Contribution ID: **85** Type: **oral (15 minutes)**

# RADIATION PROTECTIION WITH NEWLY SYTHESIZED SCHIFF BASE COPPER COMPLEXES DERIVED FROM L-HISTIDINE AND PYRIDINECARBOXALDEHYDES

*Wednesday, 17 October 2012 11:30 (15 minutes)*

Efficient bioactive antioxidant properties are exhibited by copper organic complexes along with their potential for prevention and/or treatment of ionizing radiation injury is mainly related to SOD- and Catalase-mimetic activities, as well as their respective facilitation of specific metalloelement-dependent enzyme de novo syntheses enabling them to prevent the accumulation of toxic metabolic products, promote biochemical, cellular, and tissue repair processes required for recovery from radiation injury including survival of lethally irradiated mice and rats.
The new copper complexes of Schiff bases derived from L-histidine amino acid and isomeric 2-, 3-, 4- pyridinecarboxaldehydes were synthesized and studied for radioprotective activities in white rats. The compounds were administered to rats in deionized water at doses of 10 mg/kg or 40 mg/kg using subcutaneous or oral modes of administration. In 1 hour or 24 hours after treatment animals were exposed to single X-ray irradiation at 6.5 Gy (LD50/30). Animals irradiated without preliminary treatment served as Control.
Radioprotective effects of the compounds were assessed through determination of the indices of rats'survival and their average life span in 30 days post exposure, as well as evaluation of cytogenetic state of bone marrow cells in survived animals. Additional sets of experiments were undertaken involving animal exposure to X-rays at 5 Gy in 1 hour post the preliminary subcutaneous injection of 10 mg/kg compounds to rats in order to elucidate the influence of compounds studied on SOD and Catalase activities. On 3, 7, 14 and 28 days after irradiation SOD and Catalase activities were analyzed in blood of animals.
The research demonstrated that Schiff bases derived from L-histidine amino acid and isomeric 2-, 3-, and 4- pyridinecarboxaldehydes possess no radioprotective activities or they are weakly expressed , while their copper(II) complexes are effective radiation protective agents against radiation-induced lethality in rats at subcutaneous injection 1 hour before exposure, as well as at oral administration 24 hours prior to irradiation. SOD- and Catalase-mimetic activity of the compounds studied allowing to protect organism from radiation-induced oxidative stress, as well as cytogenetic activity of copper complexes to a certain extent predetermine radioprotective ability of these metallocomplexes.

Acknowledgements: This work was supported by ISTC A-1764 Project.

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**Session Classification:** Oxidative Stress

**Track Classification:** Oxidative Stress