

**Presentation title: Antioxidant Activity of Gd(III) And Ho(III) Complexes with 1,2,3-Triazole Ligand**

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**Abstract (250-300 words):**

Lanthanide transition metals are of critical importance for modern technology - in lasers, industrial magnets, thermonuclear reactors, photocatalytic systems, electric cars, solar cells, anti-counterfeit protection of banknotes, wind turbines, NMR contrasts, among others. Their applications are generally related to the excellent fluorescent properties of lanthanide atoms and ions as well as their magnetism. In recent years lanthanide compounds have been gaining more and more traction as potential novel drug molecules. Their ionic mimicry towards a number of biometals and excellent fluorescent properties combined with the so-called ligand "antenna effect" make lanthanide complexes suitable candidates for novel theragnostic agents. 1,2,3-Triazole is a prominent pharmacophore, present in a large number of medicinal molecules - anticancer, antimicrobial, antidiabetic, neuroprotective, etc. The present study elucidates the potential antioxidant biological activity of a fluorescent 2H-1,2,3-triazole-bearing ligand (BNP01 - Sodium 2-(4-chlorophenyl)-5-(pyrrolidine-1-yl)-2H-1,2,3-triazole-4-carboxylate)) and its complexes with Gd(III) and Ho(III). Both ligand and complexes were tested for scavenging activities against a several of biologically significant reactive species - hydroxyl radicals, generated by UV-induced water radiolysis and Fenton reaction; superoxide, generated by potassium superoxide and xanthine/xanthine oxidase enzymatic model system; hypochlorite, derived from sodium hypochlorite. In addition, possible mechanisms of radical scavenging were investigated by way of the DPPH and ABTS assays. UV-VIS spectroscopy and chemiluminometry were applied during the investigations. Relative differences in observed activity were discussed. In addition, a comparison between BNP01, its complexes with Gd(III) and Ho(III) and a previously reported 1,2,3-triazole ligand and its respective Gd(III) and Ho(III) have also been discussed.

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**Biography (150-200 words):**

Dr Lozan Todorov currently serves as a Senior Assistant Professor at the Department of Chemistry at the Faculty of Pharmacy in Medical University – Sofia, Bulgaria. His PhD thesis, under the scientific supervision of prof. Irena Kostova, deals with antioxidant properties of gallium and lanthanum complexes with 5-aminoorotic acid. He has participated in and overseen a number of university-level projects in close collaboration with Dr Hristova-Avakoumova at the Department of Medical Physics and Biophysics at the Faculty of Medicine, Medical University-Sofia. Dr Todorov's research experience includes a variety of antioxidant assays, involving a different reactive species, derived from various model systems. His current research interests are associated with the promising field of lanthanide coordination chemistry and its potential applications in biomedical sciences. To that effect, together with prof. Kostova, Dr Hristova-Avakoumova and in collaboration with a multinational research team, including prominent scientists from Spain, India and Italy, Dr Todorov is participating in a new project "Biologically Active Heterocyclic Ligands and Metal Complexes with Antioxidant Activity", part of the Research Universities program, financed by the European Union, the Bulgarian Ministry of Education and the Bulgarian National Sciences Fund.