Impact of the butylparaben on the glutathione-dependent enzyme metabolism

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Glutathione-dependent enzyme metabolism is a key factor in many cellular detoxification in xenobiotics, xenoestrogens and cellular defense mechanisms. Xenoestrogens are a group of chemicals that alter the normal function of hormones and these molecules are also known as an endocrine disruptor. Butyl p-hydroxybenzoic is one of xenoestrogen which is found in cosmetics, daily care products, food, toys, pharmaceuticals. Parabens present only in very low concentrations. Parabens are used in low concentrations as preservatives, however, we receive paraben from various ways from various daily products so that, the daily exposure dose is higher than expected. Thus, safety and toxicity of butylparaben may be an important public health problem which must be discussed. Even though several *in vivo* and *in vitro* studies showed that butylparaben have hazardous effects on reproductive system, health problems that may affect development and developmental malformations in the laboratory animal models. Butylparaben-induced oxidative stress and its relation to the tissue damage has not been widely investigated before. Therefore, we aimed to investigate the effects of butyl 4-hydroxybenzoate on the glutathione-dependent enzymes activities related with pentose phosphate pathway and glutathione-dependent metabolism cytosolic enzymes, such as glucose 6-phosphate dehydrogenase, 6-phosphogluconate dehydrogenase, glutathione reductase, glutathione peroxidase and glutathione-s-transferase in the kidney, liver, brain and testis samples in our study. Rats were randomly divided into four groups and butyl paraben was orally dosed in male rats at 200, 400, 800 mg/kg/day for 14 days. We have investigated that butylparaben treatment caused imbalance in the anti-oxidant enzyme activities and tissue damage in the kidney, liver, brain and testis samples. These results are consistent with the degenerative role of butylparaben on the cellular reducing equivalent homeostasis and antioxidant defense.