

TWO SPECIES OF GENUS: *TETRAHYMENA* (*T. PYRIFORMIS* AND *T. PARAVORAX*) FOUND IN AURANGABAD REGION, MAHARASHTRA STATE, INDIA

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ABSTRACT

Tetrahymena is a non-pathogenic free living ciliated protozoa, which has been the best known and most 'plastic' of a "pivotal group" of ciliates. In the present investigation, author has identified and re-described two species of genus *Tetrahymena*, *T. pyriformis* and *T. paravorax*. It is first time reported from Marathwada region and also from Maharashtra.

KEYWORDS: ciliated protozoa, *Tetrahymena*, *T. pyriformis*, *T. paravorax*

INTRODUCTION

Tetrahymena are free-living freshwater ciliate protozoa. *Tetrahymena* species used as model organisms in biomedical research are *T. thermophila* and *T. pyriformis* (David and James, 2000). In *Tetrahymena*, A widely studied on ciliated protozoans, several morphologically different filamentous structures have been identified (Sattler and Staehelin, 1979; Jerka-Dziadosz, 1981) and characterized biochemically (Numata, *et al.*, 1980; Williams *et al.*, 1979). The present study included the identification and re-description of two species of genus *Tetrahymena*, namely *T. pyriformis* and *T. paravorax*.

MATERIALS AND METHODS

The water samples were collected from different water bodies of Aurangabad region. The observations on ciliates were done after their movements were slowed down with methyl cellulose. For fixation Schaudinn's fluid was used and permanent preparation was made by Dry silver impregnation (Klein, 1928, 1958) and tungsto phosphoric haematoxyline method.

RESULTS AND DISCUSSION

Description of the Genus:

Tetrahymena are non-pathogenic free-living ciliate protozoa. They are common in fresh-water. *Tetrahymena* species used as model organisms in biomedical researchers are *T. pyriformis* and *T. thermophila*. *Tetrahymena* is an oligohymenophoran ciliate and a very common freshwater ciliate. It is usually used to demonstrate the levels of organization and cortical features that are characteristic of the ciliate taxa. The figures below are of a silver nitrate-stained specimen of *Tetrahymena*. The cilia themselves do not stain, but their location can be identified because the region between the cilium and the kinetosome takes up silver ions. Collectively, all the stained kinetosomes in a row represent a kinety although the other structures in a kinety have not stained. The kineties of the somatic region of the cell constitute the kinetome and the polykineties of the oral area constitute the oral apparatus.

T. Pyriformis Ehrenberg (1830)

Description of the species:

T. pyriformis was first reported by Ehrenberg (1830) other research workers who had also described the same sp. Kidder (1941); Loefer *et al.* (1952); Gross (1955); Elliot and Hayes (1955); Roth and Munick (1961); Ray (1956), Elliot and Clark (1956, 1958); Nanney (1959); Kudo (1966) and Carey and Curds (1992).

T. pyriformis is a pyriform ciliate. Body is bluntly pointed at posterior end whereas rounded in posterior end. Body measures 42 to 65 μm in length and 26 to 35 μm in width. Body is covered by uniform coat of ciliation which are almost of equal in length. Cytostome or oral apparatus is located on the anterior end of ventral side of the body. *Cytostome* is pyriform in shape which possess an undulating membrane on the right side and an adoral zone of three membranelles on the left (*Tetrahymenal complex*). There are 12 to 17 ciliary meridians. The primary meridian is a line of kineties with basal bodies while the secondary meridian is the next meridian over with no kineties (*Alveolar boundaries*). There is a single macronucleus which is spherical, medially situated and is usually accompanied by single micronucleus. There is single contractile vacuole situated near the posterior end of body.

Corliss (1954) reported the difference between *T. pyriformis* and *T. paravorax*. He stated that there is *T. pyriformis* is without caudal cilium where as *T. paravorax* bears a caudal cilium *T. pyriformis* is of pyriform shape where as *T. paravorax* is oval to reniform with anterior beak (rostrum) in shape

T. pyriformis is cosmopolitan in distribution, found in freshwater containing plant and decayed materials in which bacterial decomposition has commenced, particularly in water which is polluted with manure and sewage drains. Species of *Tetrahymena* however are apparently parasitic and free living at different times.

***Tetrahymena Paravorax* (Corliss, 1957)**

Description of the species:

Tetrahymena paravorax was first reported by (Corliss 1957). *Tetrahymena paravorax* is a third member of the *patula* complex. Outline shape of the body is oval to reniform with anterior beak or rostrum. It measure 52 to 72 μm and 28 to 44 μm in width. There are twenty two to thirty ciliary rows present. Body ciliation complete with caudal cilium. Caudal cilium is thicker than ordinary somatic cilium and at least twice their length. The PBB (Polar basal body) complex is also clear (Chatton –Lwoff 1929) Microstome stage common and elongate but not tailed. No reproductive cyst known. There are only two POMs (postoral meridians) in material studied by Corliss (1978).

There is a single macronucleus which is spherical, accompanied by a single micronucleus. Macronucleus measure 3 to 6 μm in diameter. Corliss (1978) reported a variable number, one to four, unusual for species of *Tetrahymena*. Dragesco and Njine (1971) mentioned only one with a diameter of 3 to 5 μm . Elliot and Hayes (1955) stated that there was usually one micronucleus or rarely two. He also reported existence of a higher number of chromosomes that known for *Tetrahymena pyriformis*.

Tetrahymena paravorax is cosmopolitan in distribution found in freshwater containing plant and decayed materials in which bacterial decomposition has commenced, particularly in water which is polluted with manure and sewage drains.

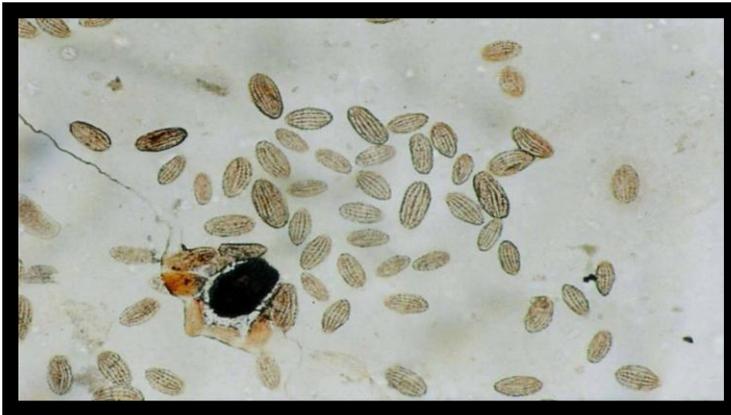


Figure-1. *T. pyriformis*

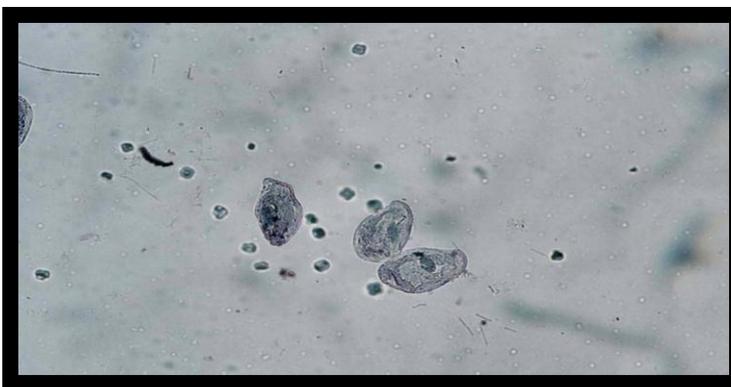


Figure-2. *T. paravorax*

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