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Thiol-disulfide metabolism in kidney tissue at the administration of some copper coordination compounds

*¹Veronica Sardari, ¹Valeriana Pantea, ³Aurelian Gulea, ²Olga Tagadiuc, ¹Lilia Andronache, ¹Inna Svet, ³Victor Tapcov, ¹Valentin Gudumac

¹Laboratory of Biochemistry, ²Department of Biochemistry and Clinical Biochemistry
Nicolae Testemitanu State University of Medicine and Pharmacy, Chisinau, the Republic of Moldova
³Department of Chemistry, State University of Moldova, Chisinau, the Republic of Moldova

Authors' ORCID iDs, academic degrees and contribution are available at the end of the article

*Corresponding author: veronica.sardari@usmf.md

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Abstract

Background: Thiol-disulfide metabolism is essential for normal function of the organism. Thus the interest of the scientists in this area of research continues to grow.

Material and methods: Copper coordination compounds (CCC), derivatives of thiosemicarbaside (CMD-4, CMJ-33, CMT-67), action on thiol-disulfide metabolism in the healthy *Rattus albicans* kidneys were studied. The animals were divided in 6 groups of 7 rats each. The control group included healthy rats which were injected i/m physiological solution 3 times a week, for 30 days. The rats from groups 2-6 have got 3 times a week, for 30 days, i/m injections of CCC. The activity of following thiol-disulfide metabolism enzymes in the renal supernatant has been measured: glutathion-reductase (GR), glutathion-peroxidase (GPO), glutathion-S-transferase (G-S-T), γ -glutamyl transpeptidase (γ -GTP), glutaredoxin (Grx), as well the amount of the protein SH-groups and of the total glutathione, reduced glutathione (GSH) and oxidized glutathione (GSSG) in renal tissue.

Results: The compounds exhibit different actions: CMT-67 in the dose of 0.1 μ M/kg influenced the activity of the glutathione metabolism enzymes – activated γ -glutamyl transpeptidase (γ -GTP) and glutaredoxine (Grx) and inhibited glutathione reductase (GR), while CMD-4 in doses of 0.1 μ M/kg and 1.0 μ M/kg and CMJ-33 in the dose of 1.0 μ M/kg significantly diminished the reduced glutathione (GSH) level and increased the amount of the oxidised one (GSSG).

Conclusions: Selective action of the copper coordination compounds established by this study opens new possibilities of their usage in the therapy of kidney diseases.

Key words: thiol-disulfide metabolism, copper coordination compounds, kidney tissue.

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