STRUCTURE OF STYLE IN *BRASSICA CAMPESTRIS* VAR. YELLOW SARSON

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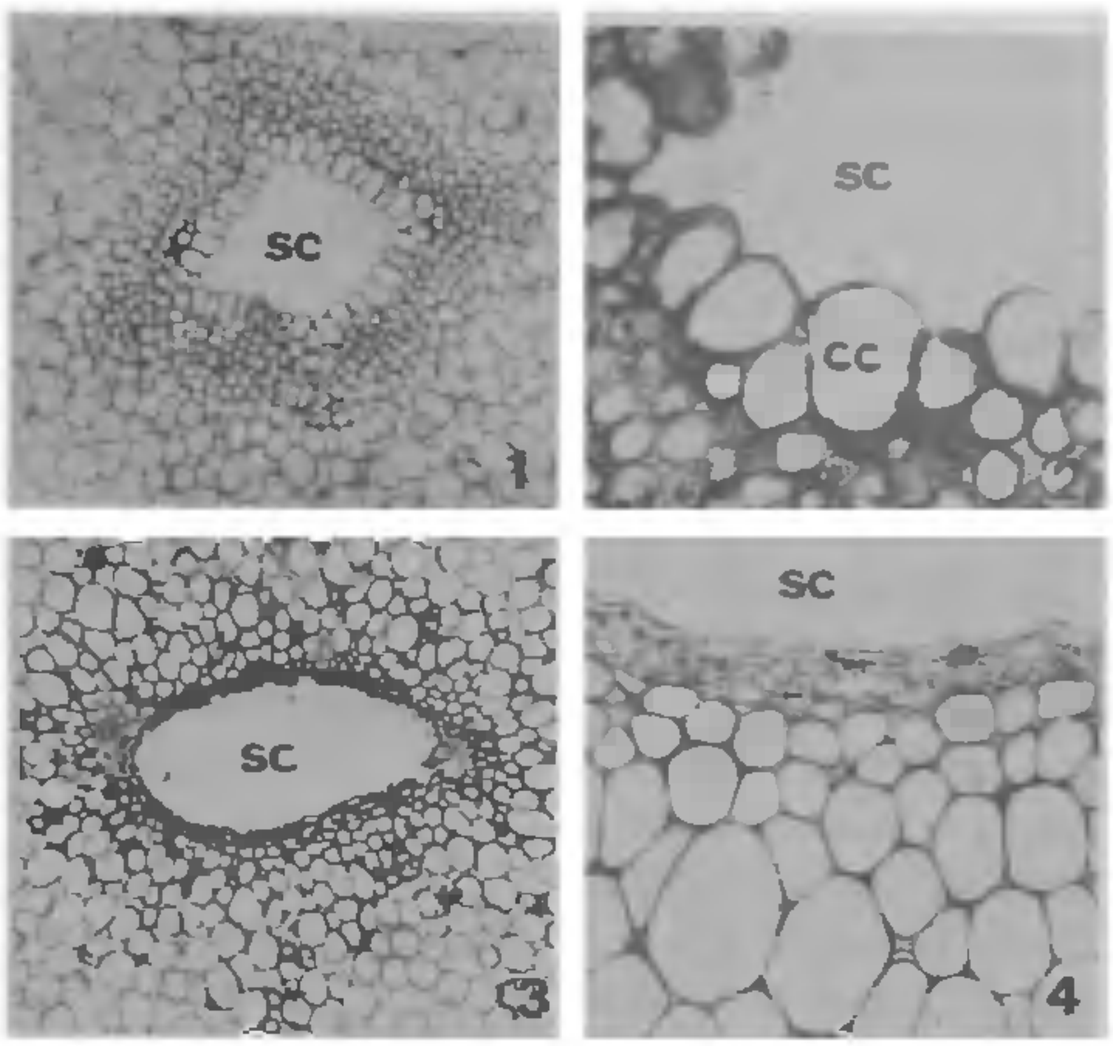
THE role of pistil in the reproductive process is well-established, yet the study of the structure of the stigma and style has been so far limited to a very few taxa. As these structures intervene between the male and female gametophytes, it is important to know their anatomy and histochemistry.

Among the Cruciferae the structure of style has been investigated in *Diplotaxis tenuifolia*[1], *Raphanus sativus*[2], *Capsella bursa-pastoris*[3] and *Brassica rapa* (personal work, unpublished). These studies have indicated that the crucifers possess a solid style. However, we have observed that *Brassica campestris* var yellow sarson (IB 1906) is exceptional in having a hollow style with a single uniform canal throughout its length.

Plants of *B. campestris* var yellow sarson (IB 1906) were raised in the Garden of the Department of Botany, from seeds obtained from IARI, New Delhi. Both pollinated and unpollinated pistils were fixed in 10% aqueous acrolein (Riedel) for 24 hr at 0°C followed by dehydration, infiltration and embedding according to Feder and O'Brien[4]. Sections were cut at 2 μ thickness with glass knives on a spencer AO microtome. Histochemical localization of insoluble polysaccharides[4] and total proteins[5] was carried out. A style at the stage of stigma receptivity measures about 10 mm in length and is erect and cylindrical. Internally the stylar tissue is differentiated into epidermis, cortex, vascular tissue and transmitting tissue. A well-defined, uniform canal is present at the centre of the style. It is bordered by a single row of conspicuous, thick-walled cells or canal cells (figure 1). This constitutes the transmitting tissue for the growth of the pollen tube. The canal cells are larger than the cortical cells. Prior to pollination the canal cells have bulging walls which stain intensely for polysaccharides. Their cytoplasm (which is mainly peripheral due to the presence of vacuoles) contains starch and proteins (figure 2). The cortical cells, adjacent to canal cells, are also rich in these metabolites and their intercellular spaces contain polysaccharides. The cortical cells away from the canal (towards the epidermis), are poorer in contents and have larger intercellular spaces (figure 1)

Following pollination and pollen tube growth through the style, characteristic changes occur in the canal cells and adjoining cortical cells. The canal cells become shrivelled, lose their cytoplasm *i.e.* contents become more vacuolate and there is a decrease in their contents. Eventually their walls break down, the cells collapse to produce a loose mass of cells around the canal (figures 3, 4). The adjacent peripheral cortical cells also gradually senescent.



Figures 1–4. *Brassica campestris* var yellow sarson (cc–canal cell, sc–stylar canal). 1,4-stained for polysaccharides. 2,3-stained for polysaccharides and proteins. **1.** T. s. style prior to pollination showing stylar canal, canal cells and adjoining cortical cells (× 342). **2.** Canal cells prior to pollination. Note the bulging walls; cytoplasm is rich in proteins and polysaccharides (× 1354). **3.** T. s. style after pollination (× 333). **4.** Canal cells enlarged to show their shrivelled condition (× 1364).

Histochemical changes suggest that starch is hydrolysed during pollination and is consumed during pollen tube growth.

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