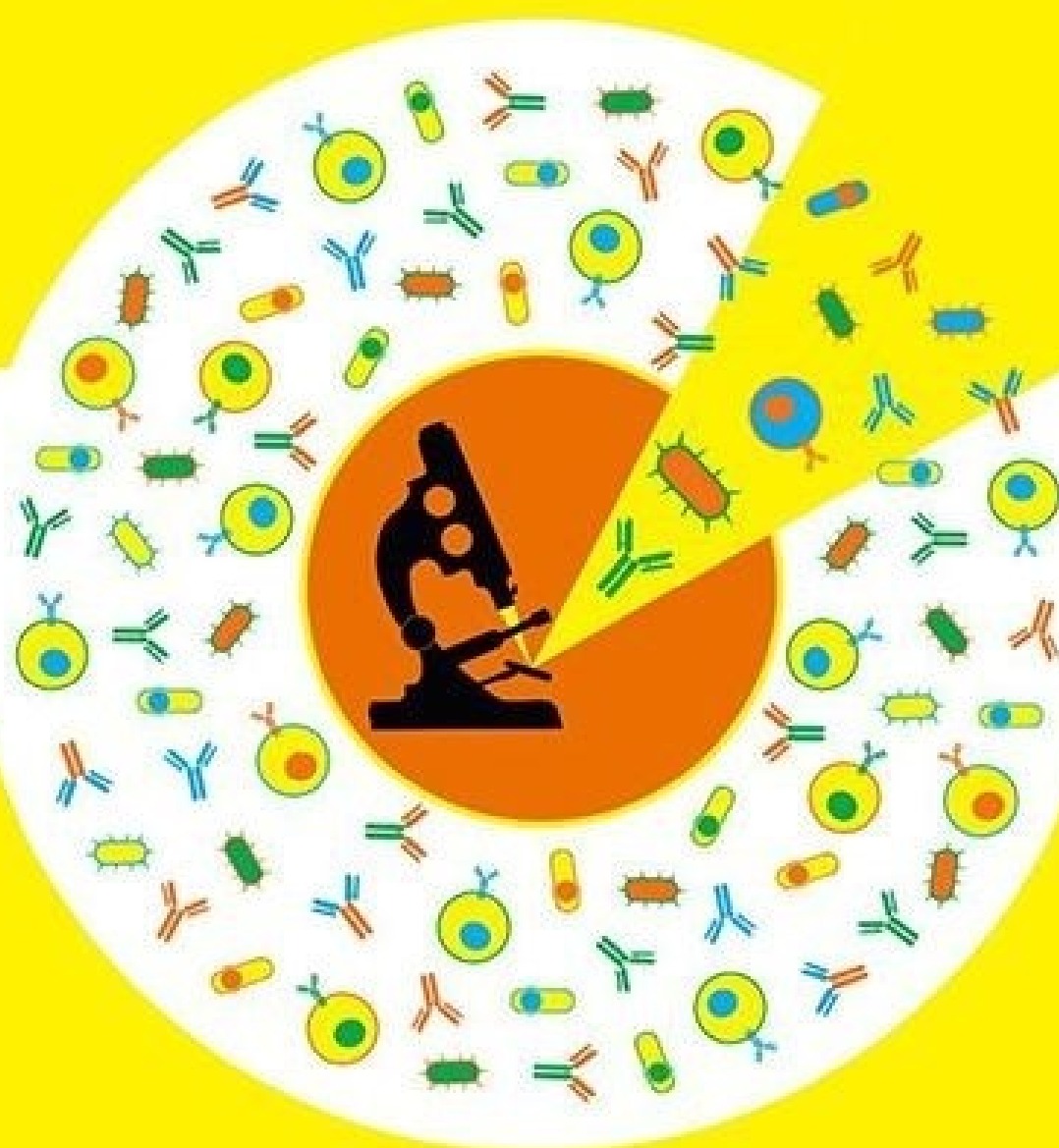


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ABSTRACT BOOK

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INFLUENCE OF OSMOTIC PRESSURE ON FILM-FORMING ACTIVITY OF *P. AERUGINOSA* AND *A. BAUMANNII*

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Background. Gram-negative non-fermenting bacteria of the genera *Pseudomonas* and *Acinetobacter* are the most common hospital and extrahospital pathogens. They are characterized high plasticity of biological properties and the ability to quickly adapt to changes in the environment. Bacteria can ability to attach to various surfaces and form biofilms on them. Biofilm is a key survival strategy for species during forced changes in living conditions. **The purpose** of the research was to study the effect of increased osmotic pressure on the film-forming activity of *P.aeruginosa* and *A.baumannii*.

Methods. There are 20 clinical strains of *A.baumannii* and *P.aeruginosa* were used. The study of the biofilm-forming ability of clinical isolates was determined using a spectrophotometric method according to Christensen which consists in the reproduction of biofilms on polymer plates.

Results. We determined the film-forming activity of *P.aeruginosa* and *A.baumannii* in the presence of different concentrations (0.9%, 3%, 6%, 9%) of sodium chloride. The calculated osmotic pressure in such media was 7.5 atm, 27.4 atm, 52.1 atm and 79.7 atm respectively. The increase in osmotic pressure caused a protective reaction in the form of increasing the intensity of film formation. The increase in the rate of film formation in the presence of 3% sodium chloride in *P.aeruginosa* was 8%, and in *A.baumannii* 4%, compared with that in isotonic solution. Both types of microorganisms formed biofilms most actively in the process of increasing the concentration of sodium chloride to 6% (52.1 atm). The density of biofilms was higher by more than 20% than in isotonic solution. A sharp inhibition of biofilm activity in 9% sodium chloride solution was observed at a osmotic pressure level close to 80 atm. We assume that bacteria deplete the protective physiological resources in such conditions, so there is a sharp inhibition of biofilm activity.

Conclusion. The increasing the osmotic pressure to a certain limit (52.1 atm) stimulates the formation of biofilms in *P.aeruginosa* and *A.baumannii*. Further increase in osmotic pressure leads to suppression of the intensity of film formation.

Keywords: *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, biofilms, osmotic pressure.