

O1. PARAXANTHINE/CAFFEINE RATIO : AS AN INDEX FOR CYP1A2 ACTIVITY IN POLYCYCLIC AROMATIC HYDROCARBONS EXPOSED SUBJECTS

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ABSTRACT

Polycyclic aromatic hydrocarbons (PAHs) are ubiquitous in the environment and originated from incomplete combustion process of organic materials. This compounds are bioactivated to reactive metabolites which bind covalently to DNA initiating carcinogenesis. PAHs have been well established as an enzyme inducer of cytochrome P450 (CYP) such as CYP1A1 and CYP1A2. Caffeine is primarily metabolized by CYP1A2 to paraxanthine, so it has been used as a specific probe for assessing CYP1A2 activity. The purpose of this study was to compare CYP1A2 activity in female subjects between smoke and non- smoke exposure using serum paraxanthine/caffeine ratio. Each subject took a 180 mg single oral dose of caffeine solution. Blood samples were collected before and 5 hours after caffeine intake. The serum was separated by centrifugation and stored at -20 °C until analysis by HPLC. Carbonmonoxide (CO) level in blood was also detected using spectrophotometer. The results showed that serum paraxanthine/caffeine ratio in exposed subjects was significantly higher than non-exposed subjects (mean \pm SD of 0.45 ± 0.18 and 0.33 ± 0.12 , respectively; $P < 0.05$). CO level in exposed subjects was also significantly higher than non-exposed subjects (mean \pm SD of 4.02 ± 0.83 and 3.00 ± 0.72 , respectively, $P < 0.05$). Conclusion: By using paraxanthine/caffeine ratio as a probe, CYP1A2 activity is increased in smoke exposed subjects. The result implies that these subjects has exposed to PAHs and has more risk of carcinogenesis.

Key words : paraxanthine /caffeine, PAHs, CYP1A2