

Copper(II) complexes of *D*-cycloserine and its hydrolytic product β -aminoxy-*D*-alanine.

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The Cu(II) complexes formed by the antibiotic *D*-cycloserine, *D*-4-amino-3-isoxazolidone (cs), were studied in aqueous solution and in the solid state in order to understand the complex formation processes taking place during the decomposition of the ligand. It was found that the "green" solutions contain the undecomposed ligand which coordinates the metal ion through the enolic oxygen and the amino nitrogen donors. The complex species predominant at neutral pH values and the corresponding solid-state compound $\text{Cu}(\text{cs})_2 \cdot \text{H}_2\text{O}$, isolated from freshly prepared solutions, involve complexed units interacting with each other through O-Cu interaction. On standing, the ligand decomposes and "blue" solutions are obtained. The decomposition route depends on the ligand concentration in solution. In dilute solution the main decomposition product is β -aminoxy-*D*-alanine which yields pH-dependent complex formation equilibria involving the carboxylate and the amino groups at low pH values, as well as the amino and aminoxy groups at higher pH values. Accordingly, the blue polymeric complexes precipitated from these solutions exhibit analytical and spectroscopic data near those of the complexes of β -aminoxy-*D*-alanine. In concentrated solutions the ligand dimerizes to yield (+)-*cis*-3,6-bis(aminoxymethyl)-2,5-piperazinedione and bluish-violet Cu(II) complexes of the latter ligand are predominantly formed in solution and isolated in the solid state.

Adres publiczny

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