

عنوان مقاله:

Application of the more affordable nanoparticles against the main bacterial infectious diseases in rainbow trout rearing industry

محل انتشار:

بیستمین کنگره بین المللی میکروب شناسی ایران (سال: 1398)

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خلاصه مقاله:

Introduction and Objectives: Emerging of Infectious outbreaks caused by bacterial agents in the aquaculture industry, expansion of bacterial resistance to antimicrobial agents, and trouble of drug residuals in the products have led to the application of novel, safe and affordable alternatives such as Nanoparticles (NPs). The present study intends assessing the toxicity of CuO and ZnO NPs at In vitro conditions on the main bacterial pathogenic agents for the reared fish, including *Lactococcus garvieae*, *Streptococcus iniae*, and *Yersinia ruckeri*. **Material & Methods:** First, the physical features of NPs crystals were determined by X-ray diffraction (Shimadzu, XRD-6100). Then, the sensitivity of them to the mentioned NPs was assayed with compared florfenicol, as a reference antibiotic, through the well diffusion method. Also, MIC/MBC were determined by the microdilution technique. We use one-way ANOVA in order to data analysis. **Results:** The diameter of Nano CuO and ZnO crystals was estimated 41.48 and 49.6 nm, respectively. Evidence indicates the positive gram bacteria had intermediate sensitivity to ZnO, but they were resistant to CuO. However, enteric redmouth disease agent was absolutely sensitive to ZnO. Nano zinc oxide and copper oxide could significantly inhibit the growth of *Streptococcus iniae* or kill it at 0.18 and 0.24 µg/ml and more, respectively. Also, MIC/ MBC of ZnO NP were obtained for *Lactococcus garvieae* and *Yersinia ruckeri*, in order equal to 0.18 and 0.06 µg/ml. **Conclusion:** Antibacterial potency of Nano ZnO was more than another NP and florfenicol at same concentration. Therefore, the application of it will be advised if there are not the observable toxic effects of this NP at the suggested concentration for reared fish.

کلمات کلیدی:

Nano copper oxide (CuO), Nano zinc oxide (ZnO), *Lactococcus garvieae*, *Streptococcus iniae*, *Yersinia ruckeri*

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