# Investigation the Effect of Penicillamine and EDTA on toxicity of silver nanoparticles in *Tor grypus*

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**Abstract**

The use of metallic nanoparticles, especially silver nanoparticles, has greatly developed in aquaculture in recent years. Generally, heavy metals affect the health of fish and consequently affect human health, so scientific methods are necessary for the decontamination and treatment of heavy metals toxicity. One of the methods used to eliminate the toxicity of metals is chelation therapy, which means the use of chelated materials to enter the bloodstream and remove harmful substances such as heavy metals. Therefore, in this study, the effect of two substances, Penicillamine and EDTA, which have been shown to have a therapeutic effect and reduce the toxicity of heavy metals in humans and warm-blooded animals has been shown to be effective in reducing the toxicity of silver nanoparticles in native fish determined. In this study, 240 *Tor grypus* fry (4/9 ± 0/32 g, Mean±SD) were randomly divided into 4 equal groups in triplicates. Group one and 2 were fed with 50 and 100 mg $kg^{-1}$ Penicillamine respectively. Group 3 were fed with 100 mg $kg^{-1}$ and group 4 or control group received basal food. Experimental diet were fed for 21 days to 4 groups and nanosiler acute toxicity test (96h LC50) were calculated according to OECD method. The results showed that the toxicity of nanosilver in the control treatment in all points (24, 48, 72 and 96 hours exposure) was significantly higher than the treatments of penicillamine and EDTA, besides the treatment with penicillamine (100 mg/kg) showed the highest resistance to the toxicity of the nanosilver in all four toxicity tests. In general, it can be concluded that these two substances can be used as proper component to control, treatment and prevention of nanosilver toxicity in fish and penicillamine is more efficient than EDTA,

**Keywords:** Penicillamine, EDTA, Silver nanoparticles, *Tor grypus.* Toxicity.