STRUCTURAL CHARACTERIZATION OF HETEROCYCLIC LIGANDS AND THEIR METAL COMPLEXES WITH ANTIPROLIFERATIVE ACTIVITY

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Bioorganometalic complexes have attracted considerable interest and have shown promise for potential application in the treatment and diagnosis of cancer and bioimaging agents, some acting as theranostic agents. The accumulation of the Re(I) benzimidazo[1,2-a]quinolone complex in the lysosomes of colorectal carcinoma CT26 cells indicated the site of its bioactivity, thus making this complex a potential theranostic agent.[1] Bis(2-picolyl)amine (bpa), iminodiacetamide (imda), mono- and bis-1,2,3-triazole (bta) ferrocene ligands (L) with and without aliphatic linker were prepared by multistep synthesis. The *cis-fac*, *trans-fac*, or *mer* stereochemistry of their ML2 complexes with Ni(II), Cu(II), Cd(II), and Zn(II) was studied.[2,3] Some quinoline- and coumarin-derived 1,2,3-triazole and isoxazole analogs and their Re(I) and Ru(II) complexes showed pronounced antiproliferative activity.[4,5] The prepared ligands and their metal complexes are fully characterized by NMR and single crystal X-ray diffraction (Fig. 1).

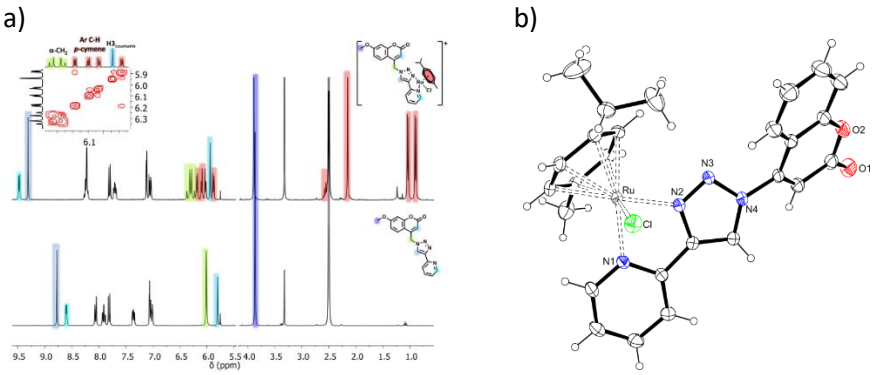

Figure 1. a) Comparison of proton NMR spectra of coumarin ligand and its Ru(II) complex; b) crystal structure of coumarin Ru(II) complex.

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REFERENCES

[1] S. Jakopec, L. Gourdon-Grünewaldt, I. Čipor, A. Meščić Macan, B. Perić, I. Piantanida, K. Cariou, G. Gasser, S. Kirin, S. Raić-Malić, *Dalton Trans.* **2023**, 52, 9482.
[2] S. Jakopec, N. Pantalon Juraj, D. Jadreško, R. Vianello, A. Brozović, V. Tadić, L. Milić, B. Perić, S. Raić-Malić, S. Kirin, *Appl. Organomet. Chem*. **2024**, 38, e7415.
[3] S. Jakopec, N. Pantalon Juraj, A. Brozovic, D. Jadreško, B. Perić, S. Kirin, S. Raić-Malić, *Appl. Organomet. Chem*. **2022**, 36, e6575.
[4] S. Jakopec, L. Ferhatovic Hamzic, L. Bočkor, I. Car, B. Perić, S. I. Kirin, M. Sedić, S. Raić-Malić, *Arch. Pharm*. **2024**, 357, 2400271.
[5] M. Piškor, I. Ćorić, B. Perić, K. Mišković Špoljarić, S.I. Kirin, Lj. Glavaš-Obrovac, S. Raić-Malić, *J. Inorg. Chem*. **2025**, 262, 112770.