Turkish Journal of Medical Sciences

Turkish Journal

of

Medical Sciences

Keywords
Authors

medsci@tubitak.gov.tr

Scientific Journals Home Page

The in Vitro Effects of The Antimalarial Drug Primaquine, on The Activities of Some Enzymes in Human Erythrocyte Lyzates

Meltem MÜFTÜOĞLU
Nazmi ÖZER
Department of Biochemistry, Faculty of Medicine, Hacettepe University, 06100 Sıhhiye, Ankara-Turkey

Abstract: The effect of primaquine on the enzymatic antioxidant defence mechanisms of erythrocytes were determined by measuring the activities of the below enzymes, before and after 30 minutes of incubation of hemolyzates with 1 mM primaquine at 37 ◦ C. Among the enzymes studied glucose-6-phosphate dehydrogenase seemed the most sensitive enzyme; 57 % and 78 % inhibition at zero (due to the binding of primaquine to NADP binding site) and 30 minutes of incubation (due to the reactive oxygen species), respectively. Catalase, superoxide dismutase, and glutathione-S-transferase were less sensitive to primaquine-derived reactive oxygen species: 33, 11, and 0 % inhibition at the time zero and 39, 27, and 4 %, at the end of 30 minutes of incubation. Glutathione reductase and glutathione peroxidase were resistant to primaquine-derived reactive oxygen species. The Primaquine-mediated toxicity, in vivo, due to the rimaquine-NAD(P)H or/and primaquine-glucose-6-phosphate dehydroge-nase interaction, will cause damage and the degree of the damage will depend on: i. concentration of the drug, PQ; ii. incubation period and; iii. the type of the system affected. The study of the interaction of reactive oxygen species with these enzymes, will help to better understand the role of protective enzyme systems in erythrocytes to oxidative stress.

Key Words: Primaquine, inhibition, glucose-6- phosphate dehydrogenase, catalase, glutathione peroxidase, superoxide dismutase, glutathione reductase, glutathione transferase.

Turk J Med Sci 1999; **29**(4): 409-412.
Full text: pdf
Other articles published in the same issue: Turk J Med Sci,vol.29,iss.4.