



# THE EFFECT OF MONOGENS ON THE BODY OF CARP FISH

*O. Fedorovych, V. Stybel*

Stepan Gzhytskyi National University of Veterinary Medicine and Biotechnologies, Lviv, Ukraine



## Introduction

Fisheries play an important role in meeting the food needs of the population. According to the practice of recent years and the results of ichthyoparasitic studies, almost all fish in the fish ponds of Ukraine are affected by pathogens of invasive diseases, including monogenesis. However, it should be noted that studies on the parasitofauna of fish in reservoirs of the Western region of Ukraine and the effects of various drugs on the immune and antioxidant status of their bodies have not been conducted in recent decades. Therefore, the aim of our research was to study the epizootology and pathogenesis of carp fish monogenoidosis in the gardens of fish farms built on warm waters of cooling reservoirs of Burshtyn and Dobrotvirska TPPs.

## Material & Methods

The research was carried out at *Rybhosp Burshtynsky LLC* of Ivano-Frankivsk and farm Dobrotvirsky Rybzavod of Lviv region on one-year-old grass carps and silver carps infested with dactylogiruses and girodactylus, and scaly carp affected by diplozoons. The research was conducted in two stages. At the first stage of research, epizootic features of carp fish monogenoidosis in experimental gardens, hematological parameters, blood protein composition, intensity of peroxide processes, state of antioxidant and immune systems of non-infested and infested annual carp fish were studied. In the second stage, the therapeutic effect of the drug “Brovermectin-granulate” and the complex of drugs “Brovermectin-granulate” and the immunomodulator “Avesstim” on the body of carp fish in monogenoidosis was studied.

## Results

Infectious parasites *Dactylogyrus lamellatus* and *Gyrodactylus ctenopharyngodonis* were detected by parasitological examination in one-year-old grass carp, and ectoparasites *Dactylogyrus hypophthalmichtidis* and *Gyrodactylus hypophthalmichtidis* in one-year-old silver carp with ectoparasite *Eudiplozoon nipponicum*. The disease was registered as a mono- and mixed invasion. The largest outbreaks of dactylogiriosis and diplozoonosis in the gardens of both fish farms were observed in May (EI — 20–45 and 10–15%, respectively), and gyrodactylosis — in March (EI — 20–25%). The intensity of invasion by the above-mentioned parasites was also the highest in May: dactylogiruses, depending on the farm, — 7.60–10.30, gyrodactylus — 2.25–2.30 and diplozoons — 2.87–3.10 specimens/fish.

It has been found decreased number of red blood cells, hemoglobin and hematocrit and increased number of white blood cells, suppressed humoral nonspecific resistance and protein synthesis function of hepatopancreas in blood of the same age grass carp, silver carp and carp flake affected by monogenea compared to unaffected fish, and this indicated by a reduction in total protein and its fractions in serum, increased intensity of lipid peroxidation and reduced antioxidant enzyme activity of the system. For mixed invasion of the same age grass carp and silver carp these changes were more significant. It is proved that the use of anti-parasitic drug “Brovermectin-granulate” helped normalize metabolic profile of blood and biological balance in the system POL↔AOS. This simultaneous use of the drug with the immunomodulator “Avesstim” showed no better normalizing effect on the sick fish. The use of the drug “Brovermectin-granulate” in carp fish affected by monogenesis showed good therapeutic efficacy: extensibility, depending on the species of fish and parasites, was in the range of 60–80%, and intensity — in the range of 79.3–90.4%.



## Conclusions

In monogenoid invasion in the body of carp fish was observed inhibition of protein-synthesizing function, inhibition of humoral and cellular links of nonspecific resistance, increased lipid peroxidation products and decreased activity of enzymes of the antioxidant system.