

Ethnic Difference of Two Common Gene Mutations (GLU¹⁵⁸LYS AND GLU³⁰⁸GLY) in Flavin-Containing Monooxygenase 3 (*FMO3*) Gene

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Recently, genetic linkage between two common *FMO3* gene mutations (Glu¹⁵⁸Lys and Glu³⁰⁸Gly) were found in Korean volunteers. These *FMO3* mutations were closely associated with diminished FMO activity (ranitidine *N*-oxidation). To compare the frequencies of these *FMO3* mutant alleles among Koreans, Caucasians and African-Americans, we determined the presence of *FMO3*/Lys¹⁵⁸ and *FMO3*/Gly³⁰⁸ mutant alleles using *Hinf* I and *Dra* II restriction enzymes, respectively. The following results were obtained:

Populations	N	<i>FMO3</i> /Lys ¹⁵⁸	<i>FMO3</i> /Gly ³⁰⁸
Korean	219	0.19	0.18
Caucasian	54	0.43	0.20
African-American	191	0.45	0.05

The *FMO3*/Lys¹⁵⁸ allele was found more frequently in Caucasians and African-Americans than in Koreans ($p < 0.001$). However, the *FMO3*/Gly³⁰⁸ allele was found more frequently in Koreans and Caucasians than in African-Americans ($p < 0.001$). In Koreans, these two common mutations occurring respectively in exon 4 and exon 7 were found to be linked, they did not appear to be linked in Caucasians and African-Americans. As the *FMO3*/Gly³⁰⁸ mutation was closely correlated with a diminished FMO activity (ranitidine *N*-oxidation) in Koreans, the high frequency of its appearance in Caucasians suggests that their FMO activity would be lower than that of African-Americans. We conclude that there is a remarkable ethnic difference in *FMO3* mutant allele frequencies and perhaps, their genetic linkage.