Effect of co-treatment of rats with cisplatin and tannic acid on substances involved in poly(ADP-ribose) polymer turnover in rat liver nuclei

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Defective mechanisms of DNA repair are intrinsic to vast majority of tumor cells and are exploited as potent pharmacological target for therapeutic treatment of cancer patients. One of the key events involved in DNA damage repair is coordinated activation of poly(ADP-ribose)polymerase 1 (PARP 1) and poly(ADP-ribose)glicohydrolase (PARG). PARP 1 and PARG are responsible for poly(ADP-ribose) (pPARr) chains turnover involved in regulation of DNA repair. Cisplatin is a powerful antineoplastic drug. Currently, chemotherapeutic regimens are employed based on the use of antioxidant supplementation alongside with cisplatin. Tannic acid (TA) is a plant-derived polyphenolic substance employed in medicine exhibits anti-oxidant and anti-cancer activities and inhibits PARG. Here we study the effect of co-administration of TA and cisplatin on PARP 1, PARG and NAD+ content in rat liver. Our data come to show that in 48 hours after injection cisplatin inhibited PARP 1 activity in liver nuclei by 50%. In 48 hours after co-treatment of rats with TA and cisplatin PARP 1 was stimulated by 50% in liver nuclei. Intra-nuclear NAD+ content in liver of rats treated with cisplatin or TA was down-regulated. Co-treatment of rats with TA and cisplatin had no impact on basal level of NAD+ content in liver nuclei of rats. Our data indicate that co-treatment with TA and cisplatin can decrease bioavailability of drugs, which eventually modulated the content and activity of biochemical components involved in pPARr turnover. Source of support: This work was supported by the RA MES State Committee of Science, in the frames of the research project № 18T-1F011.

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