

SHC 30 . EVALUATION OF STYRENE INDUCED OXIDATIVE STRESS WITH DYNAMIC DISULFIDE/THIOL HOMEOSTASIS

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Styrene is the predominant solvent used in printer. It is a colorless and volatile aromatic hydrocarbon with an original smell. Main accused toxic substance for styrene induced oxidative stress is styrene-7,8-oxide. Phenylglyoxylic acid (PGA) and mandelic acid (MA) are the basic metabolites that are used for styrene exposure screening. In this study we aimed to investigate the association between styrene metabolites and dynamic disulfide/thiol homeostasis in people working in a printing center.

30 non-smoker, inkjet printing workers, included as the study subjects. 30 non-smokers with no exposure were recruited as the control group. The study was approved by the local ethic committee. We used Erel and Neşelioğlu's method for serum disulfide/thiol homeostasis measurements. PGA, MA, hippuric acid, methyl hippuric acid levels were detected by high-performance liquid chromatography using same commercial kit. Phenol levels detected with a commercial kit (Eureka, Italy), too

The urinary PGA+MA, hippuric acids and phenol values of worker group were significantly higher than the control group ($p<0.001$, $p=0.001$ and $p=0.001$, respectively). There wasn't any significant difference in terms of methyl hippuric acid between groups ($p=0.101$). Serum disulfide levels, disulfide /native thiol ratios and disulfide/total thiol ratios of exposed group were significantly higher than control group while native thiol/total thiol ratio was significantly lower ($p<0.001$).

With this study we, for the first time demonstrate that the breakdown of thiol-disulfide balance in human body by styrene exposure.

Disulfide/thiol homeostasis measurements can be a useful and reliable marker for oxidative stress caused by styrene exposure.

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