The Turkish Journal of Occupational / Environmental Medicine and Safety
Vol:1, Issue Supplement 1 Web: http://www.turjoem.com ISSN : 2149-4711 Poster Presentation

P55. THE POTENTIAL ROLE OF *CYP2D6* PHARMACOGENETICS IN FORENSIC TOXICOLOGY

Zuhal UÇKUN[1]*, Sinan SÜZEN[2]
[1]Department of Toxicology, Faculty of Pharmacy, University of Mersin, Mersin, TÜRKİYE
[2]Department of Toxicology, Faculty of Pharmacy, University of Ankara, Ankara, TÜRKİYE

Pharmaceutical drugs have been commonly implicated in drug-related deaths. Polymorphism in the genes encoding drug-metabolizing enzymes could lead to therapeutic failure or severe toxicity, even to death by altering the relationship between dose and plasma drug concentration. The cytochrome P450 (CYP) enzymes are responsible for the metabolism of a large number of drugs. Approximately 25% of all drugs in human liver are metabolized by CYP2D6. CYP2D6 is the most polymorphic CYP enzyme. *CYP2D6* gene consists 9 exons encoding a polypeptide of 497 amino acids, and to date, at least 104 allelic variants (**1B* through **105*) of the *CYP2D6* gene have been described and almost 20 of them significantly affect the metabolism of drugs that are substrates for this enzyme. Phenotyping for CYP2D6 have four types of metabolizers – Ultra Rapid Metabolizers (UMs; CYP2D6XN), Extensive Metabolizers (EMs; *CYP2D6 *2, *33, *35*); Intermediate Metabolizers (IMs: *CYP2D6*9, *10, *17, *36* and **41*); Poor Metabolizers (PMs: *CYP2D6 *3, *4, *5* and **6*). PMs have at increased risk of suffering from adverse side effects due to drug overdose or of experiencing therapeutic failure due to poor metabolism of a prodrug to the active metabolite. Conversely, UMs have significantly increased enzyme activity. So that, they may experience either subtherapeutic blood levels of the enzyme substrate or adverse side effects because of ultra-rapid metabolism of a prodrug to the active metabolite. As a result, pharmacogenetic analysis may reveal new insight to the interpretation of forensic toxicological results.