

Antibacterial Effect of Selenium Nanoparticles Synthesized by *Clostridium Perfringens*

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Abstract

Microorganisms (bacteria, yeast and fungi) play an important role in toxic metals remediation through reduction of metal ions. This was considered interesting as nanofactories. The antimicrobial effects of selenium (Se) ion or its salts are well known, but the effects of Se nanoparticles on bacteria and antibacterial mechanism have not been revealed, clearly. The aqueous selenium oxid ions may be reduced extra cellularly and intra cellularly using *Kelebsiella pneumonia* to generate extremely stable selenium nanoparticles in water. Therefore, in this work, intracellular and extracellular production of stable biogenic Se nanoparticles by *Kelebsiella pneumonia* strain and their shape and size distribution characterized by particle characterizer and transmission electron microscopic study, and its bactericide effect against *Clostridium Perfringens type D* were studied. As a results, *Clostridium Perfringens* were inhibited at the 4510 µg/ml concentration of Se nanoparticles. These results suggest that Se nanoparticles can be used as effective growth inhibitors in different microorganisms, making them applicablto diverse medical devices and antimicrobial control systems.

Keywords: Antimicrobial effect, Selenium nano particles, *Clostridium Perfringens*