X-RAY CRYSTAL STRUCTURE AND SOLUTION PROPERTIES OF [Au(III)(H₂-Gly-Gly-L-His)]Cl.H₂O

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Gold(III) generated via myeloperoxidase is thought to play an important role in the side-effects of anti-arthritis gold drugs [1, 2]. Au(III)-modified peptides bound to MHC class II molecules may be involved in delayed hypersensitivity reactions ('gold rashes') observed in patients undergoing chrysotherapy, but little is known about the binding of Au(III) to peptides.

Only one crystal structure of a Au(III) peptide has previously been described [3].

For our studies, we used glycylglycyl-L-histidine (GGH), a model for the N-terminal copper binding site of serum albumin. The reaction of GGH with NaAuCl₄ at low pH (1.5-2) is slow ($T_{1/2}$ ca. 6 h, 10 mM, 310 K) and involves one intermediate. The structure of the final product [Au(III)(H₂-Gly-Gly-L-His)]Cl.H₂O has been determined by X-ray crystallography. It is square-planar with Au(III) coordinated to the terminal NH₂, two deprotonated peptide NH's and His N δ . The structure of this complex in solution and its behaviour at pH 7 will be discussed.

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