

Formation of epidermal idioblasts has been considered to be related with micro-environmental influences¹. The concept seems plausible, since in untreated populations, they are present only in *C. medicaginea* var. *typica*, a prostrate form having its own micro environmental surroundings different from those of the erect forms. Their formation in induced phyllody types of *C. juncea* is caused by morphological changes brought about by lethal doses of mutagen treatment. It results in destruction of biological activity of growth regulators^{2,3} and induction of physiological and biochemical disturbances⁴. However, the change is not genetical but morphologically epigenetic since, induced phyllody types are completely sterile without fruit and seed setting.

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MODIFICATION OF SEX EXPRESSION BY KINETIN, MORPHACTIN AND UREA IN CASTOR (*RICINUS COMMUNIS* L.)

CHEMICAL control of sex expression was achieved mostly in cucurbits¹⁻³. The work on monoecious plants other than cucurbits is scanty. In castor, separate male and female flowers are borne on the same plant so that the sexes are separated flower for flower but not plant for plant. While investigating the physiological basis of sex expression, it was intended to modify the sex ratio by growth regulators.

Castor seeds var. Aruna were selected for the investigation. Morphactin, kinetin, and urea were sprayed at different stages of vegetative growth. As castor is a 90 days crop, the total vegetative period was divided into six stages of 15 days interval, the fifth stage being the flower initiation stage. In general the untreated castor plants showed a ratio of 4 : 1 (Male : Female) flowers. Kinetin (10 ppm) reduced the maleness significantly although femaleness was not increased with a ratio of 2 : 1 (M : F). Urea (2-3%) also modified the sex ratio to nearly 2 : 1, similar to that of kinetin. In monoecious plants kinetin may not increase femaleness but reduces male tendency. It is also evident that nitrogen in any form (urea and kinetin) may reduce the maleness in monoecious plants. Earlier work by Gopala Rao⁴ indicated that decapitation

of shoot apex in castor increased the male tendency possibly by reducing the auxin level and increasing the gibberellin level.

An interesting finding is that morphactin at high concentrations (500 ppm), when sprayed only once just before flowering, reduced femaleness giving a ratio of 10 : 1 (M : F) and when sprayed throughout vegetative stage at different intervals of 15 days, during the 90 days period, also reduced the femaleness giving a ratio of 10 : 2 (M : F) at a concentration of 50 ppm. In general, it was found that treatment with kinetin, morphactin or urea delayed anthesis period. It is finally concluded that nitrogen supply to monoecious plants reduces maleness and higher concentration of morphactin (500 ppm) sprayed once, prior to flower initiation, reduces femaleness drastically.

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TRYPANOSOMA ACANTHOBRAEAE N. SP. FROM A FRESHWATER FISH, ACANTHOBRAEA MARMID HECKEL (FAMILY: CYPRINIDAE) FROM THE RIVER TIGRIS, IRAQ

TRYPANOSOMES have been reported from freshwater and saltwater fishes in various parts of the world. During a survey of fish parasites in 1973-74, the authors came across a new species of *Trypanosoma* from the blood of a Cyprinid fish, *Acanthobrama marmid* Heckel.

Materials and Methods

For the study of trypanosomes, thin blood films were made on clean glass slides from the blood obtained by clipping the caudal peduncle of the fish. The films were air-dried, fixed in methyl alcohol and stained with Giemsa's stain. Camera lucida drawings were made as well as phase-contrast photographs.

Observations

The organisms are slender and attenuated at both the ends. Their configuration varies, some of them have a "C"-shaped body, while others are "S"-shaped. No polymorphism is observed and no dividing stages found in the blood smears.

The average measurements of the methanol fixed specimens are :

Body length, 21.71 to 30.06 (average 25.89) microns ; the length of the free flagellum, 18.37 to 21.71 (20.37) microns ; total length from tip to tip of the organism, 33.4 to 50.1 (43.0) microns ; the length of the nucleus, 3.34 to 5.85 (5.01) microns and its width, 1.67 to 2.51 (2.17) microns ; the distance from nucleus to kinetoplast, 6.16 to 9.24 (7.60) microns and the nuclear index, 0.75 to 1.13 (0.87).

The nucleus is sausage-shaped, stains light purple in Giemsa's stain and usually occupies the entire width of the body. It is normally located near the inner border of body curvature.

The cytoplasm is vacuolated and stains blue, the vacuolations vary. In some, large vacuoles are present near the posterior border of the nucleus, while in others they are small. No myonemes were observed. Numerous reddish-purple granules considered to be chromatic granules are present between the nucleus and the kinetoplast.

The kinetoplast is usually rounded or ovoid, sometimes conical, staining dark red. It measures about 1.68 microns in length. The flagellum originates from the kinetoplast and trails anteriorly, bordering the undulating membrane and extending beyond the body as a free structure. The undulating membrane stains light red and is clearly outlined.

The infection is more pronounced in the summer months.

Discussion

Since the discovery of *Trypanosoma* in the blood of the trout (*Salmo faris*), a large number of trypanosomes have been seen in freshwater and saltwater fishes in various parts of the world.

The general morphology of these is the same. They have usually long and narrow bodies, and vary greatly in size. The trypanosome of the pike, *T. remaki* measures only 15 microns, while that of the ray about 130 microns, but the majority of species have a length of about 50 microns.

Description of trypanosomes of North American freshwater fishes¹ makes no mention of their occurrence in the Cyprinidae. Another report on diseases of fishes² mentions the occurrence of *T. danilewskyi* in the carp, *Cyprinus carpio* and *T. phoxini* in the minnow, *Phoxinus phoxinus*, but none from *Acanthobrama marmid*. Only one distinct species, *T. occidentalis*, has been described in North America³, from two species of sculpins, *Cottus gulosus* and *C. rhortheus*, and one from stickleback, *Gasterosteus aculeatus*, from the Pacific coast. *Trypanosoma remaki* was also reported from *Esox lucius*, *E. reticulatus* and probably other species⁴. Another

species, *T. percae*, described in *Perca fluviatilis* and from the brook trout⁵, resembles to *T. rotatorium* of the frog. More recently, *T. catostomi* has been reported from the white sucker, *Catostomus c. commersoni*⁶.

The trypanosome reported here from *Acanthobrama marmid* has some resemblance in the body length to *T. danilewskyi*.

Till now, so far as the authors are aware, no trypanosome has been described from *Acanthobrama marmid*, and none, at any rate, from Iraq or neighbouring countries⁷. Also, reports on the parasites of freshwater fishes⁸⁻⁹ make no mention of any trypanosomes from any of them.

The trypanosome from *A. marmid* is, therefore, considered as a new species and designated as *Trypanosoma acanthobramae*.

Locality : River Tigris, Mosul (Iraq).

Type specimens : Syntypes deposited with Parasitology Section, Department of Biology, Mosul University, Mosul, Iraq.

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CHINA DODDER (*CUSCUTA CHINENSIS* LAMK.) ON COWPEA—A NEW RECORD

IN a survey of the vegetation in and around the Dairy Farm area of Visakhapatnam, A.P., a very severe attack by China dodder of a field of cowpea—an important pulse, fodder and green manure crop¹ (*Vigna sinensis* Endl.)—has been met with. This is a recent addition to the Flora of Visakhapatnam, a new record for Andhra Pradesh and a new record of cowpea acting as a host to this dodder. The parasitised plants show wrinkled and yellowish leaves, branches and pods and die prematurely. Pods show stunted growth and dwarfing. The