

DEVELOPMENT OF THE GLANDULAR LEAF HAIRS OF
ANTIRRHINUM MEONANTHUM HOFFMANNS & LINK,
(SCROPHULARIACEAE)

A.R. DOAIGEY

*Botany Department, Faculty of Science, University of Riyadh, Riyadh, Saudi Arabia
and*

K.J. HARKISS

*Postgraduate School of Pharmacy, University of Bradford, Bradford,
West Yorkshire BD7 1DP.*

The leaves of *Antirrhinum meonanthum* Hoffmanns & Link, bear glandular hairs comprising uniseriate 3 to 5 celled stalks with smooth cellulosic walls and bicellular to multicellular clavate heads (Fig. 1A). The hairs of the intercostal lamina have thick smooth walls whilst those of the midrib (both surfaces) are occasionally warty with longitudinal cuticular striations on the basal cells. The glandular hairs of the midrib occasionally exhibit a branched stalk, each stalk bearing a single glandular head. Uniseriate 1 to 3 celled non-glandular hairs also occur on the lower leaves.

Leaves in various stages of development were taken from mature flowering plants cultivated in the Experimental Gardens of the University of Bradford from stock collected in Spain.

Surface preparations were made from the leaves either by stripping the epidermis and mounting in 50 % v/v glycerol solution or by clearing segments in chloral hydrate solution before mounting in glycerol solution.

An epidermal cell, indistinguishable from its neighbouring cells, becomes an initial cell by the development of a protrusion from its surface which then divides transversely to form two cells. The lower cell, which is slightly raised above the surrounding epidermal cells, neither divides nor elongates during subsequent development of the hair. The upper cell elongates and may undergo several transverse divisions to form the stalk of the hair. The upper stalk cell divides anticlinally to form a multicellular glandular head comprising a single layer of cells and becomes enlarged and clavate.

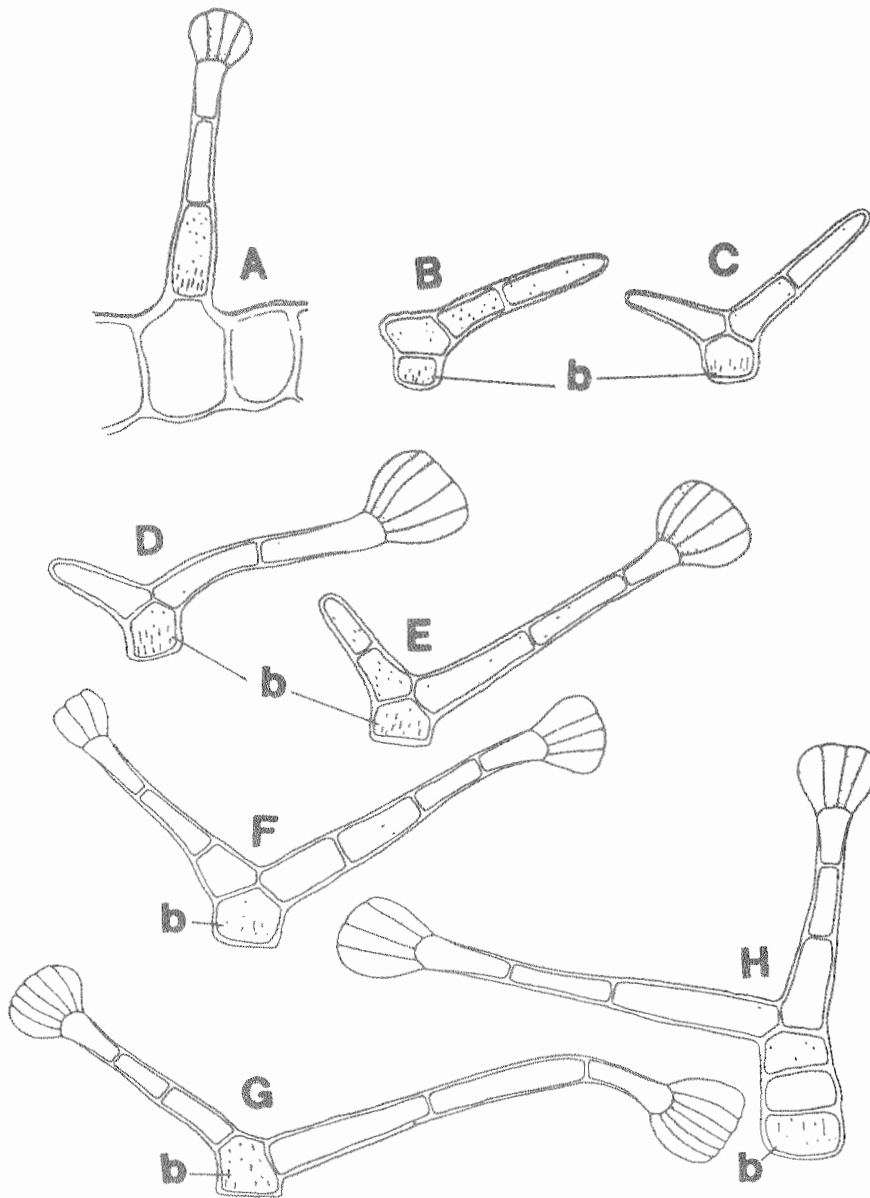


Fig. 1 A. Simple glandular hair of *A. meonanithum*
 B.C. Initiation and development of branching in immature hairs
 D.H. Development of branching in mature glandular hairs
 b. basal cell
 A - H \times 210 (as drawn)

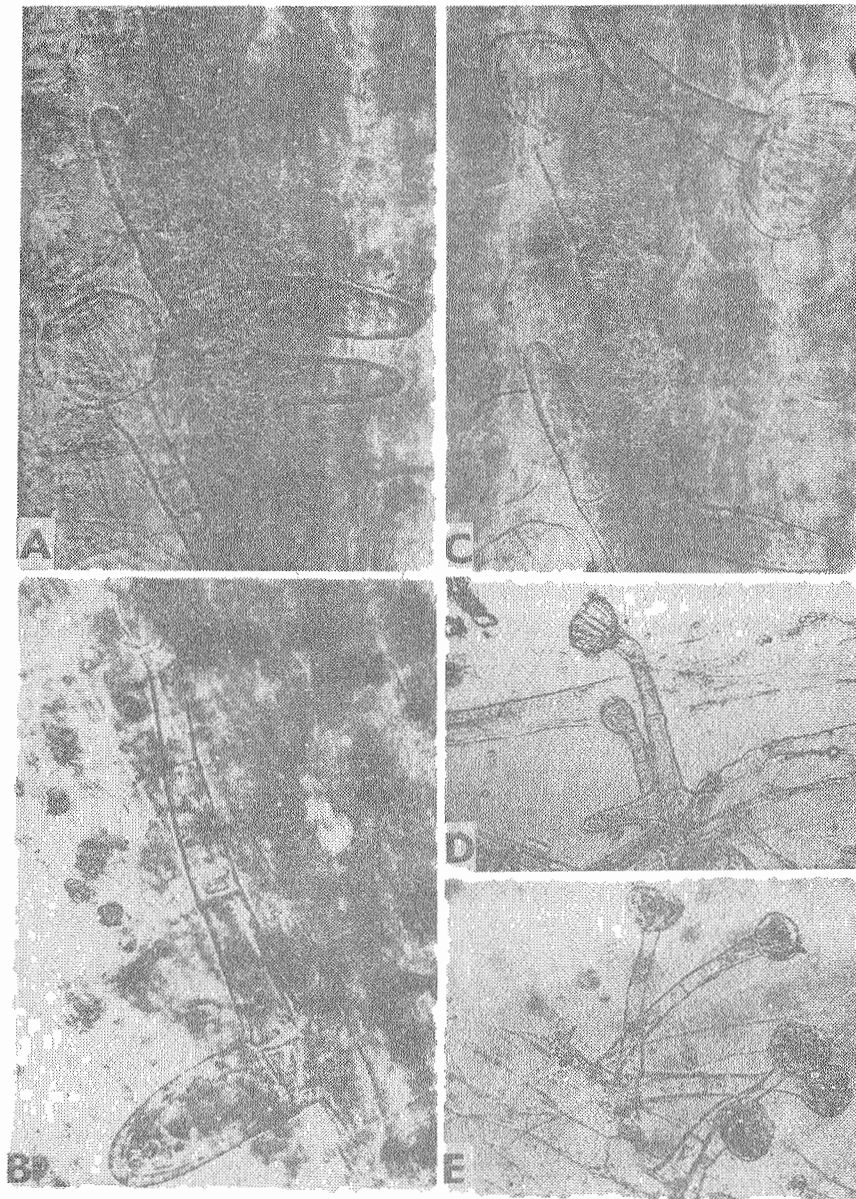


Plate 1. Glandular hairs of *A. meoanthum* leaf
A. Initiation of branching in an immature hair
B-D Initiation of branching in a mature glandular hair.
E Mature glandular leaf hairs.
A-C x500. D, F x250 (as on photographs)

Branching is initiated from the second cell of the stalk either in immature (Fig 1B,C; Plate 1A) or in mature (Fig. 1D, E; Plate 1B,C,D) hairs to form the stalk initials. These cells elongate considerably and each may undergo several transverse divisions to form uniseriate, branched structures. The terminal cell forms a clavate glandular head (Fig. 1F,G; Plate 2E). Occasionally branching occurs from the fourth cell of the stalk (Fig. 1H).

Members of the genus *Antirrhinum* show a close similarity in the types of glandular hairs, only the number of cells and distribution of the hairs being a specific characteristic (Doaigey, 1977). The glandular hairs with branched stalks, each with a glandular head are a structural modification of the more common simple hairs found in most species, branched types being found only occasionally in *A. majus* L., *A. meoanthum* Hoffmans & Link, *A. siculum* Mill., *A. braun-blanguetti* Rothm., *A. charidemi* Lange, *A. molle* L. and *A. mollissimum* (Pau) Rothm.

Acknowledgement

We are indebted to the Royal Society for a grant for one of us (KJH) to collect plant material in Spain and to the Government of Saudi Arabia for a scholarship (ARD) to carry out the study.

Reference

- Doaigey, A.R. 1977 Histological studies in the genus *Antirrhinum*. Ph.D. Thesis, University of Bradford.