

***Myxobolus platanus* n. sp. (Myxosporea, Myxobolidae), a parasite of *Mugil platanus* Günther, 1880 (Osteichthyes, Mugilidae) from Lagoa dos Patos, RS, Brazil**

[*Myxobolus platanus* n. sp. (Myxosporea, Myxobolidae), parasita de *Mugil platanus* Günther, 1880 (Osteichthyes, Mugilidae) da Lagoa dos Patos, RS]

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ABSTRACT

Myxobolus platanus n. sp. infecting the spleen of *Mugil platanus* Günther, 1880 (Osteichthyes, Mugilidae) from Lagoa dos Patos, Brazil is described. The parasites formed round or slightly oval whitish plasmodia (about 0.05-0.1mm in diameter) on the surface of the organ. The spores were round in frontal view and oval in lateral view, 10.7µm (10-11) long, 10.8µm (10-11) wide and 5µm thick, and presented four sutural marks along the sutural edge. The polar capsules, equal in size, were prominent, surpassing the mid-length of the spore, and were oval with the posterior extremity rounded, and converging with their anteriorly tapered ends. They were 7.7µm (7-8) long and 3.8µm (3.5-4) wide. A small intercapsular appendix was present. The polar filament formed five to six coils obliquely placed to the axis of the polar capsule. No mucous envelope or distinct iodophilous vacuole were found.

Keywords: Myxozoa, Myxosporea, *Myxobolus platanus* n. sp., *Mugil platanus*, Lagoa dos Patos, Brazil

RESUMO

Descreve-se *Myxobolus platanus* n. sp. infectando o baço de *Mugil platanus* Günther, 1880 (Osteichthyes, Mugilidae) da Lagoa dos Patos, Brasil. Os parasitas formavam plasmódios brancos redondos ou ligeiramente ovais (diâmetro de cerca de 0,05-0,1mm) à superfície do órgão. Os esporos eram circulares em observação frontal e ovais em observação lateral, medindo, em média, 10,7µm (10-11) de comprimento, 10,8µm (10-11) de largura e 5µm de espessura, e tinham quatro marcas suturais ao longo da linha de sutura. As cápsulas polares eram grandes e do mesmo tamanho ultrapassando a zona média do esporo. Eram de forma oval, tendo a extremidade posterior arredondada, e convergiam pelas extremidades anteriores afiladas, medindo 7,7µm (7-8) de comprimento por 3,8µm (3,5-4) de largura. Um pequeno apêndice intercapsular estava presente. O filamento polar formava cinco a seis dobras colocadas obliquamente em relação ao eixo da cápsula. Não havia envelope mucígeno nem vacúolo iodofílico.

Palavras-chave: Myxozoa, Myxosporea, *Myxobolus platanus* n. sp., *Mugil platanus*, Lagoa dos Patos, Brasil

INTRODUCTION

Myxobolus spp. are the most common Myxozoan fish parasites having a wide geographical distribution and comprising a great number of species infecting both marine and freshwater fish

(Landsberg and Lom, 1991; Lom and Dyková, 1992; Eiras et al., 2005).

For *Mugil* spp. there are 26 species of *Myxobolus*, most of them (18) infecting *M. cephalus* from different geographical areas. These parasites can be pathogenic and this may

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be particularly relevant for the regions where mullets are important for aquaculture, as in Israel, Italy, Egypt and Tunisia (Bahari and Marques, 1996).

The Lagoa dos Patos, in Rio Grande do Sul State, Southern Brazil, is the biggest freshwater lagoon in the world. It is about 240km in length, and up to 48km in width. A wide sand bar separates it from the Atlantic Ocean. The lagoon is an important fishing ground and the fish species diversity is quite high (Haimovici et al., 1997; Vieira and Castello 1997). *Mugil platanus* is one of the most important fish species of the Lagoa dos Patos. However, its parasitology is practically unknown. Taking into account the importance of *Mugil* spp. for fish farming, the study of the parasites of feral specimens is highly important.

Among the 744 species of *Myxobolus*, nearly all described so far (Eiras et al., 2005), only 20 species were described from Brazilian hosts, while Brazilian fishes represent about 24% of all fish species (Cellere et al., 2002). The objective of this study was to describe *Myxobolus platanus* n. sp., a parasite of *Mugil platanus* Günther, 1880 (Osteichthyes, Mugilidae) from the Lagoa dos Patos.

MATERIALS AND METHODS

Forty-six specimens of *Mugil platanus* (total length: 19.9-35.5 cm) were captured at the Lagoa

dos Patos, Rio Grande do Sul State, Brazil. Fish were brought alive to the laboratory, and all the organs were carefully inspected for parasites. Spore measurements were made from 30 fresh spores. For observation of the presence of iodophilous vacuole, fresh spores were treated with Lugol's iodine solution. Spores were also stained with India ink for revealing any mucous envelope (Lom and Vávra, 1961).

RESULTS AND DISCUSSION

Four out of 46 *M. platanus* (total length: 22.1-34.6cm) had the spleen infected with *Myxobolus*. The parasites formed round or slightly oval whitish plasmodia (about 0.05-0.1mm in diameter) on the surface of the organ.

The spores (Fig. 1, 3) were round in frontal view and oval in lateral view. The spore valves were relatively thin, symmetrical and smooth. Spores were 10.7µm (10-11) long, 10.8µm (10-11) wide and 5µm thick and presented 4 sutural marks along the sutural edge. The polar capsules, equal in size, were prominent, surpassing the mid-length of the spore. They were oval with the posterior extremity rounded, and tapering anterior end. They were 7.7µm (7-8) long, 3.8µm (3.5-4) wide and the polar filament formed five to six coils obliquely placed to the axis of the polar capsule. A small intercapsular appendix was present. There was no mucous envelope or distinct iodophilous vacuole.

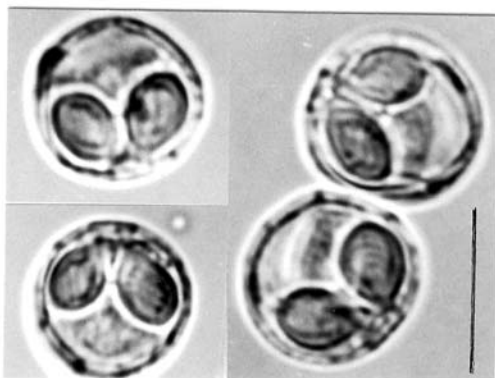


Figure 1. *Myxobolus platanus* n. sp. spores of *Mugil platanus*. Bar = 10µm.

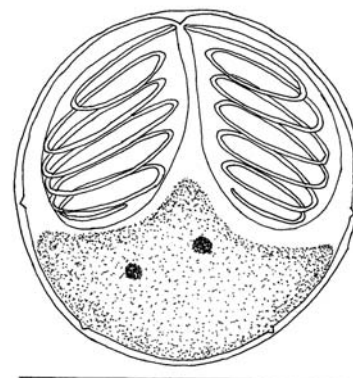


Figure 2. Schematic drawing of *Myxobolus platanus* n. sp. spore in frontal view. Bar = 10µm.

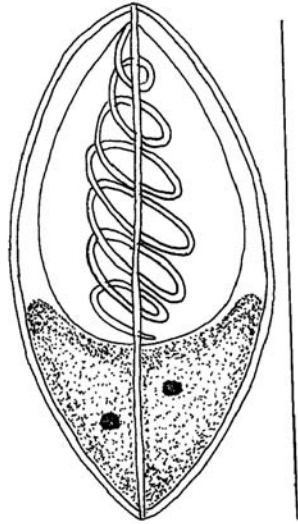


Figure 3. Schematic drawing of *Myxobolus platanus* n. sp. spore in lateral view. Bar= 10 μ m.

The specific name derives from the name of the host species.

Specimens deposition: the syntypes are deposited at the Section of Animal Pathology, Department of Zoology and Anthropology from the Faculty of Sciences of Porto, Portugal, and at the Museum of Natural History from the Faculty of Sciences of Porto, Portugal.

The specimens were first compared with all the *Myxobolus* species described for *Mugil* spp. (*Mugil cephalus*, *M. soiyu*, *M. chelo*, *M. waigensis*, *M. saliens*, *M. tade* and *M. curema*) comprising a total of 26 species.

The *Myxobolus* species which have round or almost round spores are *M. chiungchowensis* (Chen, 1998), *M. parenzani* (*Myxobolus branchialis* Parenzan, 1966) (Landsberg and Lom, 1991), *M. mugilis* (Negm-Eldin et al., 1999), *M. hani* (Faye et al., 1999), *M. hannensis* (Fall et al., 1997), *M. goreensis* (Fall et al., 1997), and *M. bizerti* (Bahari and Marques, 1996).

M. mugilis, *M. parenzani* and *M. hani* could not be identified with the studied specimens once the spores were much smaller (length x width

dimensions: 7.4x7.3 μ m, 5.4x5.4 μ m and 7-9x 7.8 μ m, respectively). On the contrary, *M. hannensis*, *M. goreensis* and *M. bizerti* have larger spores (13-15x13-15 μ m, 10-13x10-13 μ m and 14-14.5x14-14.5 μ m, respectively) besides being different also in other characteristics as the length and width of the polar capsules or the number of coils of the polar filament. *M. chiungchowensis* has spores slightly longer compared with the studied specimens (10.2-11.8 x 9.6-11 μ m), the thickness of the spore is higher (6-6.6 μ m), the polar capsules are smaller and the number of coils of the polar filament is higher.

The other species infecting *Mugil* spp. could not be identified with the studied specimens because they had not round spores and were different in other features as the size of the spore, the number of coils of the polar filament, or the size of the polar capsules.

The present material was also compared with the full characteristics of 744 species of *Myxobolus* representing nearly all the species described so far (Eiras et al., 2005). Concerning the forms with rounded spores, the most similar species are *M. bartai* from the body wall muscles of *Notropis cornutus* (Salim and Desser, 2000), *M. lanfyongi* infecting the wall of the intestine of *Spinibarbichthys denticulatus* (Ha, 1971), *M. nephroides* parasitizing the kidney, spleen and gall-bladder of *Hypophthalmichthys molitrix* (Li and Nie, 1973, quoted from Chen and Ma, 1998), and *M. paralintoni* described from the heart of *Lepomis gibbosus* (Li and Desser, 1985).

M. bartai, *M. nephroides* and *M. paralintoni* despite having rounded spores with dimensions similar to the spores found in the present study, are quite different in having unequal polar capsules. Besides, the polar capsules are smaller for *M. bartai* and *M. nephroides*, and larger in the case of *M. paralintoni*. *M. lanfyongi* has round spores slightly larger than the present material (10.8-11.7 μ m x 10.8-11.7 μ m) but the polar capsules are much more smaller (4.5-5.4 μ m x 2.7-3.6 μ m).

Thus, none of the species of *Myxobolus* described so far fits to the characteristics of the studied material. Therefore it may be considered as a new species, *Myxobolus platanus* n. sp.

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