# THE IMPACT OF THE COORDINATIVE COMPOUNDS, THIOSEMICARBASIDE DERIVATES ON THE OXIDATIVE STRESS INDICES IN *EX VIVO* EXPERIMENTS

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Background: An increased interest is actually offered in the evaluation of the impact of the new copper coordinative compounds (CCC) - thiosemicarbaside derivates. CCC showed important antitumoral properties, however their influence on the oxidative stress (OS) has not been studied. The oxidative stress (OS) is caused by the imbalance between the systemic manifestation of the reactive oxygen species (ROS) and the biological system's ability to detoxify them.

Aim: to study the influence of the new copper coordinative compounds, thiosemicarbaside derivatives, coded as CMA-181, CMC-34, CMD-8, CMG-41 andCMJ-33 on the OS indices in *ex vivo* experiments.

Material and methods: the new CCC, thiosemicarbaside derivatives, coded as CMA-18, CMC-34, CMD-8, CMG-41, and CMJ-33 developed at the State University of Moldova in the Laboratory "Advanced materials in biopharmaceutical and technical" were evaluated in several *ex vivo* experiments in 2 concentrations – 1,0 and 10,0 mM/L, in which was used the peripheral blood samples collected from 8 conventionally healthy individuals [1, 2, 3]. The markers of OS were assessed the activity of malondialdehyde (MAD), superoxide dismutase (SOD) and catalase (CAT).

Results and discussions: Our research showed different changes exerted by the new CCC on the indices of the OS in *ex vivo* experiments in conventionally healthy individuals. The most pronounced increase of SOD compared to the initial level was registered for CMA-181 (10,0 mM/L) and (1,0mM/L), CMC-34 (10,0 mM/L) and (1,0mM/L), CMC-41 (1,0 mM/L), of MAD levels for CMG-41(10,0 mM/L) and CMJ-33 (10,0mM/L); for CAT by CMC-34 (10,0 mM/L) and CMG-41 (10,0 mM/L). Other CCC did not exhibit statistical difference on MAD, SOD and CAT levels.

**Conclusions:** The influence of studied CCC on the OS indices was selective and differentiate. Further studies are needed to evaluate the mechanisms of action in other biosystems and experiments.

**Keywords:** copper coordinative compounds, oxidative stress, *ex vivo* experiments.

**References:**

1. Gulea A., Roy J., Stavila V.et al. In vitro antileukemia, antibacterial and antifungal activities of some3d metal complexes: Chemical synthesis and structure activity relationships. *Journal of Enzyme Inhibition and Medicinal Chemistry*, 2008; 23(6):806-818.
2. Gulea A., Poirier D., Pahonţu E., Ţapcov V., Bejenari N., Roy J. *Inhibitori ai leucemiei mieloide umane în baza compuşilor coordinativi ai cuprului (II) cu saliciliden-tiosemicarbazide.* Brevet de invenţie MD3890, 2009. BOPI, 2009:4;35.
3. Pahontu Elena, Usataia Irina, Graur Vasilii et al. Synthesis, characterization, crystal structure of novel Cu (II), Co (III), Fe (III) and Cr (III) complexes with 2-hydroxybenzaldehyde-4-allyl-S-methylisothiosemicarbazone: Antimicrobial, antioxidant and in vitro antiproliferative activity // Appl Organometal Chem. 2019; e 4544.

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