

gametes in *Colocasia* is being reported for the first and the origin of polyspermy is presumably due to the partial fusion of individual pollen grains in the dyad.

In *Colocasia esculenta*, there is a wide prevalence of triploid forms having 42 chromosomes<sup>5</sup> and the studies have already established the autotriploid nature. The presence of more than two gametes in the pollen tube implies that the fusion of the two gametes with the egg might have involved in the resulting triploidy.

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#### CHEMOTAXONOMY OF A FEW TAXA OF PEDALIACEAE

THE family Pedaliaceae comprising 14 genera and 220 species (Airy Shaw<sup>1</sup>) includes medicinally important plants like *Martynia* and *Petalium* and economically important plants like *Sesamum*. While the family has received attention from disciplines as anatomy, embryology, palynology, the information on the chemotaxonomy of the family is meagre. The systematic position of *Martynia* is doubtful. It was placed in Pedaliaceae by Bentham and Hooker<sup>2</sup>. Airy Shaw<sup>1</sup> and Hutchinson<sup>3</sup> separated it into an independent family, Martyniaceae on the basis of parietal placentation and absence of glands at the base of the flowers. The present study on the chemotaxonomy of *Martynia annua* L., *Petalium murex* L., *Sesamum indicum* L. and *Sesamum laciniatum* Klein has been undertaken with a view to seeing how far chemical data together with the information from other disciplines would support the separation of *Martynia* from Pedaliaceae.

The materials of *Martynia annua*, *Sesamum indicum* and *S. laciniatum* were collected locally and *Petalium*

*murex* was collected from Rudraram, a village near Siddipet, Medak District, Andhra Pradesh. Using fresh materials of stems, leaves, flowers and fruits, Siringin test, Maul's test, HCl/Methanol test 'A', Cigarette test, Hot water test, Leucoanthocyanin test 'A', Juglone test 'A', HCN test and Aurone test 'A' (Gibbs<sup>6</sup>) were carried out. Tests for carbohydrates (Molisch test), saponins, tannins, free sugars, flavonoids, alkaloids, phenols, indoles (Ehrlich test), leucoanthocyanins, triterpenoids (Noller's test), triterpenoids/steroids (Liebermann Burchard test) and Badouni's test and Labat test were carried out using 80% methanol extracts of entire plants at the time of flowering and fruiting. The results of the tests are presented in Table J.

TABLE J

| Tests                             | <i>Martynia annua</i> | <i>Petalium murex</i> | <i>Sesamum indicum</i> | <i>Sesamum laciniatum</i> |
|-----------------------------------|-----------------------|-----------------------|------------------------|---------------------------|
| Cigarette test                    | +                     | +                     | +                      | +                         |
| Hot water test                    | +                     | +                     | +                      | +                         |
| HCl/Methanol test (Gibbs)         | —                     | —                     | —                      | —                         |
| Siringin test                     | —                     | ?                     | —                      | —                         |
| Maul's test                       | +                     | +                     | +                      | +                         |
| Leucoanthocyanin test 'A' (Gibbs) | +                     | —                     | —                      | +                         |
| Juglone test 'A'                  | —                     | —                     | —                      | —                         |
| Aurone test 'A'                   | —                     | —                     | —                      | —                         |
| HCN test                          | +                     | —                     | —                      | —                         |
| Molisch test                      | +                     | +                     | +                      | +                         |
| Saponins                          | —                     | —                     | ?                      | —                         |
| Tannins                           | ?                     | —                     | —                      | ?                         |
| Noller's test                     | —                     | —                     | —                      | —                         |
| Alkaloids                         | —                     | —                     | —                      | —                         |
| Phenols                           | +                     | +                     | +                      | +                         |
| Ehrlich test                      | —                     | —                     | —                      | —                         |
| Flavonoids                        | +                     | +                     | +                      | +                         |
| Leucoanthocyanins                 | +                     | —                     | —                      | —                         |
| Liebermann Burchard test          | —                     | —                     | +                      | +                         |
| Free sugars                       | +                     | +                     | +                      | +                         |
| Badouni's test                    | +                     | +                     | +                      | +                         |
| Labat test                        | +                     | +                     | +                      | +                         |

In all the species the reactions for carbohydrates, flavonoids, phenols, free sugars, Maul's test, Cigarette test, Hot water test, Badouni's test and Labat test were positive while for triterpenoids, alkaloids, indoles, Aurone test 'A', HCl/Methanol test 'A', and Juglone

test 'A', the results were uniformly negative. Saponins are absent in all except *Sesamum indicum* where their doubtful presence is indicated. Tannins are absent in *Pedaliium murex* and *Sesamum indicum* while they are doubtfully present in the other two taxa. Negative reaction for Noller's test and positive reaction for Liebermann Burchard test in *Sesamum indicum* and *S. laciniatum* indicate the presence of steroids in these taxa while in *Pedaliium murex* and *Martynia annua*, both triterpenoids and steroids are absent. *Martynia annua* and *Sesamum laciniatum* differ from *Pedaliium murex* and *S. indicum* in the presence of leucoanthocyanins. Negative results were obtained for Siringin test 'A' for all the taxa except *Pedaliium murex* where, only the walls of the xylem elements developed blue colour and this may be considered as a doubtfully positive reaction. *Martynia annua* stands apart from the remaining taxa in the positive reaction for HCN test.

Thus from the above observations it is clear that *Martynia annua* resembles the other taxa of Pedaliaceae in a majority of chemical characteristics. On the basis of the distribution pattern of phenolic acids in the leaves and fruits of *Martynia*, *Pedaliium* and *Sesamum* Das, Rao and Rao<sup>4</sup> supported the separation of *Martynia* from Pedaliaceae into an independent family Martyniaceae.

In important anatomical characters like the presence of mucilage hairs, ranunculaceous type of stomata and vessels with simple perforation plates (Metcalf and Chalk<sup>8</sup> and in essential embryological features such as simultaneous cytokinesis of pollen mother cells, anatropous unitegmatic and tenuinucellate ovules, Polygonum type of embryo sac ontogeny, cell-lar endosperm with haustoria and Onagrad type of embryogeny, the taxa resemble closely one another (Davis<sup>5</sup>).

Thus, from a consideration of all these aspects it is suggested that the separation of *Martynia* into an independent family, Martyniaceae, does not seem justified. This is consistent with the view of Cronquist<sup>3</sup> who included Martyniaceae in Pedaliaceae.

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#### A CASE OF EFFECTIVE CONTROL OF SEVERE INFESTATION OF *TRICHODINA* ON FRY OF *CYPRINUS CARPIO* LINN.

THE ciliate, *Trichodina*, is a common ectoparasite in the Gangetic carps<sup>1</sup> and also in *Cyprinus carpio*<sup>2</sup>. It posed a serious problem when two crops of hatchlings of *Cyprinus carpio* were stocked in nursery ponds in the Fisheries Research Station, Patna. Two days after release, fry in the first nursery showed *Trichodina* which developed into a severe infestation of the entire fry population by the fourth day. The parasite was found attached to the exterior of the fry and also gliding along the slimy film over the body of the fry (Fig. 1).

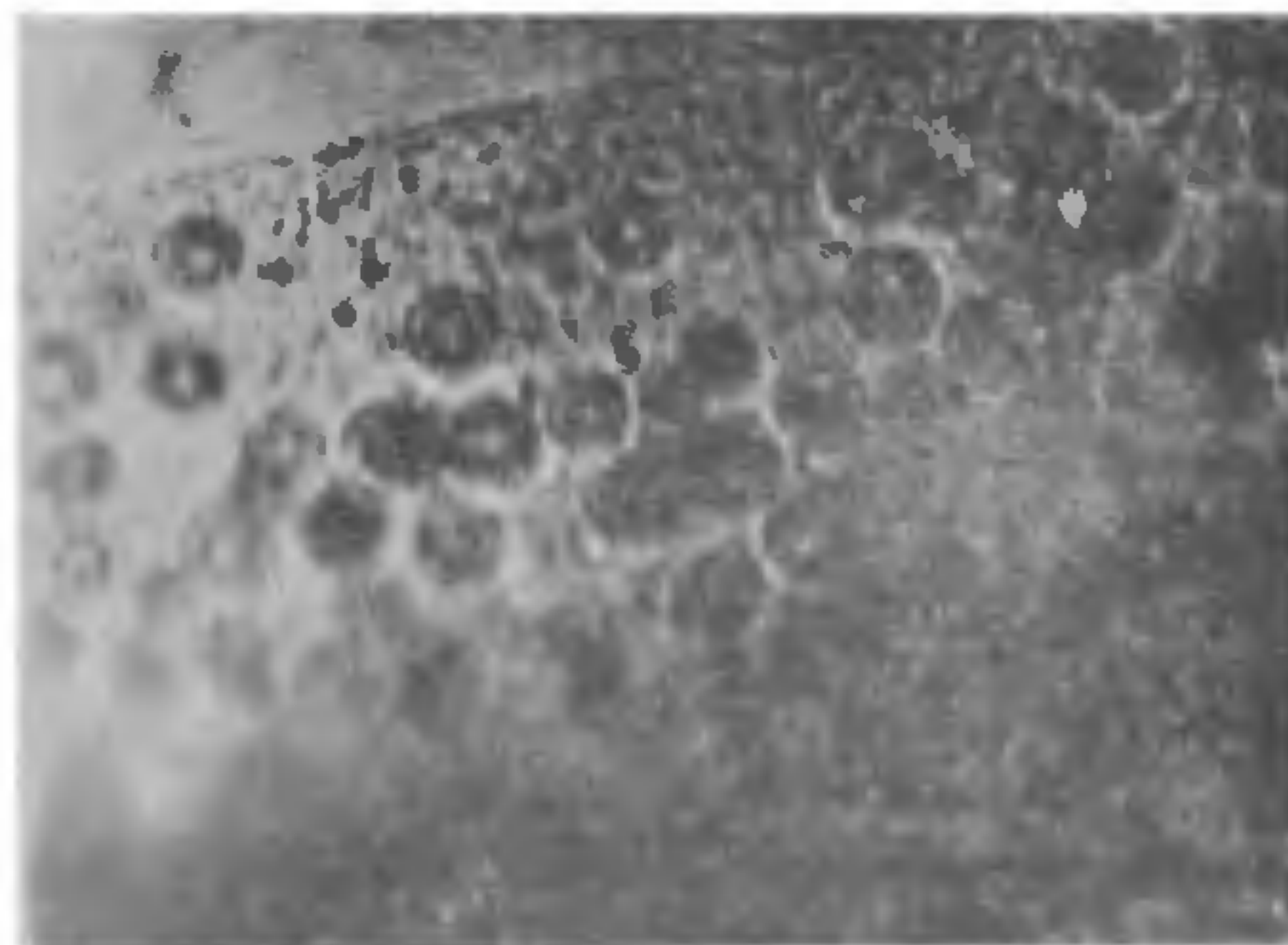


FIG. 1. Photomicrograph of a part of the body of fry of *C. carpio* infested with *Trichodina* ( $\times 100$ ).

The infestation occurred in the second nursery also in the same manner indicating a common source of