

## The effect of mushroom prebiotic (*Pleurotus ostreatus*) on histopathological changes in liver and gill tissue of Nile tilapia (*Oreochromis niloticus*) exposure to silver nitrate

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### Abstract

The presence of contaminants in aquatic bodies causes stress responses in aquatic animals, especially fish, which ultimately affects the physiological condition of fish and reduces their immune function, so the use of immune stimulants such as prebiotics is essential. The aim of this study was to investigate the effect of different levels of *pleurotus ostreatus* on the histological characteristics of tilapia fish exposed to AgNO<sub>۳</sub>. This research was conducted in the fall of ۱۳۹۷ in the aquaculture hall of Shahid Nasser Fazli Bar Abadi, Faculty of Fisheries, Gorgan University of Agriculture and Natural Resources. ۱۲۰ fish were distributed for ۴۲ days in ۴ treatments (۳ replicates) prebiotic. Then, ۰,۵ ppm of AgNO<sub>۳</sub> was exposed to each group for ۱۶ days. At the end of the course, the fish were rapidly anesthetized by clove anesthetic solution (۲۲۰ mg / l) and their liver tissue and gills were removed for histological studies. The results showed that the treatments that were exposed to AgNO<sub>۳</sub> included tissue complications including basal hyperplasia, head hyperplasia, infiltration of blood cells, and shortening of the secondary blade, epithelial bulge, squamous cell swelling, and secondary bladder connective tissue involvement in gill tissue. They showed necrosis of fat, thinning, dark granules, swelling, blood clots, bleeding, and biliary stagnation in the liver tissue, and complications in this treatment had the greatest destructive effect. AgNO<sub>۳</sub> treatments cause severe damage to liver tissue and gills, but the combined use of AgNO<sub>۳</sub> and mushroom prebiotics has been able to reduce the destructive effects of AgNO<sub>۳</sub> on tissue complications. ۰,۲ prebiotic levels of mushrooms and ۰,۵ AgNO<sub>۳</sub> in the diet could have the best effect on the complications of liver tissue and Tilapia fish gills.

**Keywords:** Prebiotic, Tissue damage, Tilapia, AgNO<sub>۳</sub>.