

Antimicrobial, anti-biofilm, and anti-proliferative activities of lipopeptide biosurfactant produced by *Acinetobacter junii* B6

Mandana ohadi

Kerman University of Medical Sciences, Iran



Abstract

Lipopeptide biosurfactants (LPBs) are amphiphilic compounds produced by microorganisms exhibiting various biological activities. The main aim of the present study was to assess the in vitro antimicrobial, anti-biofilm, and cytotoxic effects of LPB produced by *Acinetobacter junii* (AjL). We determined AjL minimum inhibitory concentration (MIC) against both Gram-positive and Gram-negative bacteria as well as two fungal strains. Also, the anti-biofilm activity of AjL against the biofilm produced by clinically isolated bacterial strains was investigated. The AjL non-selectively showed activity against both Gram-positive and Gram-negative bacterial strains. The obtained results of the present study exhibited that the AjL in concentrations nearly below critical micelle concentration (CMC) has an effective antibacterial activity. It was found that the MIC values of AjL were lower than standard antifungal and it exhibited nearly 100 % inhibition against *Candida utilis*. The attained results of the biofilm formation revealed that AjL disrupted the biofilm of *Proteus mirabilis*, *Staphylococcus aureus*, and *Pseudomonas aeruginosa* at 1250 µg/ml and 2500 µg/ml concentrations. The attained results of cytotoxic effect (determined by WST-1 assay) of the AjL revealed IC50 of 7.8±0.4 mg/ml, 2.4±0.5 mg/ml, and 5.7±0.1 mg/ml, against U87, KB, and HUVEC cell lines, respectively. The results indicated that AjL has a potential application in the relatively new field of biomedicine.

Biography

Mandana ohadi has completed her PhD at the one years ago from Kerman medical since university. She is assistant professor at Kerman medical since. She has over ten article about biosurfactants and application of them.

Publications

1. Biosynthesis of Gold Nanoparticles Assisted by Lipopeptide Biosurfactant Derived from *Acinetobacter junii* B6 and Evaluation of Its Antibacterial and Cytotoxic Activities, September 2020 *BioNanoScience*, DOI: 10.1007/s12668-020-00782-6
2. Potential Use of Microbial Surfactant in Microemulsion Drug Delivery System: A Systematic Review, February 2020 *Drug Design, Development and Therapy* Volume 14:541-550, DOI: 10.2147/DDDT.S232325
3. Antimicrobial, anti-biofilm, and anti-proliferative activities of lipopeptide biosurfactant produced by *Acinetobacter junii* B6, October 2019 *Microbial Pathogenesis* 138:103806, DOI: 10.1016/j.micpath.2019.103806
4. Anxiolytic and antidepressant-like effect of the ethanolic extract of *Cassia tora* seed in Swiss mice, June 2020, *Journal of Complementary Medicine Research* 11(1), DOI: 10.5455/jcmr.2020.11.01.01



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