The antioxidant effect of resveratrol in cisplatin induced oxidative stress

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Statement of the Problem: Cisplatin is one of the most used cytostatic with a broad antitumor spectrum. The uses of different cytostatic are followed by release of reactive oxygen species (ROS) responsible for the adverse effect of the chemotherapy. The purpose of this study was to determine if the resveratrol administration can reduce the cisplatin induced oxidative stress.

Methodology: The study was conducted on 24 Wistar rats divided in four groups: C - the control group receiving 1 ml of physiological saline I.P., CR - control blank group receiving 20 mg/kg resveratrol I.P., CP - receiving cisplatin 10 mg/kg I.P. and CP+R receiving combination of 10 mg/kg cisplatin and 20 mg/kg resveratrol I.P. At the end of experiment were analyzed the biomarkers of oxidative stress enzymes: Glutathione (GSH), glutathione reductase (GSH-r), glutathione peroxidase (GSH-px) catalase (CAT), superoxide dismutase (SOD) and malondialdehyde (MDA).

Findings: Administration of cisplatin was followed by significant decrease of GSH (-29.44%, $p<0.01$), GSH-r (-31.88%, $p<0.0001$), CAT (-52.28%, $p<0.0001$) and increase of GSH-Px (+31.25%, $p<0.001$), SOD (+11.27%, $p>0.05$) and (+24.05 $p<0.05$) comparative to control group. In case of cisplatin combined with resveratrol administration, the majority of biomarker enzymes of oxidative stress presented not significant ($p>0.05$) differences comparative to control group (GSH: -4.04%, GSH-r: -1.96%, GSH-px: +1.97%, SOD: -1.92%, MDA: +10.31%), exception in case of CAT which remains significantly lower than control (-21.62%, $p<0.01$).

Conclusion: Analyzing the dynamic of enzymes biomarkers of oxidative stress we can say that administration of resveratrol can reduce the ROS formation and has a good effect as antioxidant in case of cisplatin administration.

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