

**TITLE:** EVALUATION OF THE ACTIVITY OF *ct*-[RuCl(NO)(dppb)(4,4-Mebipy)](PF<sub>6</sub>)<sub>2</sub> AGAINST *Staphylococcus aureus* AND *Staphylococcus epidermidis* BIOFILMS

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**ABSTRACT:**

Antimicrobial resistance is a global public health problem that culminates in deaths from infections associated to multiresistant microorganisms such as *Staphylococcus aureus* and *Staphylococcus epidermidis*. Mostly of these infections are associated with the ability of microorganisms to form biofilms, communities of cells attached to an abiotic or biotic substrate and inserted into a self-produced extracellular polymeric substance (EPS). Microbial biofilms provide to microorganisms resistance through metabolic dormancy programs or molecular persistence. Thus, the discovery of novel antimicrobial agents capable of preventing the biofilm formation constitutes a promising area. Therefore, the objective of this study was to evaluate the effect of the ruthenium complex *ct*-[RuCl(NO)(dppb)(4,4-Mebipy)](PF<sub>6</sub>)<sub>2</sub> on the biofilm of *Staphylococcus aureus* ATCC25923, *Staphylococcus aureus* ATCC700698, *Staphylococcus epidermidis* ATCC12228 and *Staphylococcus epidermidis* ATCC35984. 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 activity of the compound on biofilm formation was evaluated by the quantification of biomass through the violet crystal staining method and by the quantification of viable cells in the biofilm by counting colony forming units (CFU). The compound significantly inhibited the biomass formation of *S. aureus* ATCC25923 and *S. epidermidis* ATCC12228 between 7.8 and 500 µg/ml and *S. aureus* ATCC700698 and *S. epidermidis* ATCC35984 between 15.6 and 500 µg/ml. Regarding CFU enumeration, the compound significantly reduced the number of viable cells at all concentrations tested against all microorganisms. Therefore, the ruthenium complex *ct*-[RuCl(NO)(dppb)(4,4-Mebipy)](PF<sub>6</sub>)<sub>2</sub> may represent a therapeutic alternative for infections associated with *Staphylococcus aureus* and *Staphylococcus epidermidis* biofilms.

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

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