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BOOK OF ABSTRACTS

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Antimicrobial Studies of Silver (I) *N*-Heterocyclic carbene complexes containing acridine moiety and non classical pyrazole derived.

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Silver and its complexes have long been used as antimicrobial agents in medicine due to the lack of silver resistance and the effectiveness at low concentration as well as to their low toxicities compared to the most commonly used antibiotics[1]. *N*-Heterocyclic Carbenes (NHCs) have been extensively applied as carrier molecules for metals in anticancer applications. In the present study we selected two NHC-carbene based on acridine scaffold and detailed non classical pyrazole derived mono NHC-Ag neutral and bis NHC-Ag cationic complexes. Their inhibitor effect on bacterial strains Gram-negative and positive was evaluated. Imidazolium NHC silver complex containing the acridine chromophore showed effectiveness at extremely low MIC values. Although pyrazole NHC silver complexes are less active than the acridine NHC-silver, they represent the first example of this class of compounds with antimicrobial properties. Fluorescence images (**Figure 1**) allow to demonstrate the interaction with *Escherichia coli* of silver complex after 1 h of incubation. Moreover all complexes are not toxic and they show not significant activity against mammalian cells (Hek lines) after 4 and 24 h. Based on our experimental evidence, we are confident that this promising class of complexes could represent a valuable starting point for developing candidates for the treatment of bacterial infections.

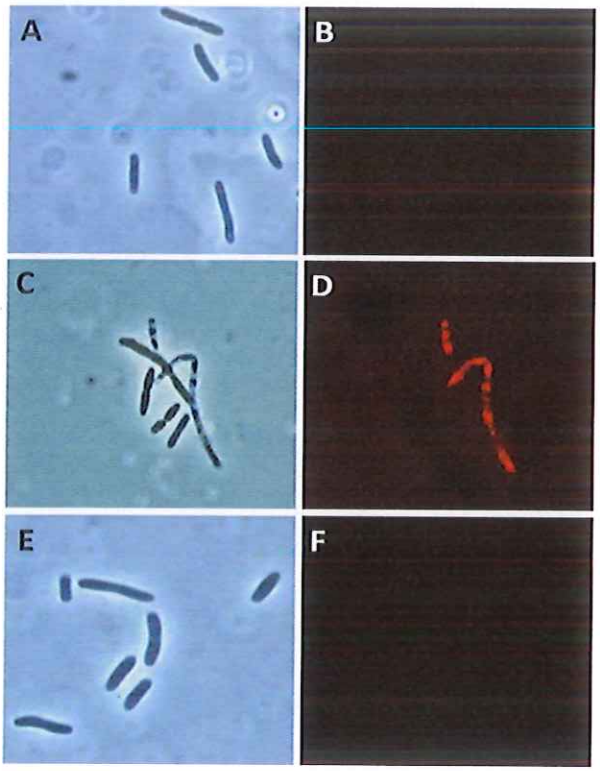

Figure 1. Panels show *Escherichia coli* DH5α bacterial cells observed in optical microscopy and in fluorescence microscopy. Untreated bacterial cells (A and B); cells treated with Ag complex (C and D), cells treated with ligand (E and F).

References

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[2] Patil S.A., Patil S.A., Patil R., Keri R.S., Budagumpi S., Balakrishna G.R,,Tacke M.: *N*-heterocyclic carbene metal complexes as bio-organometallic antimicrobial and anticancer drugs. *Future Med. Chem.* 2015; 7: 1305–1333