

# Synthesis and Evaluation of Chitosan-Levofloxacin Antibiotic Against Biofilm Formation †

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**Abstract:** Microbial biofilms that form by bacteria are considerably more resistant to antibiotics. Biofilms are a thick layer of prokaryotic organisms that aggregated to form a colony, and these biofilms promote the growth and survival of microorganisms. Generally, levofloxacin is an antibacterial drug and has a high ability to inhibit only gram-positive bacteria comparing to gram-negative bacteria. The aim is to study the elimination of biofilm that forms by *Pseudomonas aeruginosa* using conjugates of chitosan – antibiotic levofloxacin. In this study, we conjugate water-soluble chitosan with having poor water solubility antibiotic levofloxacin. So, that now this conjugate ready to kill both positive gram bacteria and negative gram bacteria. The conjugate was collected after the dialysis process. The chitosan-levofloxacin conjugate was characterized and analyzed for biofilm viability assay. We found that chitosan conjugates with antibiotic levofloxacin disrupt the biofilm formation of gram-positive bacteria like *Pseudomonas aeruginosa*. Overall this study demonstrates the possible approach for the development of antimicrobial drugs against biofilm formation.

**Keywords:** microbial biofilms; *Pseudomonas aeruginosa*; chitosan; levofloxacin; NMR.

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## Conflicts of Interest

The authors declare no conflict of interest.