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III ENCONTRO DE  
BIOTECNOLOGIA  
MEDICINAL

I IBERIAN CONGRESS ON  
MEDICINAL  
BIOTECHNOLOGY

BOOK OF ABSTRACTS



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## Serine-based surfactants active against antibiotic-resistant bacteria

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Bacterial resistance to antibiotics has been a recognized reality almost since the dawn of the antibiotic era, but only within the past twenty years has the emergence of dangerous, resistant strains occurred with a disturbing regularity. As no new antibiotics have been developed in the last twenty years, existing drugs are quickly becoming ineffective.

We have previously developed biocompatible serine-based surfactants whose ability to form liposomes has been demonstrated. Following these findings, we decided to evaluate antibacterial activity *in vitro* of the serine-based surfactants, as this may be the basis for a novel strategy to fight infection: encapsulation of antibiotic drugs in liposomes that show antimicrobial properties *per se*.

Four serine-based surfactants were synthesized and their antimicrobial activity against Gram negative and Gram positive bacteria was determined using a standard microdilution method. Minimum Inhibitory Concentration (MIC) values were determined according to the methodology of the Clinical Laboratory Standards Institute (CLSI), against both antibiotic-sensitive and resistant bacterial strains. The influence of surfactant concentrations on bacterial growth rate was also evaluated.

The tested surfactants were active against antibiotic-resistant Gram positive and Gram negative bacteria, which holds great promise on their future contribution towards antimicrobial stewardship, either as good alternatives to classic antibiotics or, more likely, as antibiotic nanocarriers with intrinsic antibacterial activity.

**Keywords:** surfactants, nanocarriers, bacterial resistance, antibacterial activity.