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HPLC based method for proteomic biomarker analysis: Application to *in vivo* drug metabolite in human plasma

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Today, coronary arterial disease (CAD) is a prominent cause of death in developed and developing countries. It is known that CAD is more prevalent in Turkey than in Western countries and it appears that this rate of prevalence is likely to increase in the coming years. Atorvastatin, which is a drug, is a 3-hydroxy-3-methylglutaryl-coenzyme A (HMG-CoA) reductase inhibitor, which limits the rate of cholesterol biosynthesis. Paraoxanase 3 (PON3) is related to high density lipoprotein (HDL) and it has been suggested that it protects low density lipoprotein (LDL) against oxidation. Paraoxanase 3 activity in human blood plasma is considered to be an adequate biomarker for tracking premature atherosclerosis but it has not yet been used in any official method for tracking atorvastatin which reaches systematic circulation and stimulates PON3 activity. In our experimental model, we aimed to characterize of PON3 activity in human blood with atorvastatin (AT) as a substrate and its metabolite, hydroxyacid atorvastatin (HAT). We used a modified method steming from different methods. Patients with atherosclerosis were divided into two subgroups as pre- and post-operation. Blood samples were collected from patients with atherosclerosis who took atorvastatin (20mg/day). Separation of AT and HAT was evaluated on an liquid chromatography (C18) column. This study reports an accurate, sensitive and reliable liquid chromatographic method for the determination of atorvastatin and its metabolite, HAT, which, to our knowledge, constitutes the first *in vivo* approach in the literature.

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