

TITLE: EVALUATION OF ANTIMICROBIAL ACTIVITY OF Ru(dppb)Cl₂ AGAINST STRAINS OF *Staphylococcus aureus* AND *Staphylococcus epidermidis*

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ABSTRACT:

The discovery of antibiotics in the twentieth century and its therapeutic applicability against pathogenic microorganisms establish a turning point in the medicine history. However, increasing resistance to antimicrobials demands the prospection of new molecules with antimicrobial activity against microorganisms of clinical importance. Among the main microorganisms involved in nosocomial infections are *Staphylococcus aureus* and *Staphylococcus epidermidis*. Thus, the objective of the present study was to evaluate the effect of a precursor of Ru(dppb)NO, Ru(dppb)Cl₂ against planktonic cells of *Staphylococcus aureus* ATCC25923, *Staphylococcus aureus* ATCC700698, *Staphylococcus epidermidis* ATCC12228 and *Staphylococcus epidermidis* ATCC35984. To evaluate the antibacterial activity of the compound, the bacteria were incubated for 24 hours at 37°C with the compound diluted in concentrations ranging from 7.8 to 500 µg/mL. The susceptibility of the microorganisms to the compound was evaluated by tests of minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC). Ru(dppb)Cl₂ showed MIC values at concentrations of 31.2 µg/mL against *S. aureus* ATCC25923, 62.5 µg/mL against *S. aureus* ATCC700698 and 125 µg/mL against both strains of *S. epidermidis* and showed MBC values at concentrations of 500 µg/mL against *S. aureus* ATCC700698 and 250 µg/mL against other strains, whereas the ruthenium complexed with NO presented MIC values of 7.8 µg/mL against all the same strains, except *S. epidermidis* ATCC35984, which the MIC was 15.6 µg/mL and MBC values of 31.2 µg/mL against *S. aureus* ATCC25923 and *S. epidermidis* ATCC12228, 62.5 µg/mL against *S. epidermidis* ATCC35984 and 125 µg/mL against *S. aureus* ATCC700698. Therefore, the Ru(dppb)Cl₂ may represent a therapeutic alternative for nosocomial infections and the comparison of this results with the successor molecule, Ru(dppb)NO, can elucidate the mechanism of action of this class of metallocompounds against microorganisms of clinical interest.

Keywords: Ruthenium complex; antimicrobials; *Staphylococcus* sp..

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