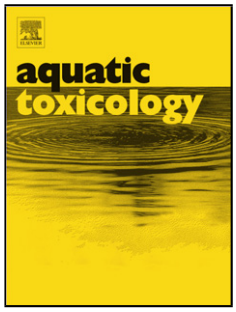

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Effects of nanosilver on *Mytilus galloprovincialis* hemocytes and early embryo development

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Highlights

- AgNPs do not affect immune parameters of *Mytilus* hemocytes in both ASW and HS
- AgNPs induced mitochondrial and cytoskeletal damage
- AgNPs decreased normal larval development and induced malformations in D-larvae
- AgNPs are much less toxic than Ag^+ in both mussel hemocytes and embryos
- The mechanisms of action of AgNPs appear to be distinct from those of Ag^+

Abstract

Silver nanoparticles (AgNP), one of the main nanomaterials for production and use, are expected to reach the aquatic environment, representing a potential threat to aquatic organisms. In this study, the effects of bare AgNPs (47nm) on the marine mussel *Mytilus galloprovincialis* were evaluated at the cellular and whole organism level utilizing both immune cells (hemocytes) and developing embryos. The effects were compared with those of ionic Ag^+($AgNO_3$). In vitro short-term exposure