

**P2303 Metal complexes as novel antibacterial agents against *Staphylococcus aureus***

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**Background:** *Staphylococcus aureus* is one of the most important pathogens causing nosocomial bacteremia, food poisoning and pneumonia. The methicillin resistance and the biofilm formation of *S. aureus* are alarming problems for health care. In the biofilm bacterial cells adapt to environmental conditions showing increased resistance against antibiotics. The treatment of resistant or biofilm forming *S. aureus* isolates is difficult without new and effective antimicrobial agents.

The objective of this study was to investigate the antimicrobial activity of 2-trifluoroacetylbenzoxazole ligands (WB1-WB3) and their metal complexes (Zn, Cu, Ni, Mg, Fe, Pd and Ag) in reference and methicillin resistant *S. aureus* strains.

**Materials/methods:** Minimum inhibitory concentrations (MICs) of compounds were determined on reference and resistant *S. aureus* strains. The combined effects of antibiotics (tetracycline and ciprofloxacin) and metal complexes were studied by MIC reduction assay. The efflux pump inhibiting activity of compounds on the accumulation of the general efflux pump substrate ethidium bromide (EB) was assessed by real-time fluorimetry on *S. aureus* strain. The anti-biofilm effect of metal complexes was investigated using reference *S. aureus* strain, furthermore the quorum sensing (QS) inhibition of compounds was studied by agar diffusion method.

**Results:** WB1(Cu) and WB3(Zn) had strong antibacterial effect compared to the ligands on the MRSA strain. In the MIC reduction assay WB3 ligand, furthermore WB2(Zn) and WB1 complexes with Cu, Ni, Mg and Fe reduced the antibacterial activity of ciprofloxacin in the reference *S. aureus*. WB3 ligand was potent efflux pump inhibitor in MRSA while the other ligands and complexes had no effect on the intracellular EB accumulation. WB3(Fe) decreased the biofilm formation of the reference *S. aureus* by 75%. Furthermore the WB3 ligand and the complexes of WB1 with Zn and Ag significantly inhibited the QS between *Chromobacterium violaceum* and *Enterobacter cloacae*.

**Conclusions:** These results suggested that WB3 ligand and its metal complexes could be effective adjuvants in the antibiotic treatment of infections caused by methicillin resistant *S. aureus*. Furthermore, WB3 is a promising efflux pump and QS inhibitor in MRSA.