

Interaction of the $[\text{PtCl}_2(\text{DMSO})_2]$ Complex with L-Cysteine

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The reaction between $[\text{PtCl}_2(\text{DMSO})_2]$ and L-cysteine (L-Cys) has been investigated in the presence of micelles of sodium dodecyl sulfate (SDS) – as a model for biological membranes. Additionally, the inhibitory effect of $[\text{PtCl}_2(\text{DMSO})_2]$ on the Na^+,K^+ -ATPase activity and its partial prevention with 10 mM L-Cys were demonstrated. The interaction of L-Cys with $[\text{PtCl}_2(\text{DMSO})_2]$ resulted in the formation of a $[\text{Pt}(\text{DMSO})_2(\text{L-Cys})_2]^{2+}$ (DMSO)₂] complex, which most probably occurs through stepwise replacement of Cl^- with L-Cys. It has also been demonstrated that neither the pH value nor SDS affects the composition of the new complex. On the other hand, the pH value and SDS do affect the reaction rate, most probably due to electrostatic interactions with reactants. In summary, this study can be used as a simple model approach for the investigation of reaction mechanisms between platinum complexes and various biomolecules, and for the determination of potential toxicity and/or side effects of antitumour platinum drugs.

Key words: Platinum Complexes, L-Cysteine, Na^+,K^+ -ATPase