

# Investigation of MDR1 Gene Polymorphism and Losartan Plasma Concentration in Patients Undergoing Hypertensive Episodes While under Losartan Treatment

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## Abstract

**Aim:** Losartan, a drug in the angiotensin receptor blocker (ARB) family, is the substrate of the Multi Drug Resistance-1 (MDR1) drug-efflux protein encoded by the ABCB1 gene. This study seeks to investigate the MDR1 gene polymorphism and losartan concentration in order to identify drug resistance in patients presenting to the emergency department (ED) with a hypertensive episode while having losartan treatment. **Method:** The patient cohort was comprised of 50 individuals presenting with a hypertensive episode while under losartan treatment. The control cohort included 50 patients whose blood pressure was regulated while receiving losartan treatment and who were admitted to the ED for reasons other than hypertensive episode. Allele-specific PCR analysis was carried out in order to determine the frequencies of the G2677T/A, C3435T and C1236T genotypes. Plasma losartan and EXP3174 levels of the patients were calculated using tandem mass spectrometry **Findings:** The frequencies of GG, GT, GA, TA and TT genotypes did not differ significantly between the cohorts in G2677T/A single nucleotide polymorphism (SNP) ( $p>0.05$ ), whereas those of C3435T TT and C1236T CT genotypes yielded a significant difference between the patient and control cohorts ( $p<0.05$ ). Besides, no significant difference was evident between G2677T/A, C3435T and C1236T genotypes with respect to plasma losartan/EXP3174 concentration ( $p>0.05$ ). **Conclusion:** We provided clinical evidence that hypertensive episodes occurred more frequently in C3435T TT and less frequently in C1236T CT. However, no significant correlation was established between plasma losartan, EXP3174 concentration and G2677T/A, C3435T, and C1236T genotypes. **Keywords:** Losartan, MDR1, Genetic polymorphism, EXP3174, Hypertension

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