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P-199 - CHITOSAN AS AN EFFECTIVE INHIBITOR OF MULTIDRUG RESISTANT ACINETOBACTER BAUMANNII

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Background

Acinetobacter baumannii is a multidrug resistant pathogen often associated with nosocomial outbreaks, with an innate ability to evade nearly all traditional antibiotics and a capacity to adhere and colonize medical devices.

Chitosan is a biocompatible and non-toxic polymer which has been shown to have a strong antimicrobial activity against antibiotic resistant microorganisms, with potential to become an alternative to traditional antimicrobials.

Method

Chitosan's biological activity was assessed upon two *A. baumannii* strains (one clinical multidrug resistant strain (MDR) and one reference strain CCUG 61012) in planktonic and sessile environments. From a planktonic standpoint minimal inhibitory concentrations (MIC) and the minimal bactericidal concentrations (MBC) were determined while from a sessile perspective minimal biofilm inhibitory concentrations (MBIC), adhesion and biofilm formation were assayed through biomass and metabolic activity inhibition.

Results & Conclusions

Results showed that the chitosan molecular weights tested were effective in inhibiting *A. baumannii*'s planktonic and sessile growth. For the first MICs and MBCs were obtained at relatively low concentrations (0.5–2 mg/mL). For the latter, MBICs varied between 1 and 8 mg/mL and chitosan effectively inhibited both *A. baumannii*'s adhesion and biofilm formation, with this inhibitory activity being more pronounced from a biomass formation standpoint. Analyzing the differences observed between the reference and the MDR *A. baumannii*'s strains, the MDR strain was, in general, as susceptible as the reference strain to chitosan's activity.

Overall, chitosan showed high potential as a possible natural alternative to the treatment of multidrug resistant *A. baumannii* infections with the high antibiotic resistance profile of this microorganism not being an impediment to chitosan's activity both in planktonic and sessile settings.

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Keywords: Chitosan, Antimicrobial, Antibiofilm, Multidrug resistant strain