

“Antibacterial efficiency of silver(I) complexes with Ag-O Bonding”

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In recent decades silver complexes have been extensively studied for their excellent antibacterial properties, which have proven to be even more effective than silver salts. Despite numerous investigations related to the topic, the mechanisms and biological activity are not yet well understood. However an important factor that determines the effectiveness of silver complexes is the type of atom coordinated to Ag(I) and the properties of that bond. Silver complexes with Ag-O and Ag-N bonds have shown a broader spectrum of antimicrobial activity than those with Ag-P and Ag-S bonds. In addition, it has been suggested that the antibacterial properties of silver complexes are more associated with the Ag-ligand bond than with solubility, chirality, or the degree of polymerization of these complexes.

Although there is consensus that the structure-activity relationship is important in antimicrobial capacity, an exhaustive review of the literature does not permit a general conclusion since the antibacterial capacity of the complexes studied depends on the type of bacteria tested.

In order to elucidate the differences in the behaviour of various types of antibacterial silver(I) complexes, we studied the effect of the structure and the properties of the Ag-OOC bonds of silver complexes on the kinetics of antimicrobial action and the efficiency of these compounds as antimicrobial agent.

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