Inorganic chemistry of vitamin B₁₂.

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Abstract: The theme of the book is the coordination chemistry of the cobalt vitamin B-12 and related compounds. The nomenclature of these molecules is set out according to the IUPAC rules. There follows a very brief outline of the role of vitamin B-12. The complex corrinoid molecule is divided into four regions for the purpose of detailed inorganic analysis. These regions consist of the axial ligands, the cobalt atom, the conjugated corrin chain and the side chains. In order to study equilibria in these, they have been divided into two groups depending on the mode of formation of the cobalt-ligand bond. The study includes stereochemistry, thermodynamics and bonding.
The cobalt atom, corrin ring and side-chains are taken as separate entities in the section on equilibria. Here again stereochemistry is discussed, as well as valency and spin-state. The work on the organocorrinoids has demonstrated the tremendous influence of the cobalt ion and other ligands on the structure and properties of the organoligand, and vice versa. When an axial ligand, such as HO, is replaced by methyl or ethyl then there is an effect on the properties and equilibria of ligands in the axial position. Thus, the ligands can effect the physical properties (bond lengths, bond angles and stretching force constants), the equilibrium constants and the rates of reactions, that is, the kinetic effects.

-J. A. Stacey.

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