LETTER TO THE EDITOR

Preparation of *trans*-1,2-Diaminocyclohexanetetra-chloroplatinum(IV)

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The complex *trans*-1,2-diaminocyclohexanetetra-chloroplatinum(IV) (ormaplatin, tetraplatin) is a second generation antitumor drug, which is similar in efficiency with respect to various tumors but less nephrotoxic than *cis*-dichlorodiaminoplatinum(II) (cisplatin). It is also efficient against the human and murine tumor cells having the acquired resistance to cisplatin [1]. The preparation of this compound is based on the reactions (1) [2, 3] and (2) [1, 4] where 1,2-Dach is *trans*-1,2-*d,l*-diaminocyclohexane):

This communication presents a new procedure for the preparation of $[\text{Pt}(1,2\text{-Dach})\text{Cl}_4]$.

1,2-Dach · 2HCl (0.74 g, 3.96×10^{-3} mol) in 3 M HCl (5 mL) was added at room temperature to $\text{H}_2[\text{PtCl}_6] \cdot 6\text{H}_2\text{O}$ (2 g, 3.85×10^{-3} mol). After 30 min, the precipitate was filtered off and dried in vacuum. Water (15 mL) was added to the resulting intermediate product $(1,2\text{-DachH}_2)[\text{PtCl}_6]$ (1.81 g, 3.46×10^{-3} mol), and the mixture was kept for 2 h at room temperature. After the supernatant solution became pale yellow, the process was terminated, and the resulting precipitate of the target product was filtered off, washed with ethanol, and dried. The yield of $[\text{Pt}(1,2\text{-Dach})\text{Cl}_4]$ was 1.24 g (80%).

The composition of the compound was confirmed by elemental analysis (platinum was quantified by the gravimetric method, and carbon, hydrogen, and nitrogen were quantified on a EA 1108 CHNS analyzer). The individual character of $[\text{Pt}(1,2\text{-Dach})\text{Cl}_4]$ was proved by powder X-ray diffraction [5] and IR and UV spectroscopy.

The preparation of the complex $[\text{Pt}(1,2\text{-Dach})\text{Cl}_4]$ by reactions (1) and (2) is rather complicated and requires the use of additional reagents, in particular, DMF and gaseous chlorine for reaction (1) and acetone and ether for reaction (2). To perform reaction (2), repeated evaporation with successive carrying out of chemical operations was used [1, 4], which markedly decreased the yield of the target product (54%) and increases the duration of synthesis.

Using the proposed procedure, $[\text{Pt}(1,2\text{-Dach})\text{Cl}_4]$ can be obtained markedly more easily and in a higher yield.

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