Synthese und Charakterisierung von kronenetherstabilisierten Platin(IV)-
Komplexen mit Aminosäureliganden

Synthesis and Characterization of Amino Acid Complexes of Platinum(IV)
Stabilized by Crown Ethers

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Platinum(IV) Complexes, Crown Ethers, Amino Acids, Crystal Structure

Crown ether complexed pentachloro(aqua)platinic acid, \((H_3O)[PtCl_5(H_2O)]-2(18-cr-6)\)
\(\cdot 6H_2O\) (1) reacts with glycine, L-alanine, and DL-2-aminobutyric acid to give \(cis\)-\([PtCl_4(O-glyH)(H_2O)] \cdot (18-cr-6) \cdot H_2O\) (4a) and \(cis\)-\([PtCl_4(O-amaH)(H_2O)] \cdot (18-cr-6)\) (amaH = alaH 4b, abuH 4c), respectively, as well as (amaH)\(_2\)\([PtCl_6]\)-2(18-cr-6) (amaH = glyH 5a, alaH 5b, abuH 5c). The crown ether complexed hexachloroplatinic acid, \((H_3O)_2[PtCl_6]/2(18-cr-6)\) (2), reacts with glycine to afford \((glyH_2)[PtCl_4(N,O-gly)] \cdot 2(18-cr-6) \cdot 1.25H_2O\) (6).

The structures of 4b and 6 were determined by X-ray diffraction. The alanine ligand in 4b is a zwitterion that is coordinated to platinum by one oxygen atom of the carboxylate group only. The other oxygen atom is engaged in a strong hydrogen bond to the \(cis\)-coordinated aqua ligand. The glycinate ligand in 6 is \(N,O\)-coordinated at platinum forming an anion \([PtCl_6(N,O\text{-gly})]^-\). The other oxygen atom of the carboxylate group is involved in a strong hydrogen bridge to the cation \((glyH_2)^+\). In both complexes hydrogen bridges are formed between the \(-N^+H_3\) and \(-NH_2\) groups of the amino acid ligands and the oxygen atoms of the crown ether molecules.

Abbreviations: amacH = amino acid, glyH = glycine, alaH = L-alanine, abuH = DL-2-aminobutyric acid.

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