THE PROBLEM OF TOXICITY OF ANTICANCER DRUGS AND THE METHODS OF IT REDUCTION

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The problem of cancer today is one of the most global and important. More than a half of the deaths in cancer patients is not due to illness, but because anticancer drugs which have the plenty of side effects with high toxicity and very low selectivity of action. All this leads to the necessity of searching and creating of compounds which could to reduce the side effects of anticancer drugs and improve the quality of life of patients with cancer. The one of compounds which could to reduce the side effects of anticancer drugs is aminosugar glucosamine and its derivatives. The anti-inflammatory and analgesic activities, hepatoprotection, cardioprotection, nephroprotection, immunomodulatory and regenerative activities are the main pharmacological properties of glucosamine. Glucosamine protects membrane structures of those organs that suffer due to anticancer drugs.

Purpose of the study is evaluation the effectiveness of derivatives of glucosamine as potential correctors of toxicity of anticancer drug cyclophosphamide, which is often used in medical practice. Protective properties of derivatives of glucosamine were studied under experiment with course administration of cyclophosphamide in mice. Animals were divided into 5 group. The first group received only cyclophosphamide, animals of other groups received derivatives of glucosamine in therapeutic doses: group 2 – glucosamine hydrochloride, group 3 – glucosamine sulfate, group 4 – N-acetylglucosamine, 5 group – composition of derivatives of glucosamine with quercetin. The estimated indicators were mortality (%) and life expectancy (days). Animals were inspected in the middle and at the end of the experiment. In the groups of animals which received only cyclophosphamide, the maximum of mortality was observed on 11th day of the experiment and at the end of the experiment it amounted up to 80% (8 mice). In groups of animals treated with derivatives of glucosamine the sharp peaks of mortality was observed on 11th day experiment. At the end of the experiment the mortality rates were as follow: group 2 – 50% (5 mice), 3 and 4 groups -– 90% (9 mice) and group 5 – 5 mice (50%).

During the experiment two promising compounds were identified – glucosamine hydrochloride and composition of derivatives of glucosamine with quercetin. These objects will be investigated as a possible correctors of toxic effects of cyclophosphamide.