

## عنوان مقاله:

Phycosynthesis of Antimicrobial *Ulva prolifera*-Fe<sup>3</sup>O<sub>4</sub> Magnetic Nanoparticles

## محل انتشار:

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## خلاصه مقاله:

**Background and Aims:** The growing concern about bacterial strains resistant to antibiotics reveals the urgent need to discover and develop new types of bactericidal agents. **Materials and Methods:** In the present study, in a pioneering step to phycosynthesis of magnetic iron oxide nanoparticles (Fe<sup>3</sup>O<sub>4</sub> MNPs) with antimicrobial potency, the process was initially exploited using an aqueous extract of green marine algae *Ulva prolifera*, and further evaluated the antimicrobial activity of biosynthetic magnetite nanoparticles against eight bacterial strains and three strains of fungi. **Results:** In the present study, the *U. prolifera*/Fe<sup>3</sup>O<sub>4</sub>-MNPs showed a strong inhibitory effect on gram-positive bacteria and relatively modest antifungal activity than fungal pathogenic agents. The highest antibacterial activity compared to strain *Staphylococcus epidermidis* ( $19 \pm 0.6$  mm) and consequently in *Bacillus subtilis* ( $18 \pm 0.03$  mm) and *Bacillus pumulis* ( $18 \pm 0.2$  mm) were observed. However, the bactericidal effects of magnetite nanoparticles were more effective than gram-positive bacteria compared to gram-negative ones. In the present study, we also observed a relatively modest antifungal activity in the anesthetized nanoparticles compared to *Saccharomyces cerevisiae* ( $11 \pm 0.4$  mm), and this was the most sensitive fungal strain relative to the fungicidal activity of these nanoparticles. **Conclusions:** The results of this study indicated that biosynthetic magnetite nanoparticles can be introduced as a new antibacterial to the pharmaceutical field and medicine.

## کلمات کلیدی:

Antimicrobial, Green seaweed, Magnetite nanoparticles, Biosynthesis  
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