EFFECTS OF SOME DRUGS ON RAT ERYTHROCYTE 6-PHOSPHOGLUCONATE DEHYDROGENASE: AN IN VITRO AND IN VIVO STUDY

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The in vitro and in vivo effects of some drugs on rat erythrocytes 6-phosphogluconate dehydrogenase were investigated in this study. Rat erythrocyte 6-phosphogluconate dehydrogenase was partially purified with ammonium sulfate precipitation. The enzyme activity was determined by Beutler’s method. Some drugs such as ampicillin, amikacin sulfate, and netilmicin sulfate inhibited the enzyme activity in in vitro conditions, while metamizole activated it. The IC50 values of the inhibiting drugs were 66.2, 5.836, and 0.963 mM, respectively. For the drugs having low IC50 values (drug concentrations which produce 50% inhibition) (amikacin sulfate and netilmicin sulfate), in vivo studies were performed in rats (Sprague-Dawley). Amikacin sulfate at 64 mg/kg inhibited the enzyme activity significantly (p < 0.05) 2 h after dosing. Netilmicin sulfate at 6.4 mg/kg also inhibited the enzyme significantly (p < 0.05) 4 h after dosing.

Amikacin sulfate and netilmicin sulfate inhibited rat erythrocyte 6-phosphogluconate dehydrogenase both in vivo and in vitro. The enzyme was inhibited in vitro by ampicillin and activated in vitro by metamizole.

Key words: 6-phosphogluconate dehydrogenase, erythrocytes, rat, drugs

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