EFFECTS OF DIMETHYL SUFOXIDE(DMSO) IN BACTERIAL STRAINS GROWTH IN MIC DETERMINATION

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INTRODUCTION: Dimethyl sufoxide(DMSO) is frequently used as solvent for natural as well as synthetic antibacterial compounds, in order to determine their Minimal Inhibitory Concentration(MICs). Effects of this solvent on bacterial growth is an important factor to be considered because high concentration can inhibit the bacterial growth. DMSO is polar organic solvent utilized to solubilize apolar compounds. It also acts as a penetrant of drugs through the skin, e.g. it has been shown to increase the effectiveness of idoxuridine in herpes simplex.

OBJECTIVES: The objective of this study was intended to investigate the effect of various concentrations of DMSO on the growth of different strains of important genera of pathogens causing of mastitis.

MATERIAL AND METHODS: Four clinical bacterial isolates from bovine mastitis were used in the study, named Escherichia coli, Pseudomonas aeruginosas, Staphylococcus aureus and S. falcalis. This isolates were inoculated in Tryptic Soy Broth(TSB) for 18 hours and standardized to 10⁷ UFC/ML. In the MIC determination, DMSO’s concentrations utilized it was of 50% to 1,16%.

DISCUSSION AND RESULTS: S. aureus was the most resistant strain to DMSO, reaching a degree of growth of almost 100% in 1% of concentration. E. coli was the second strain most resistant, reaching a degree of growth of almost 90% in 1,16% of concentration. P. aeruginosas and S. falcalis were the most sensitive to DMSO, in all concentrations tested.

CONCLUSION: The results demonstrated that DMSO’s concentrations exercise different effects in bacterial strains growth, helping pharmaceutical industry in the antimicrobial synthesis using organic solvents.