with negative charge increase. It could be connected with inclusion of alternative mechanisms of HY action, such as pH drop. Results of our investigations indicate pH changes of Hb solution under HY influence that correlate with incubation time. While pH appears to be practically time independent for the Hb alone, it decreases in the case of incubation with HY and after 1 h irradiation. pH changes as large as 0.11 ± 0.03 unit can be considered as a possible mechanism of binding and releasing oxygen to heme group. We have also shown that in Hb solution it was obtained increase of met-Hb/Hb ratio that could be caused by pH drop. Thus mechanism of action of HY on Hb is mediated by ROS and by pH drop in the dark and under irradiation.

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DOSE-DEPENDENT CHANGES OF POLY(ADP-RIBOSE) POLYMERASE-1 ACTIVITY IN RAT LIVER CELL'S AND THYMOCYTE NUCLEI BY CISPLATIN

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Cisplatin (cis-DDPt) is widely used anticancer drug which forms various DNA-adducts in nuclei of tumor and normal cells. These changes in DNA structure suppress mitotic cycle and initiate apoptotic death program in many cell types. Poly(ADP-Ribose) Polymerase-1 (PARP-1) is well established chromatin-associated enzyme which recognizes not only DNA-nicks but unusual DNA structures as well (H-structure, Z-conformation etc). The main purpose of this study was examination of PARP-1 activity in rat liver cell's and thymocyte nuclei after cis-DDPt administration in vivo.

It was shown that PARP-1 activity from the drug-injected rat nuclei of examined tissues changed in dose- and time-dependent manner. The common therapeutic dose of cis-DDPt (5mg/1kg of animal weight) did not cause noticeable changes in PARP-1 activity in rat liver and thymocyte nuclei. However, PARP-1 activity was suppressed in rat liver nuclei about 2 times by elevated dose of cis-DDPt (10mg/1kg of animal weight) in 48 hours of drug administration. On the other hand, enzyme activity of thymocytes' nuclei

was increased by the same extend. We propose that the main reason of the observed changes in PARP-1 activity are the differences in DNA packaging in the structure of chromatin in rat liver cell's and thymocyte nuclei are the.

Our data suggest tissue specific mechanisms of cis-DDPt action and necessity of development of new chemotherapeutic regimen that will improve the effectiveness of anticancer drugs in different organs.

CHANGES OF PHOSPHOLIPID CONTENT IN NUCLEAR FRACTION FROM RAT THYMUS AFTER THE CISPLATIN ACTION

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Cisplatin is well known anticancer agent, which widely used in chemotherapy for more than two decades. It is well-established ability of cisplatin to induce all ways of apoptosis. It is well known also, that DNA is the major target for cisplatin. But whether cisplatin was enter into the nuclei and whether it has an affinity for cellular lipids is not known. Nuclear phospholipids seem to play a crucial role in the regulation of major nuclear functions and in apoptosis.

Knowledge about cisplatin-sensitivity of nuclear phosphorlipids might contribute to understanding the cisplatin antitumor action mechanisms as well as to clarifying the role of lipids in induction of apoptosis by this platinum drug.

It is of interest to establish the *in vivo* 24h effect of cisplatin on rat thymus cells nuclear phospholipids. The phospholipids were fractionated by microTCL technique. Quantitative valuation of fractionated phospholipids was established by computer software FUGIFILM Science Lab2001 Image Gauge V 4.0.

The results of our study confirm that two choline-content phospholipids, particularly phosphatidylcholine and sphingomyelin exhibit diversity in sensitivity to cisplatin action in rat thymus nuclear fraction. Increase of sphingomyelin content is accompanied by phosphatidylcholine decrease. Changes in content of other phospholipids are insignificant. The possible participation of rat

thymus nuclear phospholipids in the cisplatin antitumor effects realization was discussed.

THE COMPARATIVE STUDY OF CUTBUTPYP4 AND COTBUTPYP4 PORPHYRINS WITH DNA

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The comparative investigations of water-soluble Cu(II)-containing cationic meso-tetrakis (4-N-Buthyl-pyridiniumyl) [CuButPyP(4)] porphyrin and Co(II)-containing meso-tetrakis (4-N-Buthyl-pyridiniumyl) [CoTButPyP(4)] porphyrin and its metal free form H_2TButPyP(4) have been carried out. An interpretation of two binding mechanism via intercalation and outside binding of porphyrins with calf thymus DNA was made and the features of its complexformation were clarified [1]. The complexes have been studied by optical absorption and circular dichroism (CD) methods.

All experiments were carried out in phosphate buffer 1BPSE (1BPSE=6mM Na_2HPO_4 + 2mM NaH_2PO_4 + 185mM NaCl + 1mM EDTA), pH 7.2, at different ionic strength μ=0.02 and μ=0.2.

The absorbance spectra at Soret band show red shift and high hypochromic effect (45%) for intercalation mode binding of H_2TButPyP(4) and CuTButPyP(4) porphyrins with DNA. In the case of CoTButPyP(4) with axial ligand less hypochromism (29.3%) was observed. These effects are more apparent at high ionic strength (μ=0.2). Binding mode with DNA was determined by sign of ICD spectra. It was shown, that the H_2TButPyP(4) and CuTButPyP(4) porphyrins prefer intercalation binding mode, while CoTButPyP4 porphyrin interact with DNA by external binding mode. The binding parameters (K_b and n) were calculated using changes of the maximum absorption at Soret band. Based on the binding constants we can conclude that Cu(II)TMPyP and Co(II)TMPyP have the close affinity with DNA.

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DIFFERENT STABILITY OF RNA SECONDARY AND TERTIARY STRUCTURES

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The RNA molecule plays a remarkably versatile role in cellular processes [1, 2]. The main focus of the given article is to clarify contribution of the chain entropy in stability of RNA secondary and tertiary structures. The Hamiltonian of the model includes relevant interactions explicitly [3]. The proposed model includes the terms, describing chain elasticity, Watson-Crick base pairs formation and nonspecific electrostatic repulsion, screened by counter-ions immersed in solution. In the frameworks of the given model, thermodynamic stability of secondary and tertiary structures is estimated. We show that different stability of secondary and tertiary structures governed by chain entropy rather than energy of interaction.

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INFLUENCE OF HYPERICIN ON ACTIVITY OF ERYTHROCYTES' SUPEROXIDE DISMUTASE

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Relatively new therapeutic modality is the photodynamic therapy (PDT) that involves a photosensitizer that is selectively taken up by the target tissue, molecular oxygen and light activation. Hypericin (HY) has been intensively studied in recent years as a photosensitizer for application in anticancer PDT and in blood sterilization [1]. Photodynamic action of HY is mediated by generation of different reactive oxygen species (ROS), which define the type of photodynamic action mechanism. To reveal the influence of HY on anti-