

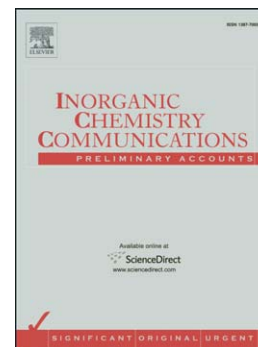
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Iwona Łakomska, Marzena Fandzloch, Andrzej Wojtczak

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Dimeric ruthenium-triazolopyrimidine complex: synthesis and structural characterization

Iwona Łakomska^a, Marzena Fandzloch^a and Andrzej Wojtczak^b

^aBioinorganic Chemistry Research Group, Faculty of Chemistry, Nicolaus Copernicus University, Gagarina 7, 87-100 Toruń, (Poland), e-mail: iwolak@chem.umk.pl

^bDepartment of Crystallochemistry and Biocrystallography, Faculty of Chemistry, Nicolaus Copernicus University, Gagarina 7, 87-100 Toruń, (Poland)

Rare diruthenium(II) complex with the bridging 1,2,4-triazolo[1,5-*a*]pyrimidine (tp) ligand was synthesized and characterized using various analytical tools (X-ray crystallography, IR and ¹H, ¹³C, ¹⁵N NMR). Assays of *in vitro* cytotoxicity against two human cancer cell lines (A549 – non-small cell lung carcinoma and T47D – breast carcinoma) and normal mice fibroblasts (BALB/3T3) have been carried out.

Triazolopyrimidine ligands (Figure 1) [1] have multiple coordination sites therefore their different varieties of coordination modes and metal interactions are possible. The coordination chemistry of 1,2,4-triazolo[1,5-*a*]pyrimidine derivatives is a field of research that has yielded a considerable number of new compounds with interesting structural features [1]. Triazolopyrimidines can bind in mono- or bidentate (chelating or bridging) mode, which can result in mono or multinuclear complexes [2-5]. Generally, reported X-ray structures have confirmed the presence of monodentate triazolopyrimidines in many transition complexes [3,5-12]. The triazolopyrimidines are rarely bidentate coordinated. However, this coordination mode is important because it usually gives rise to the formation of dinuclear (homo- and heteronuclear) compounds, especially with Pt(II) and Pd(II) ions [13-17, 19], with interesting properties.

Figure 1.

The molecular structure of dinuclear triazolopyrimidine complexes, both homonuclear (Pt–Pt, [14-17], Pd–Pd [13] or Cu–Cu [18]) and heteronuclear (Pt–Pd [14, 17] and Pt–Ag [19]) have been reported with various triazolopyrimidines.

First, the diruthenium compound [Ru₂Cl₂(dmsO)₂(μ₂-Cl₂)(μ-tp)]·H₂O (**1**) was synthesized by heating the *cis*-[RuCl₂(dmsO)₄] [27] (0.2778 g, 0.5735 mmol) and 1,2,4-triazolo[1,5-*a*]pyrimidine (0.0689 g, 0.5735 mmol) under reflux in 25 mL of a 1:4 water: ethanol mixture for 8 h. Slow evaporation of the solvent resulted in 0.1881 g of dark orange crystals (yield 61%). Analysis: calcd/exp. for C₁₃H₃₀Cl₄N₄O₅Ru₂S₄: C 19.7/19.5; N 7.1/7.1; H 3.8/3.9%.

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