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## Pathological Evaluation to Some Protozoa Infections among Freshwater Fish in Egyptian Aquaculture

SALAH ALY<sup>1</sup>, SADDIK FAYEK<sup>2</sup>, OMAR AMER<sup>2</sup>, AHMED EL-ASHRAM<sup>3</sup>, GEHAN SHAGAR<sup>3</sup>

<sup>1</sup> Worldfish Centre, Fish Health, Egypt

<sup>2</sup> Zagazig University, Parasitology, Egypt

<sup>3</sup> Central Lab for Aquaculture Research, Sharkia, Egypt

### Abstract

1088 fish (*Oreochromis niloticus*, *O. aureus*, *Tilapia zillii*, *Clarias gariepinus* and *Cyprinus carpio*) were examined from Abassa farms, Egypt, for internal protozoa during 2001–2003. 67% of fish were infected with enteric protozoa. The infection rate among *O. niloticus*, *O. aureus*, *T. zillii*, *C. gariepinus* and *C. carpio* was 62, 57, 80, 58 and 50%, respectively. The highest infection rate was seen in spring (81%), followed by summer (72%), autumn (60%) and winter (48%).

*Eimeria aurati* (35.3%), *E. rutili* (4%), *E. sp.* (11%), *Goussia sp.* I (34.2%), *G. sp.* II (2.6%), *Cryptosporidium nesorum* (47.2%), *Myxobolus nkolyaensis* (2.2%), *M. carassii* (2.2%), *M. pharyngeus* (9.2%), *Mixidium lieberkuehni* (1.1%), *Ceratomyxia drepanosettae* (1.8%), *Entamoeba molae* (7%), *Hexamita sp.* (7%) and *Trypanosoma tilapiae* (0.7%) were recorded. The incidence of protozoa varied with fish species.

Histopathological results: *E. rutili* induced tubular nephrosis with developmental stages and activation of melanomacrophages. *Goussia sp.* was recovered from the gas-bladder with no lesion. *Myxobolus* induced intestinal mucinous degeneration, melanomacrophages and leukocytes in *Lamina propria*. The lumen contained spores and sloughed epithelium. *C. drepanosettae* induced severe enteritis with focal sloughing, the lumen contained protozoan tissue debris and leukocytes. *E. molae* and *Hexamita* infections induced mild intestinal degeneration with mononuclear and eosinophilic cells. *T. tilapiae* induced vascular lesions, hepato-cellular and hematopoietic alterations. Successful transmission of *Cryptosporidium parvum* and *Balantidium coli* was experimentally done from cattle to *C. gariepinus*. *C. parvum* infection induced intestinal epithelial desquamation with congestion and leukocytic infiltration. Merogony and gamogony were seen attached to intestinal brush border. With *B. coli* infection, trophozoites and cysts were seen in intestinal lumen with minimal mononuclears.

We concluded that protozoa infections are common among freshwater fish, especially in spring where *Eimeria sp.* was the most prevalent infection. The infection was high in *T. zillii* and low in *C. carpio*. Transmission of *C. parvum* and *B. coli* from mammals to fish are possible. These protozoa induced various pathological changes that could interfere with the growth and/or survival of the infected fish. Therefore, protozoa infections in fish should be controlled.

**Keywords:** Aquaculture, carp, catfish, Egypt, fish, freshwater, histopathology, prevalence, protozoa, season, tilapia