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BLOOD PARASITES FROM FRESHWATER FISH, GARRYA MULLYA

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ABSTRACT

The present study is undertaken to study the morphometrics of flagellated blood parasites found in freshwater fish *Garrya mullya*. Three blood parasites were isolated from blood and gill tissues of *Garrya mullya* fish in the Washim region of Maharashtra, India. The blood parasites reported and morphologically described are *Trypanoplasma vidyai* (Wahul, 1985), *Trypanoplasma krishnamurthy*i (Wahul, 1985) and *Trypanoplasma cavacius* (Wahul, 1985).

KEYWORDS :*parasites, Blood, flagellates, Trypanoplasma, Washim.*

INTRODUCTION

Fish are poikilothermic animals that are subject to changes in the environment in which they live. Piscine blood parasites belongs primarily to the genera *Trypanosoma Gruby* 1843 and *Trypanoplasma Laveran* and *Mesnil,* 1901(Mastigophora). Blood parasites of the genus *Trypanosoma* and *Trypanoplasma* have been reported earlier from various parts of world. Mandal (1979) and Joshi (1982) were the first in India who reported the members of the genus *Trypanoplasma*. After that Wahul (1985), Gupta and Gupta (1987, 1988), have reported many species of *Trypanoplasma* from India. The first Trypanosome was discovered from the blood of Salmo by Valentin (1841). The parasite has been reported from different parts of the globe, Qadri (1962), Mandal, (1975), Joshi (1979), Gupta (1986), Joshi and Sharma (1992), Gupta et al.,(1998), Nandi *et al.* (2002) and Gupta *et al.*, (2006) reported the presence of parasites from the blood of Indian fishes time to time.

During the present research work, three known species of *blood parasites* viz. *Trypanoplasma vidyai* (Wahul, 1985), T*rypanoplasma krishnamurthyi* (Wahul, 1985) and *Trypanoplasma cavacii* (Wahul, 1985) were reported from freshwater fish *Garrya mullya*. The present work is the first record of the blood parasites from *Garrya mullya* fish in Washim region of Maharashtra state of India.

•MATERIALS AND METHODS

The fishes for the present study were collected during January 2009 to July 2013 from the various water reservoirs in Washim region of Maharashtra. The live fishes were collected and placed into well aerated water in plastic bag and brought to the laboratory for further investigation. In the laboratory, the length and weight of fishes sampled were measured and Blood was collected directly from the heart with plastic syring rinsed with EDTA solution and examined immediately for the presence of parasites by using Hanging drop preparation. The smears were stained with Giemsa Stain and observed under Olympus phase-contrast microscope at 100x magnification. The photographs of the slide taken with the digital camera. Camera lucida drawings were made to show more details.

RESULT AND DISCUSSION

The various blood parasites reported during the present study are described below:

1.1. *Trypanoplasma vidyai* (Wahul, 1985)

Taxonomic summary:

Type host : *Garrya mullya*
Parasite : *Trypanoplasma vidyai* (Wahul, 1985)
Type locality : Ekburgi dam
Site of infection : Gills, blood
Holotype : In slide no. TP 02/2013, deposited in P.G. and Research department of Zoology, R.A. College, Washim Dist. Washim Maharashtra.

Morphometrix

Length of cell body : 17.2 µm
Width of cell body : 9.4 µm
Length of nucleus : 5.1 µm
Width of nucleus : 2.3 µm
Length of anterior flagellum : 21.6 µm
Length of posterior flagellum : 16.4 µm

Description:

1.Body of this blood parasite is short and stumpy.
2.Body structure is broad with a convex dorsal margin and a straight or curved concave margin.
3.Anterior end of body is broad and rounded.
4.Posterior end of body is bluntly conical.
5.The cytoplasm is vacuolated.
6.The nucleus is spherical to ovoid and lies along dorsal margin at anterior side of the body.
7.The Kinetoplast is short, broad and variable in shape.
8.Two delicate flagella arise from the kinetosomes which are placed just anterior to the Kinetoplast.

9.The anterior flagellum is relatively long, being one and one third times body length.
10.The posterior flagellum is running along or close to the dorsal side of the body.

Reported By
Wahul (1985) in Mystus seenghala fish from Maharashtra.

1.2. *Trypanoplasma krishnamurthyi (Wahul, 1985)*
Taxonomic summary:

Type host	: *Garrya mullya*
Parasite	: *Trypanoplasma krishnamurthyi* (Wahul, 1985)
Type locality	: Ekburgi dam
Site of infection	: Gills, blood
Holotype	: In slide no. TP 03/2013, deposited in P.G. and Research department of Zoology, R.A. College, Washim Dist. Washim Maharashtra.

Morphometrix:

Length of cell body	: 23.4 µm
Width of cell body	: 12.1 µm
Length of nucleus	: 7.2 µm
Width of nucleus	: 2.7 µm
Length of anterior flagellum	: 24.6 µm
Length of posterior flagellum	: 21.4 µm

Description:
1.Body is short, broad and irregular in shape.
2.The cytoplasm is vacuolated and granular.
3.Cytoplasm is not homogenous as exhibiting various patterns of granulation in different regions.
4.The nucleus is spherical to ovoid and lies along dorsal side of the body.
5.The Kinetoplast is absent, characteristic feature of this parasite.
6.Two delicate flagella arise from the kinetosomes which are distinct and rod-like.
7.The anterior flagellum is relatively long having length equal to body length.
8.The posterior flagellum forming S shape and runs along whole length on dorsal side of the body.

Reported by
Wahul (1985) in *Mystus cavacius* fish from Maharashtra.

1.3. Trypanoplasma cavacii (Wahul, 1985)
Taxonomic summary:

Type host	: Garrya mullya
Parasite	: Trypanoplasma cavacii (Wahul, 1985)
Type locality	: Ekburgi dam
Site of infection	: Gills, blood
Holotype	: In slide no. TP 04/2013, deposited in P.G. and Research department of Zoology, R.A. College, Washim Dist. Washim Maharashtra.

Morphometrix:

Length of cell body : 16.4 µm
Width of cell body : 7.2 µm
Length of nucleus : 5.2 µm
Width of nucleus : 1.8 µm
Length of anterior flagellum : 15.2 µm
Length of posterior flagellum: 14.4 µm

Description:

1.Body of this blood parasite is short, broad and almost straight in shape.
2.Body structure is broad with a convex dorsal margin and a straight or curved concave margin.
3.The cytoplasm is vacuolated and granular.
4.Cytoplasm is not homogenous as exhibiting various patterns of granulation in different regions
5.The nucleus is spherical to ovoid and lies along dorsal side of the body.
6.The Kinetoplast is relatively short
7.Two delicate flagella arise from the kinetosomes which are distinct and rod-like.
8.The anterior flagellum is relatively long having length equal to body length.
9.The posterior flagellum forming S shape and runs along whole length on dorsal side of the body.

Reported by-

Wahul (1985) in *Mystus cavacius* fish from Maharashtra.

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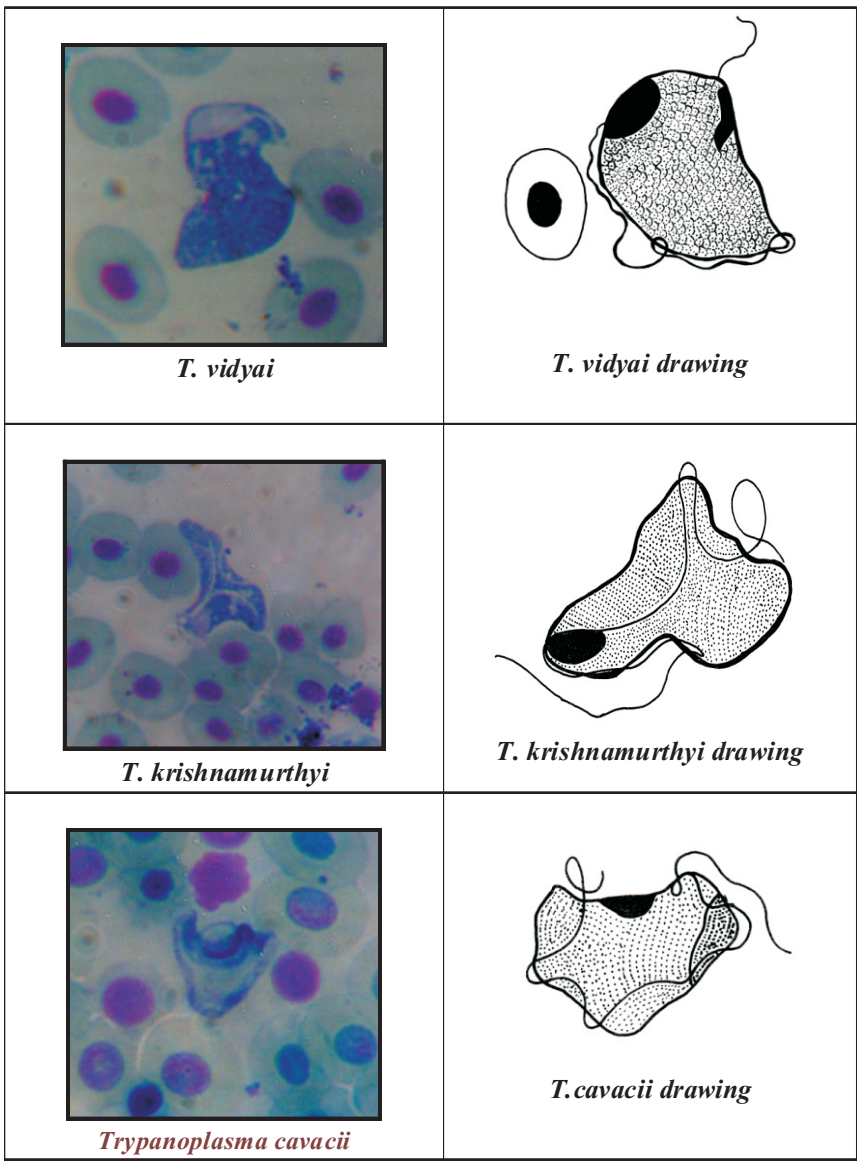

PHOTO PLATE NO. 1: PHOTOGRAPHS OF BLOOD PARASITES ALONG WITH DRAWINGS.