

**EFFECTS OF COLCHICINE ON ERYTHROPOIESIS AND ON SOME PROPERTIES OF THE ERYTHROCYTES IN RATS**

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It is known that assembling of cell tubulin molecules in microtubules is blocked by colchicine (CCH) (2,4). That disturbs mitotic processes and functions in many cell systems (2-4). Blood system at treatment with high doses of CCH reacts with leukocytosis, thrombocytosis and bone marrow aplasia. CCH depresses thrombocyte formation under "in vitro" (7), and "in vivo" conditions (5). There are no complex studies of CCH influence on erythropoiesis and on some properties of erythrocytes. Our aim was to investigate CCH influence on erythropoiesis and on some functions of mature erythrocytes. Experiments were carried out on 207 white female Wistar rats with 170-180 g body mass divided in three groups: 1<sup>st</sup> group (86) treated with CCH once daily - 0,5 mg/kg b.m. Colchicine (Merck, Germany); 2<sup>nd</sup> group (26) treated with gamalumi-colchicine (Sigma, USA) once daily - 0,5mg/kg b.m. and 3<sup>rd</sup> group (95) treated with the solvent for CCH and lumi-CCH (0,9 % NaCl) for control. Duration of the experiment was 3 days. Serum iron, <sup>59</sup>Fe incorporation in newly formed erythrocytes, erythrocytes' deformability and G-6-PD activity were determined according to already described methods (1).

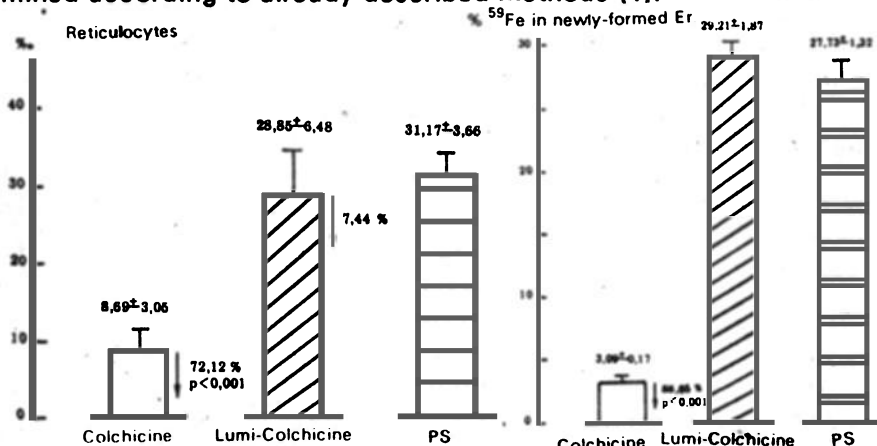


Fig.1 The data are presented as means ± SE towards 1000 erythr.

Fig.2 The data are presented as means ± SE

Determination of erythrocytes peroxide haemolysis was performed according to the method of Jager (8). Results are presented as means  $\pm$  SE. Considerable decrease of reticulocytes with 72,12% ( $p < 0,001$ ) and of  $^{59}\text{Fe}$  incorporation in newly formed erythrocytes with 88,85% ( $p < 0,001$ ) (fig.1 and 2) in CCH treated rats was observed. Serum iron and coefficient of transferrin saturation were increased (fig.3). Activity of G-6-PD in erythrocytes showed

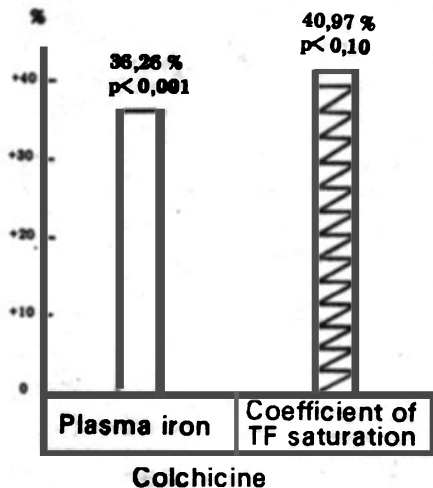


Fig.3. Data are presented as percent deviation to control levels accepted as 0

depression of erythropoiesis by CCH does not influence substantially on the erythrocytic functions: deformability, peroxide resistance and activity of G-6-PD.

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tendency for increase in comparison with the control group. Deformability of erythrocytes and peroxide haemolysis after treatment with CCH did not show significant changes versus control group. The probable reason for the depression of erythropoiesis is antitubulin effect of CCH possibly on early erythroid cells and may be also reduced biogenesis of erythropoietin described by George and Rodgers (6). The reason for the increased serum iron according to us is its diminished utilization by erythroid bone marrow, indicator for which is the considerable decrease of  $^{59}\text{Fe}$  incorporation by newly formed erythrocytes. It is obvious that the underlined depression of erythropoiesis by CCH does not influence substantially on the erythrocytic functions: deformability, peroxide resistance and activity of G-6-PD.