

EXTRA FLORAL NECTARIES IN SOME APOCYNACEAE

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Carissa carandas Linn., *Nerium odorum* Linn., *Tabernaemontana divaricata* Linn., R. Br., *Thevetia neriifolia* Juss. ex Steud and *Wrightia tinctoria* R. Br. of Apocynaceae have extra floral nectaries on the adaxial surface of the petiole and also associated with the shoot apex. The ontogeny and nature of nectaries are similar in all the species studied. They consist of an epithelium enclosing a core of parenchyma and no vasculature. The secretion attracts ants which probably wards off other insect pests.

Keywords : Apocynaceae; Extra floral nectaries.

Introduction

Extra floral nectaries were reported at the junction of the petiole and lamina in the members of Asclepiadaceae viz. *Calotropis gigantea*, *Wattakaka volubilis*^{1,2}. Dave and Menon³ studied the origin and development of similar nectaries. The present study deals with the ontogeny, structure, morphology and function of these nectaries in some members of Apocynaceae.

Material and Methods

Shoot apices and nodes of *Carissa carandas*, *Nerium odorum*, *Tabernaemontana divaricata*, *Thevetia neriifolia* and *Wrightia tinctoria* were collected and fixed in FAA. After dehydration and infiltration, sections were cut at 8 μ m. General morphological stains like safranin-light green were used.

Observations

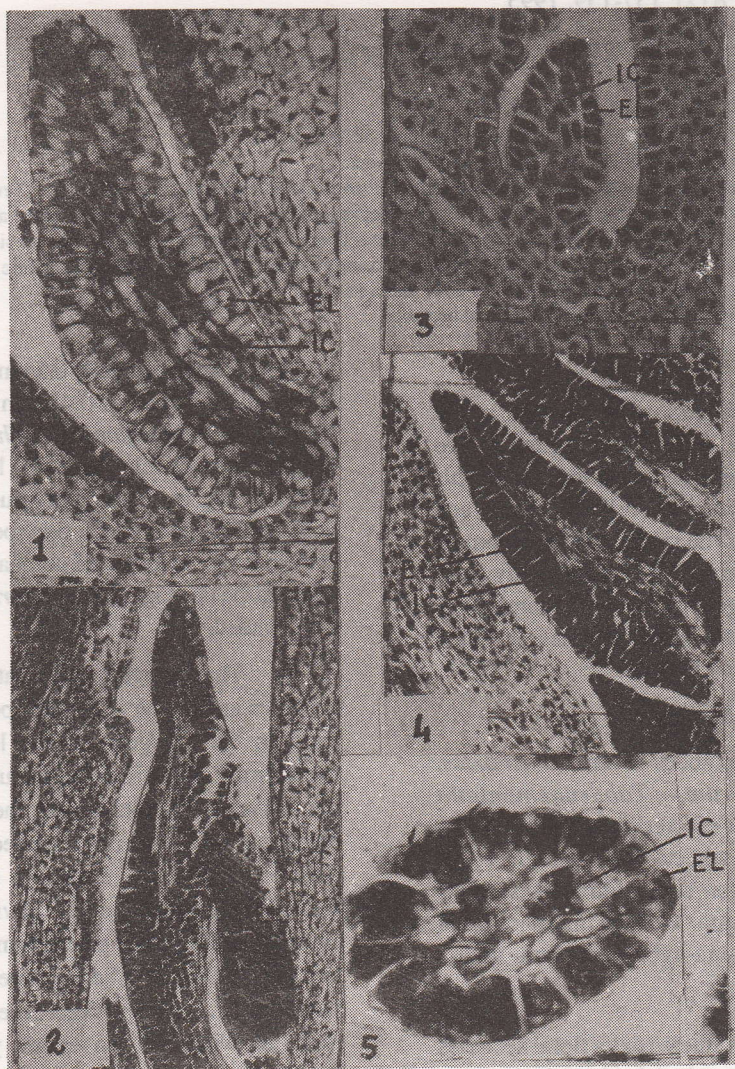
In all the species studied extra floral nectaries developed on the adaxial side at the junction of the petiole and lamina and also associated with shoot apices. In *Carissa* one to two and in *Nerium*, *Tabernaemontana*, *Thevetia* and *Wrightia* six to seven nectaries developed at the leaf axial. Length of the fully developed

nectaries is approximately 0.24 mm, 0.1 mm, 0.22 mm, 0.57 mm and 0.45 mm in *Carissa*, *Nerium*, *Tabernaemontana*, *Thevetia* and *Wrightia* respectively. As seen in longitudinal sections they are elongated structures with very short stalks in all the five species, broad at the base and middle and gradually tapering towards the tip (Figs. 1-4). In *Carissa* the tips are rounded.

The ontogeny and nature of the nectaries are similar in all the species. Very early in the ontogeny of the leaf, a few hypodermal cells divide at the future loci of the nectaries. Simultaneously the overlying epidermal cells undergo repeated anticlinal divisions and form epithelial layer with radially elongated cells having dense cytoplasm. The inner parenchymatous cells are lighter (Fig.5). The nectaries are non-vascularised. Ants have been observed on the nectaries when the leaves are young and fresh indicating that they are active in young leaves, and dry up in the mature leaves. Their secretions attract ants which probably ward off other insect pests.

Discussion

Unlike the single cup like nectary of



Figs. 1-5 Extra floral nectaries as seen in longitudinal sections.

Fig. 1. *Carissa carandas* (X 400); Fig.2. *Nerium odorum* (X 400); Fig. 3. *Wrightia tinctoria* (X 400); Fig. 4. *Tabernaemontana divaricata* (X 800); Fig. 5. *Tabernaemontana divaricata* - Extra floral nectaries in transverse section.

(EL - Epidermal layer; IC - inner cells)

*Pithecellobium dulce*⁴ there are several small nectaries at the same site in the members of Apocynaceae studied increasing the secretory surface and covering more ants.

The origin, development, structure and function of extra floral nectaries studied, resemble those in Asclepiadiaceae^{1,2} but the isolated vascular traces are absent.

Extra floral nectaries are meant to secrete unwanted fluids from the plant body and to attract ants which ward off other insect pests. The secretion contains reducing sugars.

The level of specialisation and taxonomic significance of extra floral

nectaries can be ascertained only after wider comparative studies on related families.

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