

INFLUENCE OF UNITHIOL UPON NUCLEIFORMING OF BONE-MARROW LYMPHOCYTES OF RATS WITH SUBCHRONIC MERCURY INTOXICATION

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Our investigations on the changes of bone-marrow lymphocyte mitosis in rats with subchronic mercury intoxication (SMI) and the influence of Unithiol (U) upon this process (1) were continued in studying the nucleiforming cell processes showing their functional activity (3). We could not find bibliographical data concerning the influence of antidotic therapy with U upon nucleiforming in the conditions of SMI. We presume our study to be actual having in mind the established theratogenic effect of the organic mercury compounds (5, 6, 7, 8), as well as the gonadotoxic and embryotoxic action of metal mercury vapours (2).

Material and methods

The study covers 90 white male rats divided into the following groups: 1) Control. 2) Treated s. d. with HgCl_2 (dose 0,25 mg/kg BW — $1/30$ DL_{50} of the compound). 3) Treated i. m. with U (dose 0,38 mg/kg BW). 4) Treated with the combination $\text{HgCl}_2 + \text{U}$ (same doses).

The applied dose of U provides a double mollar ratio of the antidote to the injected dose of HgCl_2 . All animals are treated for a period of 45 days. 3 animals are killed every 7th, 15th, 30th and 45th day of treatment and another 3 animals — 30 days after the end of treatment. Smears of their femoral bone-marrow are prepared by using the method of Fox et al. (4).

A total number of 40 000 blastic cells are studied: blastic cells without, with one and with more nuclei are counted; the number of the nuclei in 100 cells is determined; the results are analysed statistically by using the method of alternation.

Results and discussion

A decrease in number of blast cells in conditions of SMI is established. No changes in blast cells without nuclei are registered up to the 15th day ;after 30th day a slight decrease is established but from 45th day a further increase of their values is found. Blast cells with nuclei show a constant number (compared to the controls) on 7th and 15th day, but on 30th day they tend to multiply. After 45th day and during recreation their number goes down again. Constant number of all nuclei is registered until 30th day, whereas after that a decrease is reported.

We establish that the treating of animals with U tends to an increased number of blast cells in all intervals (except 7th day); the percent of blast cells without nuclei is unchanged. The latter are multiplied on 15th, 30th and 45th

day, whereas after recreation their number tends to that of the controls. U influences upon the decrease in number of blast cells with nuclei as well as total number of all nuclei (100 cells) in any interval (except 7th day).

The combination of $\text{HgCl}_2 + \text{U}$ decreases unconsiderably the amount of all blast cells at the beginning of the experiment (up to 7th day), while in the rest intervals this effect is strongly considerable. There is a simultaneous increase of the percent of blast cells without nuclei, decrease in number of cells with nuclei, and also the total number of nuclei in 100 cells. HgCl_2 , applied alone, tends to get down the total number of blast cells in bone-marrow of rats with SMI. It suppresses the processes of nucleiforming; this effect is more expressed between 30th and 45th day and is still the same even after recreation.

Our data correlate to those of V. M. Ignatiev (1980) who reports a statistically reliable change in the functional state of rats' sperm cells and a decrease in DNA- and RNA-amount in their testicles (established even in their first generation); the animals are subjected to a chronic intoxication with metal mercury vapours. It is obvious that the application of U only tends to a percentage improvement of blast cells in experimental conditions and later recreation. However, it can not restore their functional activity; this is because the number of cells without nuclei is higher, whereas that of the cell nuclei goes down (between 15th and 45th day of treatment).

The combination of $\text{HgCl}_2 + \text{U}$ makes stronger the suppressive effect of HgCl_2 over blastic activity and nucleiforming of bone-marrow cells of experimental animals. These data analysed together with our previous results (1) allow the conclusion that U, being antidote of HgCl_2 , provides insufficient effect to normalize the affected by SMI functions and activity of bone-marrow cells of the experimental animals.

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**ВЛИЯНИЕ УНИТИОЛА НА ЯДРЫШКООБРАЗОВАНИЕ ЛИМФОЦИТОВ
КОСТНОГО МОЗГА КРЫС ПРИ СУБХРОНИЧЕСКОЙ РТУТНОЙ ИНТОКСИКАЦИИ**

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Р Е З Ю М Е

Исследовано действие унитиола на ядрышкообразование лимфоцитов костного мозга у крыс, которые подвергались субхронической ртутной интоксикации. Антидот использован в дозе, обеспечивающей его двойное молярное соотношение к введенному количеству хлорной ртути. Ядрышкообразование прослеживалось на 7-ой, 15-ый, 30-ый и 45-ый дни после его прекращения.

Установлено, что комбинированное применение хлорной ртути (сулемы) и унитиола усиливает тормозящее действие хлорной ртути по отношению к бластной активности и ядрышкообразованию костномозговых клеток лабораторных животных. Высказывается мнение, что действие унитиола в качестве антидота хлорной ртути у крыс в условиях субхронической ртутной интоксикации не является достаточно эффективным для преодоления нарушения ядрышкообразовательных процессов лимфоцитов костного мозга.