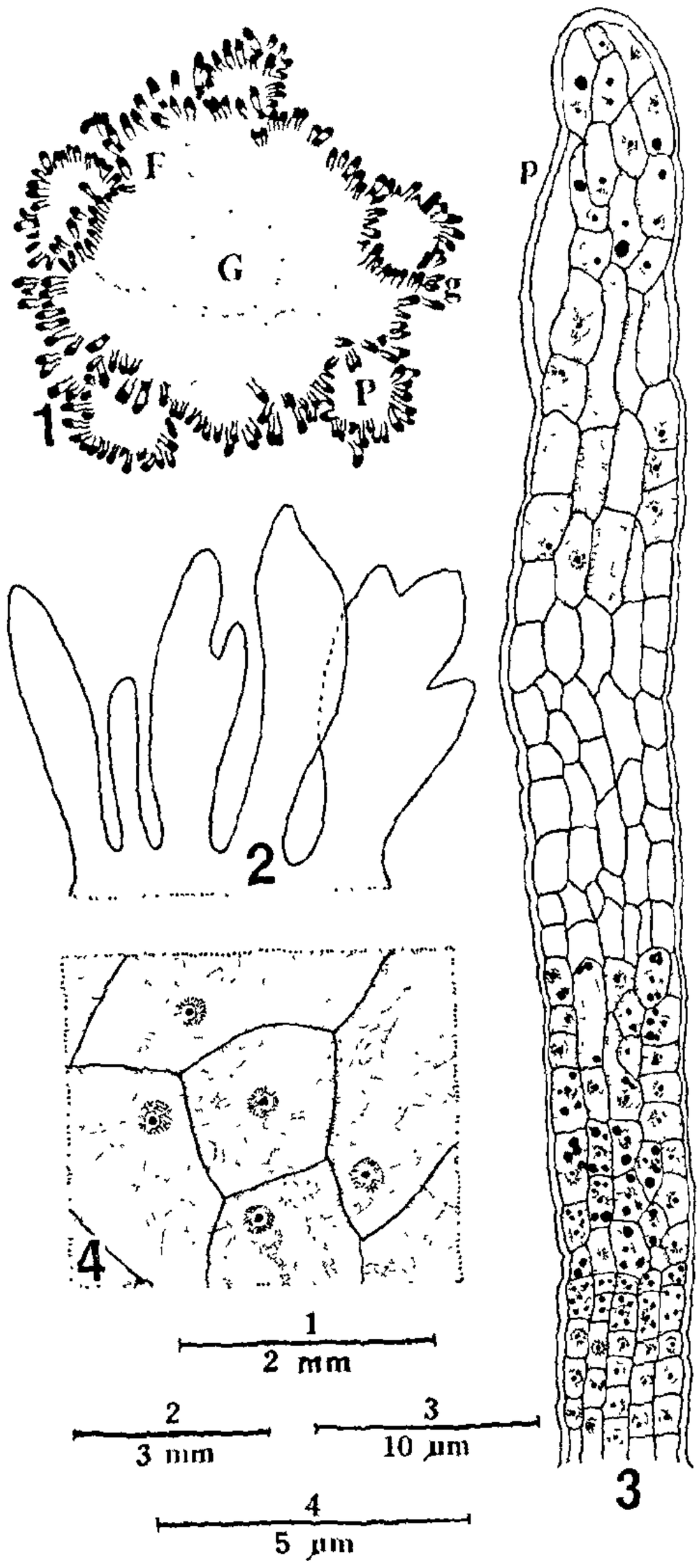
FLOWERS of *Cassia* are regarded as devoid of nectar secreting hairs. Floral biology and enantiostyly in several species of *Cassia* has been described[1]. In a survey of nine locally available *Cassia* species, *C. auriculata* L., *C. tora* L., *C. spectabilis* DC., and *C. fistula* L., showed conspicuous toral glandular hairs. The mature structure and chemical composition of the toral glandular hairs of *C. auriculata* have been studied.

The torus of *C. auriculata* is richly provided with orange, yellow or brown, linear or spathulate, simple or variously lobed (figure 2), fleshy glandular, multicellular hairs around the fleshy base of the petals and filaments (see figure 1). On an average the total number of glandular hairs is 98 per flower out of which 55 are small and brown, while the rest are long and yellow. The average size of the glandular hairs is 435.0 × 90.0 μm. In *C. tora*, *C. spectabilis*, and *C. fistula* these are few, small and whitish to translucent but in *C. auriculata* they are yellow, orange to dark brown with cellular contents. The upper half of most of the glandular hairs in *C. auriculata* is orange brown, while the lower half is yellowish. In some, the hairs can be divided into three distinct regions i.e. lower colourless region, with square to rectangular small cells arranged in parallel rows, the middle yellow region with rectangular to polygonal cells arranged irregularly and the upper orange to brown blunt tip region with irregularly arranged cells (figure 3).

Apart from the cellular contents, the cells in the lower half of the glands contain irregularly distributed oil bodies (see figure 3). The glandular hairs possess a conspicuous cuticular cap near the tip, which on maturity releases the contents by the rupture of the cuticle (see figure 3). The cells of some of the glandular hairs may be smooth surfaced or striated forming a net work all over (figure 4). The glandular hairs are devoid of vascular tissue.



Figures 1–4. 1. Camera lucida drawing showing the toral glandular hairs around the bases of the petals and filaments. 2. Part of the same enlarged. 3. Single glandular hair enlarged showing differentiation of cells and pellicle. 4. Cell surface showing striations. Key: F = Filament; G = Gynoecium; P = petal; g = glandular hair (toral); p = pellicle.

The chemical composition of glandular hairs have been studied following the techniques of Jensen[2] and Johansen[3]. Chemically the glandular hairs contain polyphenolic compounds, anthocyanins, glucose, sucrose and fructose. The foliar nectaries of *Cassia biflora* contain 15 amino acids[4]. Alston and Irwin[5] similarly reported amino acids, phenols and anthocyanins in the flowers of 5 species of *Cassia* but without mention of toral glandular hairs.

In the closely related *Krameria* spp. Simpson *et al*[6,7] reported two types of glands that produce saturated fatty acids and methyl esters, through a row of elongate epidermal cells that collect under the cuticle akin to those observed in the present study.

Based on the histochemical tests, it may be said that the glandular hairs are nutritive to various pollinators since the flowers are enantiostylous. It is thus clear that both the foliar glands as well as the toral glandular hairs presently described play useful role in maintaining plant/animal relationship.

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IMMOBILIZED TRYPSIN ON GELATINATED PVC: PLATELET ADHESION

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A LARGE variety of synthetic polymers are increasingly used in biomedical applications. Polyvinyl chloride (PVC) with a wide choice of additives and ingredients such as plasticizers, fillers and stabilizers finds broad application in blood contacting devices. One of the disadvantages with this polymer is that it contains a large number of leachables which can adversely affect the blood components. In an attempt to reduce the leaching, the PVC sheet is plasma glow treated and a network of gelatine is developed on the surface which can effectively retard the migration of leachables to the surface. Trypsin is immobilized on the gelatine substrate using glutaraldehyde coupling to improve the blood compatibility of the surface.

Preparation of surfaces:

The PVC sheet was cut into pieces of size 2.5 cm × 3 cm, cleaned with 0.1% soap solution (Teepol) and washed thoroughly with distilled water and dried. The samples were plasma glow treated for 3 min with nitrogen gas at a pressure of 10^{-1} m bar using Edwards Vacuum Coating Unit E306A. Then they were exposed to gelatine (500 mg%) dissolved in phosphate buffer pH 7.4 for 3 hr at reduced air/water interface[1]. The samples were taken out rinsed in buffer and vacuum-dried. γ-irradiation was done (^{60}Co source) under N_2 atmosphere with a total doze of 0.275 M Rad. The irradiated samples were exposed to gelatine again and then cross-linked with glutaraldehyde (2.5%, v/v) by exposing for 2 hr. They were taken out and rinsed with the buffer thoroughly. Any unlinked aldehyde group was neutralized by a third exposure to gelatine (surface A). Alternatively instead of gelatine, trypsin was immobilized[2] by overnight exposure at 4 C to 50 mg% trypsin dissolved in phosphate buffer (surface B)

Contact angle studies:

The contact angle measurements on the surfaces were made with a goniometer (Kernco Instruments