TRANSLATOR APPARATUS IN *LEPTADAENIA SPORTEUM* (ASCLEPIADACEAE)

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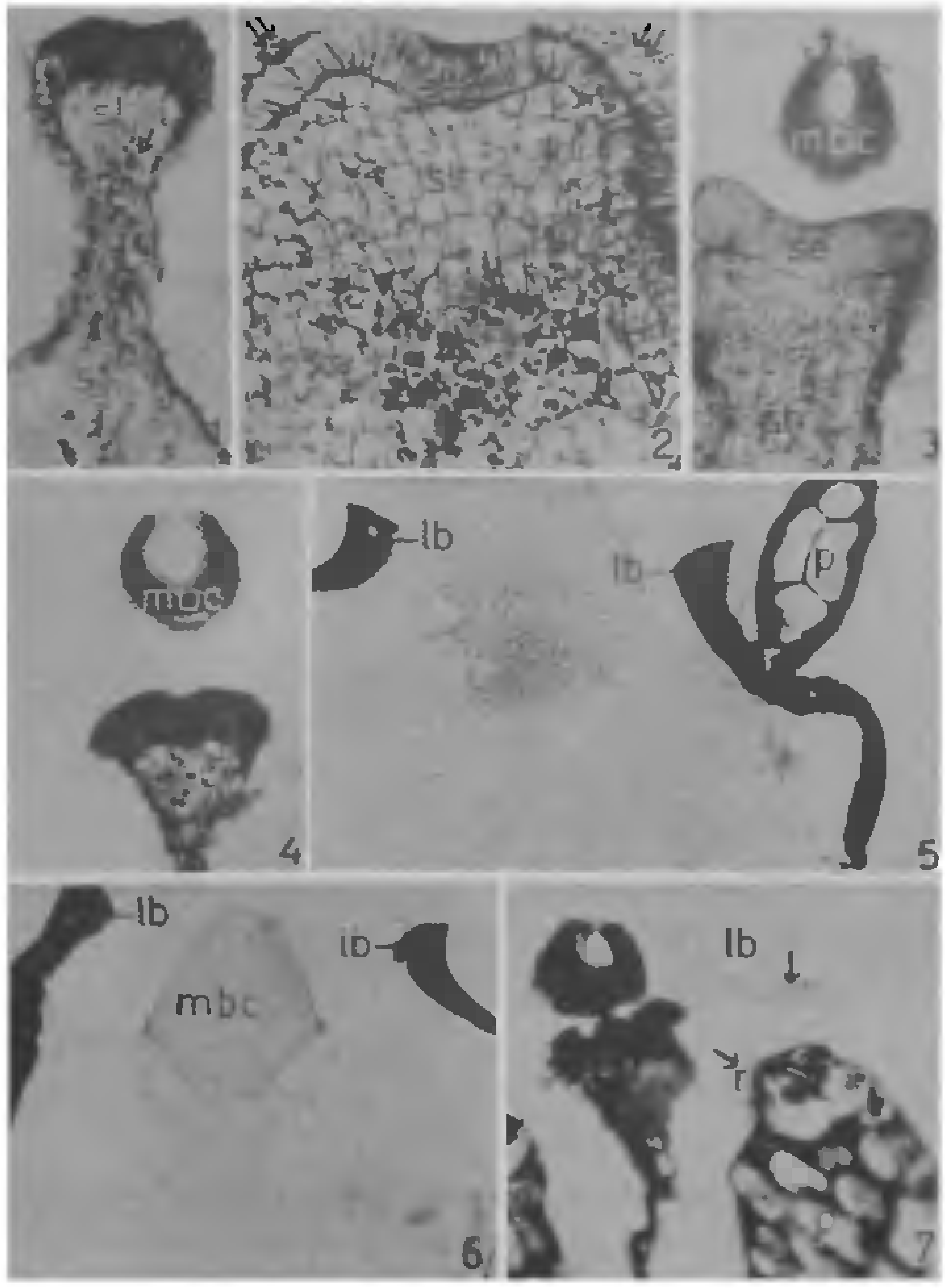
THE family Asclepiadaceae comprises two subfamilies Cyanandroideae and Periplochoideae of which the former shows the presence of translator apparatus[4]. This apparatus consists of two parts (i) the corpusculum attached to the margin of the stigmatic head between the anthers and a pair of arms. The latter connect the pollinia of the adjacent anther halves; (ii) the retinaculum which spans the lateral blades of the corpusculum to acellular beak of the pollinium.

Young flower buds of *Leptadaenia sporteum* collected from Okha port (Gujarat), shows a pentangular stigmatic disc surrounded by five pairs of developing anthers. With the commencement of meiosis in sporogenous tissue the amount of metabolites in the stigmatic tissue increases peripherally. Simultaneously corpusculum, with two lateral blades, develops on each side of five stigmatic corners in depressions known as the stigmatic grooves. Polysaccharide granules are abundant in the hypodermal regions of the stigmatic groove (figure 1) epidermal tissue of stigmatic ridge also shows the presence of a few polysaccharide granules (figure 2, single arrows). Appearance of corpusculum along with the simultaneous disappearance of these polysaccharide granules from stigmatic region suggests that these grains are probably transported through the epidermal layer (figure 2) and reorganized and metamorphosed in the stigmatic grooves to form the corpusculum (figure 3). The development of corpusculum is completed during the late one or two-celled stage of microspores[5,6]. The mature corpusculum shows the presence of a main body and two lateral blades on either side. Just after the completion of corpusculum secondary stigmatic grooves, a shallow depression on either side of the stigmatic grooves, secretes out the retinaculum which then eventually spans the lateral blades with extended acellular beak of the pollinium which in turn is synthesised by the anther tapetum. The translator apparatus, is thus, stigmatic in origin[7].

The main body of the corpusculum gives a positive staining with PAS reaction (figure 4) and a faint reaction with Sudan Black B (figure 6) suggesting the presence of lignin[5], sporopollenin[3], lipids[1], and cutin[2]. The lateral blades of the corpusculum and the retinaculum responds negatively to the PAS reaction (figure 7) but show a positive reaction with Sudan Black B (figure 5) which suggests that the reticulum is composed of lipids[1,5], cutin[2,5], and sporopollenin[1,5].

The lateral blades and retinacula autofluoresce dull-white suggesting the presence of cutin when observed



Figures 1–7. Development of translator apparatus in *Leptadaenia sporteum* (lb, lateral blades; mbc, main body of corpusculum; p, pollinium; r, retinaculum; se, stigmatic epidermis; sl, stigmatic lobe; st, stigmatic tissue). ×455. **1.** Stigmatic lobe showing accumulation of PAS-granules in hypodermal tissue of stigma. **2.** Stigmatic epidermis showing PAS-granules (single arrows) and extraepidermal secretions (double arrows). **3.** Stigmatic lobe at the level of corpusculum showing PAS + ve main body of the corpusculum. **4.** Mature corpusculum. **5.** Lateral blades, retinaculum and pollinium stained with Sudan Black B in 70% alcohol showing the presence of lipids. **6.** Corpusculum (cut at a lower level) showing faint reaction for lipids. **7.** Gynostegium at the anther level showing PAS − ve retinaculum and lateral lobe (arrows).

through a Zetopan-Binolux II, dark-field fluorescence microscope fitted with a exciter filter E-2, grade/thickness UG 1 1.5 and absorption filter Sp 2, grade/thickness GG13 1 + 3 plus Wratten foil 2A.

The histochemistry of translator apparatus, thus, shows that corpusculum is composed of lignins, lipids, cutin, and negligible amount of proteins whereas the retinaculum and the lateral blades are lipoidal. A direct correlation between the distribution of metabolites in the stigmatic tissue and the appearance of the translator apparatus is envisage. Thus, developmental and histochemical studies reveal that the translator apparatus is stigmatic in origin.

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PARASITE-HOST INTERACTION IN RELATION TO THE NEMATODE *ANGUILLULINA APTINI* (SHARGA)—A PARASITE ON *MICROCEPHALOTHRIPS ABDOMINALIS* (CRAWFORD) AND *FRANKLINIELLA SCHULTZEI* (TRYBOM).

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INFORMATION on nematodes infesting thrips is limited to species such as *Thrips physapus* Linn[1], *Heliothrips fasciatus* pergande[2], *Stenothrips graminum* Uzel[3,4], *Aptinothrips rufus* (Gmelin)[5–7] and *Frankliniella occidentalis* (Pergande)[8] in Europe and detailed studies on the percentages of nematode parasitism and the ecology of the host parasite interaction being restricted only to the species *Aptinothrips rufus*[5–7] infested by a nematode *Anguillulina aptini* (Sharga). Information presented here highlights the discovery of the species for the first time in India parasitizing two new thrips hosts and their occurrence in relation to host density as well as abiotic factors.

The incidence of the nematode *A. aptini* was observed in *Microcephalothrips abdominalis* (Crawford) and *Frankliniella schultzei* (Trybom), while studying their ovarian structure. Periodical samplings of thrips were made in a selected experimental plot by collecting 25 flowers (*Wedelia chinensis* and *Helianthus annuus*) every week. The flowers were brought to the laboratory in polythene bags and thrips species from the respective flowers were isolated and examined. By dissecting the thrips the number of different stages of nematodes was counted. Dissected thrips having nematodes were carefully separated on a fresh slide using a micropipette. Nematodes were stained with Nile blue and were photographed with the aid of Leitz photomicroscope.

Periodical observations revealed the occurrence of the parasite during almost all months of the study period (May 1981–May 1982). The percentage of parasitism in *M. abdominalis* was 21 when the population of thrips reached a peak with 450 per 25 flower heads, while it was 2.2 during low populations of thrips. In *F. schultzei*, the maximum percentage of parasitism was 29.6 with the maximum abundance of the host *i.e.* 430 thrips per 25 flower heads, whereas a minimum of 4.5% parasitic incidence was observed when the host was less abundant. Since the population of the thrips species was also determined by abiotic factors, the relation between the host and the parasite in terms of their abundance was correlated with abiotic factors (figure 1). This correlation also revealed that high rainfall exerted a negative influence on the degree of parasitism, while the occurrence of the nematode was triggered at a temperature range of 31–35°C with 65% humidity.

Analysis of the number of nematodes present in the body cavity of thrips indicated a maximum of 108 larvae, 47 eggs, 5 males, and 7 females and a minimum of a few eggs and larvae with one female nematode per individual host. Males were fewer and sometimes even absent. The infestation of the nematode was seen only in female thrips including their pupal stage and it was