

Copper(II) binding to tobramycin: potentiometric and spectroscopic studies.

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Streszczenie

Protonation and Cu(II) binding by tobramycin, an aminoglycosidic antibiotic, was studied by potentiometry and UV-vis, CD and EPR spectroscopies. A range of mononuclear complexes of a general formula CuH_nL was found, with n between 3 and -2. Tobramycin anchors Cu(II) with an ζNH_2 , O- ζ chelate of the C-ring of its molecule. The amino and hydroxyl groups of the A-ring of tobramycin also participate in the binding at pH 7 and higher. The resulting structure involves both terminal aminosugar rings but eliminates the donors of the central streptamine unit from the coordination. A comparison between tobramycin and its close analog, kanamycin B [M. Jezowska-Bojczuk, W. Bal and H. Kozłowski, Inorg. Chim. Acta, 275-276 (1998) 541-545] reveals the importance of the A3-OH group for the binding properties of these aminoglycosides.

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