

عنوان مقاله:

Antimicrobial and anti-biofilm activities of biosurfactant produced by *Shewanella* on antibiotic-resistant bacteria

محل انتشار:

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خلاصه مقاله:

Introduction and objectives: There are a lot of concerns about the use of antibiotics to treat various diseases of humans and other living organisms. Because of high levels of antibiotics, it can cause disorders and adverse effects on human health. Despite the demonstration of the antibiofilm and anti-bacterial action of biosurfactants, they can also be used to solve this problem. Biosurfactants are biodegradable, non-toxic, harmless and environmentally friendly compounds. Therefore, these compounds can be a good alternative to antibiotics. In this study, our goal was to assess the in vitro antimicrobial and anti-biofilm abilities of biosurfactant produced by *Shewanella*.
Materials and Methods: We determined biosurfactant minimum inhibitory concentration (MIC) against both Gram-positive and negative antibiotic-resistant bacteria by agar well diffusion method. Also, the anti-biofilm activity of biosurfactant against the biofilm produced by clinically isolated bacterial strains was investigated by microtiter plate.
Results: The biosurfactant produced by *Shewanella* non-selectively showed activity against both Gram-positive and negative bacterial strains. The highest zone of inhibition (30 mm) was observed at concentration of 1 mg/ml against *Acinetobacter*. Obtained results of the biofilm formation revealed that biosurfactant disrupted the biofilm of *Pseudomonas aeruginosa* (90%) at 100 mg/ml concentrations.
Conclusion: The result of this study indicated that antibacterial and antibiofilm agents on the bacteria studied but the use of biosurfactant in biomedicine and the replacement of antibiotics needs further investigation.

کلمات کلیدی:

Biosurfactant, Antibiotic resistant, Biodegradation bacteria, Antimicrobial activity, Antibiofilm activity

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