

concentrations of 187.5, 93.75 and 46.9 µg/ml, showed an inhibition rate in the ABTS test equal to 40%, 20%, 13% and, respectively, 40%, 24% and 17%. The biologically active compounds present in the leaves of *Taraxacum officinale* can act as free radical capture agents, thus participating in the prevention of DNA adduct formation and in the prevention of mutagenesis and carcinogenesis and may also exert chemopreventive effects.

Conclusions. In this research, we developed an environmentally sustainable procedure for determining the antioxidant properties of *Taraxacum officinale* leaf extracts. We applied this procedure to select the most efficient method for extracting bioactive molecules with the highest antioxidant activity in the ABTS free radical capture assay. This method is fast, non-toxic, low cost and environmentally sustainable and due to its efficiency, it can be used in various biomedical applications.

Key words: ABTS free radical capture assay, *Taraxacum officinale*, extraction of biologically active compounds.

293. INFLUENCE OF COORDINATING COMPOUNDS OF COPPER, DERIVATIVES OF THIOSEMICARBAZIDE, ON NITRIC OXIDE HOMEOSTASIS IN HEPATIC TISSUE

Author: **Valeriana Pantea**

Co-authors: Ala Fulga, Inna Şveţ

Scientific advisers: Olga Tagadiuc, MD, PhD, Associated professor, Head of Department of Biochemistry and Clinical Biochemistry; Valentin Gudumac, MD, PhD, Professor, Head of Biochemistry laboratory, *Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

Introduction. The researches carried out in the last decades have brought more and more evidence that nitric oxide (NO) and its derivatives play an important role in various physiological and pathological processes, including liver diseases. The therapeutic efficacy of the thiosemicarbazide derivatives is known, but the data regarding their influence on the main nitric oxide metabolites – nitrite (NO₂) and nitrate (NO₃) in the liver tissue are missing.

Aim of the study. Based on the above, the purpose of the study is to investigate the influence of new copper coordinating compounds (CCCs), thiosemicarbazide derivatives on the level of nitric oxide metabolites *in vivo* in laboratory animal studies.

Materials and methods. The Research Ethics Committee of the *Nicolae Testemitanu* SUMP (favourable opinion no. 73 of 26.04.2017) approved the research. The action of the thiosemicarbazide derivatives – CMJ-33 and CMT-67 was evaluated in experiments on 40 male white Wistar rats randomly divided into the following groups: I control – intact animals; II and III – animals, which were administered CMJ-33 and CMT-67, respectively, at a dose of 1.0 mg/kg body weight for 30 days. The determination of NO metabolites was performed according to the methods described previously.

Results. The study shows that the tested CCCs induced statistical changes in the content of NO metabolites in the liver tissue. Thus, CMJ-33 and CMT-67 statistically significantly increase the summary content of NO₂ + NO₃ by 32% and 20% compared to the values attested in the control group. The concentration of NO₂ after administration of CMJ-33 and CMT-67 increases by 43% and, respectively, by 23% compared to the control values. The NO₂/NO₃ ratio relevantly increases after CMJ-33 administration by 47%, while CMT-67 causes a discrete increase of this ratio by 12% in the liver.

Conclusions. The obtained results demonstrate the ability of the CMJ-33 and CMT-67 to induce the formation of NO derivatives, in particular, NO₂ in liver tissue. This can be certified as a positive moment because nitrite acts by a mechanism distinct from that of nitric oxide, and it is capable of modulating multiple intracellular/extracellular signaling pathways, at lower concentrations than those required for induction of methemoglobinemia and vasodilation. Evaluation of the NO homeostasis is important for the research of new bioactive compounds for a better understanding of their mechanisms of action, which will facilitate not only the discovery of new targets for their action, but also the development of new therapeutic agents. **Key words:** nitric oxide metabolites, copper coordinating compounds, thiosemicarbazide derivatives, liver tissue.

294. ISCHEMIA-REPERFUSION INJURY IN OVARIES

Author: **Ana-Maria Bulat**

Scientific adviser: Cornelia Lazăr, PhD, University Assistant, Department of Biochemistry and Clinical Biochemistry *Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

Introduction. Ovarian torsion is a condition in which the ovary twists around its pedicle resulting in diminished blood flow with the ischemia of the organ. It is the fifth most common cause of acute abdomen in women and requires detorsion to treat. Following reperfusion a cascade of reactions is initiated with the formation of reactive oxygen and nitrogen species (ROS, RNS), which lead to cell injury.

Aim of the study. To determine the effects of ischemia-reperfusion injury on ovarian viability and later fertility in patients with ovarian torsion.

Materials and methods. Studies from the specialized journals of PubMed, Medline, Hinari were used, which focused on the structural and functional changes in detorsioned ovaries, their viability, follicular reserve and fertility.

Results. Ischemia in torsioned ovaries leads to the formation of ROS and RNS such as superoxide anion radicals, nitric oxide and others. Following reperfusion the influx of large amounts of oxygen leads to the increase of ROS production which causes inflammation and tissue damage. Therefore the damage to the tissue is exponentially more severe in the reperfusion rather than in the ischemic phase. ROS are responsible for the peroxidation of the membrane lipids with the formation of malonic dialdehyde (MDA), increased cell membrane permeability, DNA chain breaks and mutations, massive influx of Ca²⁺ from its binding sites with the release of cytochrome c from the mitochondria and activation of caspase-dependent cell death. These free radicals are scavenged by the antioxidant enzymes, such as superoxide dismutase, catalase and by vitamin C, which seems to be present in high concentrations in the ovary and can help partly minimize the cell damage. Studies in patients with ovarian torsion show that the majority of detorsions are successful even in later stages with the recovery of normal blood flow and the preservation of the organ structure. Follicular reserve has also been shown to be maintained even after prolonged periods of ischemia. Few studies are available for the fertility of these patients, but nonetheless they show pregnancies in the majority of cases.

Conclusions. The ovary seems to possess a certain degree of resistance to ischemia-reperfusion injury even after long periods of ischemia as shown by the preservation of its structure, follicular reserves and fertility, but further studies are required to assess all of the