

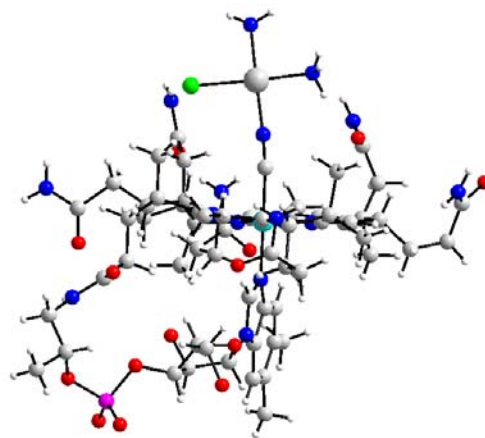
Vitamin B₁₂ as a Ligand: Cobalamin – Cisplatin Conjugates

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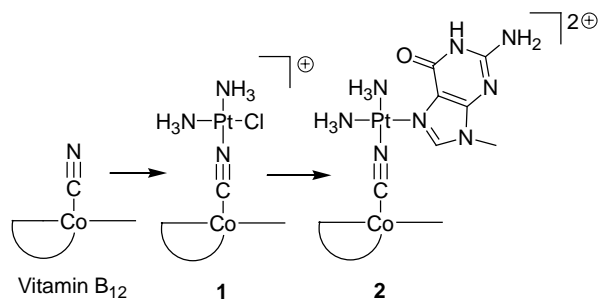
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Fast proliferating cancer cells are high B₁₂ consumers. This makes B₁₂ a potential “Trojan horse” for delivering therapeutic agents to cancer tissue. Conjugates of B₁₂ and cisplatin could improve the selective uptake of this well known anti-cancer drug in malignant tissue and thus reduce its general toxicity.

The cyanide ligand of vitamin B₁₂ can act as a ligand for an additional metal center, yielding bridged two-metal species.¹ *cis*-[PtCl(OH₂)(NH₃)₂]⁺, the mono-activated form of cisplatin, reacts with the cyano ligand of cobalt in vitamin B₁₂ (cyano-cobalamin) to form the Co-C≡N-Pt conjugate **1**.² Adducts of other Pt^{II} species with varying numbers of chloro- and amino-ligands will be presented.



x-ray structure of 1



The chloride ligand in **1** is fairly labile and can be exchanged by aromatic bases. This allows the binding to N⁷ of methyl guanine to form **2**, but also the introduction of a further functionality such as a fluorescence marker or a bioactive compound. In general, the platinum core could be used as a linker between B₁₂ and any molecule of interest, especially as the products are not as light sensitive as the commonly used organometallic cobalamins.

1. S. Kunze, F. Zobi, P. Kurz, B. Spingler, R. Alberto, *Angew. Chem.-Int. Edit.* **2004**, 43, 502.
2. S. Mundwiler, B. Spingler, P. Kurz, S. Kunze, R. Alberto, *Chem.-Eur. J.*, in press.