LETTER TO THE EDITOR

EFFECT OF INHIBITORS ON GLUTATHIONE METABOLIZING ENZYMES

Sir,

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Jaundice is observed during first week of life in nearly 60 percent of term infants and 80 per cent of preterm infants (1). Jaundice is observed in children with age group between 3 to 4 years though the infants have been not suffering for jaundice previously (2). Human erythrocyte are rich in glutathione and glutathione peroxidase (3). Studies have been done on the effect of MgCl₂ and SnCl₂ on the glutathione metabolizing enzymes.

Eight normal patients (mean age 3–6 years) and eight jaundiced patients were selected for our study attending out at the Department of Institute of Child Health, Calcutta. Whole blood was drawn by vein puncture, one part of which was collected in EDTA vial, the other part was allowed to clot separately. From EDTA vial plasma was separated by centrifugation at 2500 g for 10 min at 0°C. The packed red cells were washed thrice with isotonic saline, and the buffy coat was removed, washed erythrocytes were lysed by adding distilled water to it and allowing it to stand for 15 min at (0–4°C). This hemolysate was used as a source of enzyme in RBC. The activity of glutathione peroxidase was assayed according to the method of Pagila and Valentine (4). The assay system contained the enzyme, glutathione (reduced) glutathione reductase and NADPH in 50 mM phosphate buffer (pH–7.0) and sodium azide. The activity of glutathione reductase was assayed according to the method of Pinto and Bartley (5). The assay system contained the enzyme, oxidised glutathione, NADPH in 50 mM phosphate buffer (pH–7.4) containing 5 mM EDTA. The reaction was followed upto 3 min at 340 nm. The activity of glutathione-S-transferase was assayed according to the method of Warholm et al. (6). In vitro study was carried out with magnessium chloride and stanus chloride. The inhibitor was directly added to the erythocyte and then kept under incubation for different time intervals like 5, 10, 15 min and finally enzyme activity was estimated. Three different concentrations of each salt (1–10) nmol/dl was utilised. It was already found that MgCl₂ shows no inhibitory effect in in vitro conditions.

The results presented in Table I show control and patient values and inhibition of GSH-peroxidase, GSH-reductase and GSH-S-transferase by SnCl₂ accordingly. It is evident from Table I that at 5 nM concentration of inhibitor 20% inhibition of glu-peroxidase activity, 50% inhibition of glu-reductase activity and 25% inhibition of glu-s-transferase activity take place accordingly. At 10 nM concentration, 30% inhibition of glu-reductase, 25% inhibition of glu-peroxidase and 40% inhibition of glu-
s-transferase take place accordingly. The results of the present investigation clearly indicates the inhibition of antioxidant enzymes at a certain range of inhibitor concentration respectively in comparison to their adjacent control set. We had demonstrated earlier that the activity of glutathione peroxidase was reduced in erythrocyte of jaundiced children (2). It was explained that glutathione reductase activity had greatly increased in erythrocytes of jaundiced children to maintain steady state concentration of glutathione within the cell (7).

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