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RESEARCH ARTICLE

MORPHOLOGICAL STUDIES ON TWO RARE WATER AMOEBA *BALAMUTHIA MANDRILLARIS* AND *VANNELLA MIROIDES* FROM GODAVARI BASIN AT GANGAPUR AND VAIJAPUR

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ABSTRACT

We found these two aquatic amoebae ***Balamuthia mandrillaris, Vannella miroides*** during studies of the amoeba fauna to the Godavari basin at Gangapur and Vaijapur .These two species of Amoeba are fist recorded in Maharashtra.Morphological investigation using live observation at the light microscopical level indicated that ***Balamuthia mandrillaris*** is a free living heterotrophic amoeba consisting of a standard complement of organelles surrounded by a three layered cell wall and with an abnormally large vesicular nucleus.***Vannella miroides*** a fan like structure, & locomotive form is flattened .Additional data and details of the morphology of both the species were described and illustrated.

INTRODUCTION

There are many species of free-living amoeba, but only four genera have been causally associated with diseasein humans.., *Balamuthia mandrillaris is one of them.*

Balamuthia is a free-living amoeba found in the environment. It was first identified in 1986 in a specimen from the brain of a baboon that died in the San Diego Wild Animal Park. Since then, approximately 200 cases of *Balamuthia* disease have been reported worldwide; approximately 70 of those cases have been reported in the United States.

Balamuthia can cause *Balamuthia* granulomatous amebic encephalitis (GAE), a serious brain infection that is usually fatal. Balamuthia GAE occurs when the *Balamuthia* amebae infect the body, possibly through skin wounds and cuts, or when dust containing *Balamuthia* is breathed in through the nose or mouth.

The genus *Vannella* Bovee, 1965 is one of the most common genera in marine and freshwater habitats (Page, 1980; 1983; 1988; Ariza *et al*., 1989; Smirnov and Goodkov, 1995).

However, so far no *Vannella* species isolated from soil have been described. All members of this genus belong to the "fan-shaped" morphotype (Smirnov and Goodkov, 1999). They have the same general appearance in locomotion and are rather polymorphic in size and organisation of the floating form. Currently the genus includes 11 clearly described freshwater and marine species (Page, 1983, 1991), none of which is cyst-forming.

During the research on amoebae in Godavari basin at Gangapur and Vaijapur these two *Balamuthia* and *Vannella* species were found. Their morphology was studied at the light microscopical level with special reference to the locomotive forms of both species.

MATERIAL AND METHOD

- Water samples were collected along with submerged plants, decaying leaves or any other detritus material.
- Water samples were collected in morning time as the temperature affects the abundance of protozoa and they found more abundant in low temperature.
- These samples brought to laboratory and examine under microscope for the further study and observation.

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- Protozoa are usually swim rapidly in water and hence unable to identify .To immobilize those 10% methyl cellulose was add to the water drop on slide. This slow movement of organism without immediate death or bursting.

RESULT AND DISCUSSION

Balamuthia mandrillaris

Description of Species

Balamuthia mandrillaris is a free-living, heterotrophic amoeba, consisting of a standard complement of organelles surrounded by a three-layered cell wall, and with an abnormally large, vesicularnucleus. On average, a *Balamuthia* trophozoite is approximately 30–120 µm in diameter. The cysts fall approximately in this range as well.

Balamuthia's life cycle, like *Acanthamoeba*, consists of a cystic stage and a trophozoite stage, both of which are infectious. The trophozoite is pleomorphic and uninucleated, but binucleate forms are occasionally seen. Cysts are also uninucleated possessing three walls.

Classification-
Domain-Eukaryota
Kigdom -Amoeboza
Class-Lobosea
Order-Centramoebidia
Family-Balamuthidae
Genus-Balamuthia
Species-B.mandrilla

Vannella miroides

Description of Species

Fan-shaped, crescent-shaped or semi-circular amoeba. Frontal hyaloplasm consists from half to two thirds of the body, usually it forms an anterior hyaline crescent. Frontal hyaloplasm smooth. Usually differentiated uroid, but when the cell is elongate modulate uroid may appear Breadth of the locomotive form normally greater than length. Single rounded vesicular nucleus one contractile vacuole. No cytoplasmic crystals. No cysts found. Length in locomotion 23–35 µm (average 29 µm); breadth 23–40 µm (average 34 µm), L/B ratio 0.65–1.1. Vesicular nucleus 3.5–5 µm in diameter with a single centralnucleolus.

Classification-
Domain-Eukaryota
Kigdom –Amoebozoa
Phylum-Flabellinea
Class-Vannellida
Family- Vannellidae
Genus-Vannella
Species–V. miroides

CONCLUSION

In protozoology lab research work is going on *free living protozoa since forty years but amoebae does not found, this is the first time Balamuthia* and *vannella* amoebae species reported in Maharashtra Godavari basin at Gangapur and Vaijapur respectively.

Fig.1 Trophozoite of Balamuthia mandrillaris

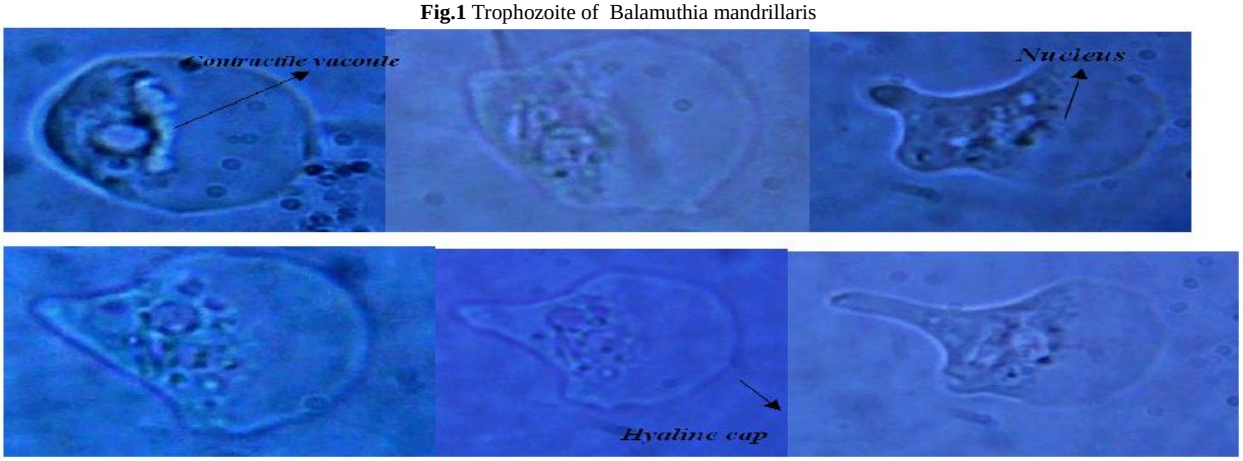

Fig 2 Vannella miroides (Locomotive form)

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