



Synthesis and structural characterization of antimicrobial binuclear copper(II) coordination compounds bridged by hydroxy- and/or thiodipropionic acid.

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In the present study, two binuclear copper(II) coordination compounds bridged by hydroxy- and thiodipropionic acid have been synthesized. The structure of compounds was determined by X-ray crystallography. The central copper atoms exist in square pyramidal surroundings. Basal plane is formed by nitrogen atoms of amines and oxygen atoms of bridges, whereas apical positions are occupied by oxygen atoms of coordinated water molecules. Temperature dependence study of magnetic susceptibility proved strong antiferromagnetic exchange between copper atoms in hydroxy-bridged complex. These coordination compounds were also tested for their biological activities *in vitro*. Both coordination compounds exhibit pronounced cytocompatibility in mammalian epithelial cells with no induction of oxidative stress and DNA fragmentation. Moreover, synthesized compounds are hemocompatible and do not alter expression of a marker of multiple cellular stress, p53. On the other hand, both compounds had stimulatory effect on expression of metallothioneins (MT-1/2 and MT-3). Antimicrobial testing on *Escherichia coli*, *Staphylococcus aureus* and methicillin-resistant *Staphylococcus aureus* revealed that both copper compounds exhibit antibacterial activity regardless the cell wall composition. Overall, current work presents a synthesis of Cu(II) coordination compounds with interesting biological behavior and with a promising potential to be further tested in pre-clinical models.

Słowa kluczowe

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