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ON THE OCCURRENCE OF MICROSPORIDIAN INFECTIONS IN THE LIVER OF FOUR SPARID FISHES SPECIES FROM SENEGAL

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Abstract,

Four species of Sparid fish, *Dentex canariensis*, *Dentex maroccanus*, *Sparus caeruleostictus* and *Sparus pagrus pagrus* from Senegalese coasts were infected by four distinct microsporidian species assigned to the collective group *Microsporidium* and named *Microsporidium maroccani* sp. n., *Microsporidium canariensis* sp. n., *Microsporidioum caeruleosticti* sp. n. and *Microsporidium pagri* sp. n. These microsporidia induced formation of xenomas within the liver. The prevalences observed were low.

Introduction

The sparid fishes constitute one of the most important food resources of Senegal and are also an important export commodity. In this paper we report hepatic infections due to microsporidian parasites in *Dentex canariensis, Dentex maroccanus, Sparus caeruleostictus* and *Sparus pagrus pagrus*.

Materials and methods

The fishes, *Dentex canariensis*, *Dentex maroccanus, Sparus caeruleostictus* and *Sparus pagrus pagrus* were collected from the coasts of Senegal (West Africa) and examined for the presence of microsporidian parasites. Infected tissues were studied by light and electron microscopy (Faye *et al.*, 1991).

Results

All microsporidia found formed whitish and rounded xenomas in the liver of their hosts. Presporal stages and sporophorous vesicles were not observed within these xenomas.

In *Dentex canariensis*, 9 of 45 specimens examined (20%) were found to be parasitized. The microsporidian spores (Figs 1 &3) were ovoid, uninucleate and measured 3.2± 0.14 (2.5-4) x 1.8-0.38 (1.5-2.50)µm. Their polar tube was isofilar and had 7 to 9 coils. The polaroplast was lamellar and vesicular. The xenomas were surrounded by a wall consisting of layers of fibroblasts (Fig. 2).

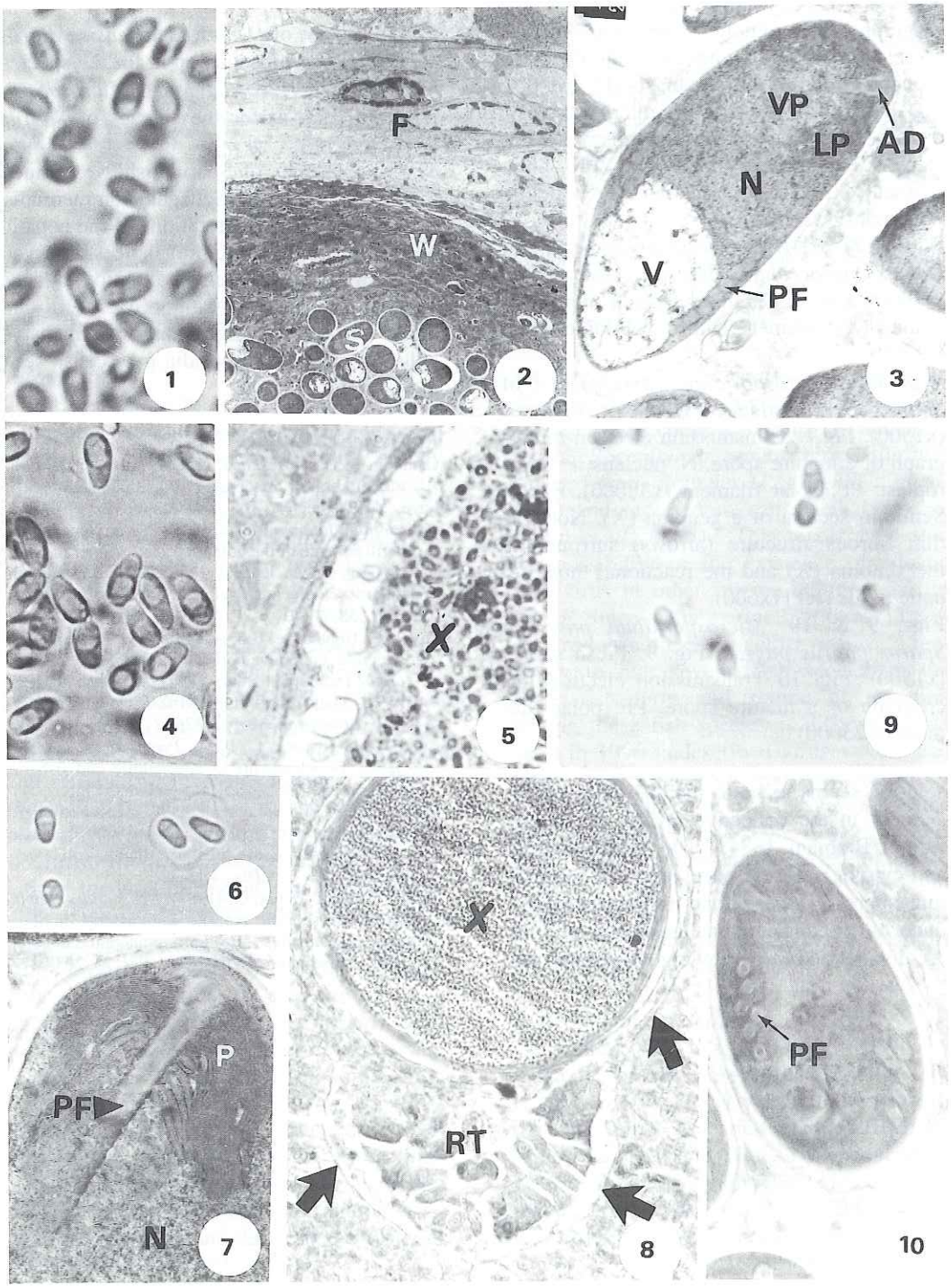
In *Dentex maroccanus* the microsporidian xenomas (Fig. 5) contained ovoid spores (Fig. 4) measuring 4.6±0.18 (3.5-5) x 2.40±0.27 (2-3) µm. The prevalence was 4.1% (4/97).

Of the 151 *Sparus caeruleostictus* examined, 22 (14.5 %) were parasitized by a microsporidium which formed ovoid and uninucleate spores (Figs 6 & 7) measuring 3.9±0.29 (2.5-3.5) x 1.85±0.36 (1.5-2.5) µm. Their polaroplast was composed of two lamellar parts (Fig. 7). The polar tube was isofilar with 6-8 coils. The xenoma induced a host tissue reaction; a thin fibrous structure surrounded the xenoma and the reactional host hepatic tissue (Fig. 8).

; Faye et al., In *Sparus pagrus pagrus* the microsporidium formed ovoid and uninucleate spores (Figs 9 & 10) measuring 3.1±0.31 (2.5-3.5) x 1.80 (1.5-2) µm. The polar filament was isofilar with 6-7 coils. The polaroplast was lamellar. Two (5.2 %) of the 38 specimens examined were infected by this microsporidium.

Discussion

In fish, numerous microsporidia belonging to fifteen genera and to the collective group *Microsporidium* Balbiani, 1884 were described (Morrison & Sprague, 1981; Canning & Lom, 1986; Sakiti & Bouix, 1987; Faye *et al.*, 1991, 1996; Lom & Dyková, 1992). It is impossible to assign the four microsporidia presented here to an establihed genus because their presporal stages were not found in ultrathin sections. The best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Figs. 1-3 *Microsporidium canariensis* of *Dentex canariensis*. Fig. 1 Fresh spores (x2500). Fig. 2. Transmission electron micrograph of a xenoma containing mature spores (S) and showing the wall (w) surrounded by layers of fibroblasts (F) (x3500). Fig. 3. Transmission electron micrograph of a mature spore. AD: anchoring disc; N: nucleus; LP: lamellar polaroplast; PF: polar filament; V: posterior vacuole; VP: vesicular polaroplast (x26000).

Figs. 4 & 5. *Microsporidium maroccani* of *Dentex maroccanus*. Fig. 4. Fresh spores (x2000). Fig. 5: Semithin section of the xenoma (X) stained with Toluidine blue (x1200).

Figs. 6-8. *Microsporidium caeruleosticti* of *Sparus caeruleostictus*. Fig. 6: Fresh spores (x1500). Fig.7. Transmission electron micrograph of a mature spore. N: nucleus; P: polaroplast; PF: polar filament (x38000). Fig. 8. Semithin section of a xenoma (X). Note the thin fibrous structure (arrows) surrounding the xenoma (X) and the reactiona1 host hepatic tissue (RT) (x600).

Figs. 9 & 10. *Microsporidium pagri* of *Sparus pagrus pagrus*. Fig. 9. Fresh spores (x1500). Fig. 10 Transmission electron micrograph of a mature spore. PF: polar filament (x 23000).

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solution seems to be to include them provisionally in the collective group, Microsporidium Balbiani 1884. The morphological and cytological differences between the mature spores of these four microsporidia induce us to consider that these four species are distinct and the following names are provisionnally proposed : *Microsporidium maroccani* sp. n. for the species of *Dentex maroccanus*, *Microsporidium canariensis* sp. n. for the species of *Dentex canariensis, Microsporidium caeruleosticti* sp n. for the species of *Sparus caeruleostictus* and *Microsporidium pagri* sp. n. for the species of *Sparus pagrus pagrus*.

The four species of Sparid fishes examined in this work are, in Senegal, commercially exploited fish. The alterations of the hepatic tissue and the infection prevalences observed were not severe but we call attention to these parasites because it cannot excluded that under certain conditions, such as intensive culture, these microsporidia may cause serious damage

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