

Seasonal distribution of protozoan parasite infections in rainbow trout (*Oncorhynchus mykiss*) farms in the Eastern Black Sea of Turkey

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Abstract

In the present study a total of 8850 rainbow trout (*Oncorhynchus mykiss*) fry (0.2-10 g) and juveniles (30-80 g) were sampled monthly from 15 farms in the Eastern Black Sea region of Turkey during a one-year period. The parasites *Trichodina* sp., *Chilodonella* sp., *Ichthyobodo* sp., *Ichthyophthirius multifiliis* and *Spironucleus salmonicida* were recorded from all trout farms. Infections with these protozoa are responsible for the high mortality (30% to 50%) rates found in rainbow trout farms in this region. Infested trout displayed exophthalmia, skin discoloration and abdominal distension. The seasonal prevalence of the infections varied between 5.77±1.46 and 37.72±4.41% for *Trichodina* sp., 5.63±1.36 and 38.52±12.27% for *Chilodonella* sp., 5.77±1.46 and 37.72±4.41% for *Ichthyobodo* sp., 5.34±1.37 and 49.96±7.91% for *I. multifiliis* and 8.02±4.30 and 38.52±12.27% for *S. salmonicida*, respectively. This is the first study to provide seasonal data on the presence and intensity of five protozoan parasites in cultured rainbow trout in Turkey.

Introduction

The availability of suitable fresh water resources in Turkey has permitted the growth of commercial rainbow trout aquaculture with an annual production of 101 761 tonnes in 2017 (TUIK, 2018). Protozoan parasites represent one of the most important groups of pathogens which negatively affect the health of cultured and feral fish in Turkey and decrease their market value. In the last decade, there has been a tremendous increase in protozoan infestation restricting rainbow trout production. It has been determined that protozoan parasitic infestations affected sustainable production leading to 70% mortality and major economic losses, if not

diagnosed and/or treated at the early stage. The most important protozoan infections in rainbow trout (*Oncorhynchus mykiss*) farms are *Chilodonella* sp., *Ichthyobodo* sp., *Spironucleus* sp., *Ichthyophthirius multifiliis* and *Trichodina* spp. It was reported that parasitic ciliate infections may cause significant production and economic losses in fresh water fish farms (Lom and Dykova, 1992; Scholz, 1999; Bastos Gomes et al., 2017). *Ichthyobodo necator* is a flagellated protozoan causing infections of the skin which lead to significant loss in salmonid fish culture (Durborow, 2003). *Spironucleus* sp. is a flagellated parasite of the intestine which has previously been described as *Hexamita* or *Octomitus*

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