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Polymorphisms of ADH2, ALDH2 and CYP2E1 in Huichol and Mestizo subjects from western Mexico in comparison with other populations of the world

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Complete List of Authors:	Bastidas-Ramírez, Blanca; Universidad de Guadalajara, Biología Molecular y Genómica Gordillo-Bastidas, Elizabeth; Universidad de Guadalajara, Biología Molecular y Genómica Gordillo-Bastidas, Daniela; Universidad de Guadalajara, Biología Molecular y Genómica García-Bañuelos, Jesus; Universidad de Guadalajara, Biología Molecular y Genómica Panduro, Arturo; Universidad de Guadalajara, Biología Molecular y Genómica Muñoz-Valle, José; Universidad de Guadalajara, Biología Molecular y Genómica Zepeda-Carrillo, Eloy; Universidad Autónoma de Nayarit, Hospital Civil Tepic □Dr. Antonio González Guevara
Keywords:	Amerindian, cytochrome P450, ethanol metabolism, genotyping, liver disorders, metabolism, pharmacogenetics, polymorphism detection, SNP, Xenobiotic metabolism, genomic polymorphisms

Abstract

ADH2, ALDH2 and *CYP2E1* genes encode the main ethanol metabolizing enzymes and have been considered candidate genes involved in alcohol related diseases. Nevertheless, controversial results have been obtained probably due to ethnic differences, among other factors. We determined genotype and allele distribution of Arg47His *ADH2*, Glu487Lys *ALDH2* and RsaI *CYP2E1* polymorphisms in 101 Huichol (HUI) and 239 mestizo (MES) subjects from western México, and compared our results with other populations around the world. PCR-RFLP's analysis was conducted after DNA isolation from peripheral blood leukocytes. Distribution of the allelic variants in HUI were 0% *ADH2*, 0.5% *ALDH2* and 51.5% *CYP2E1;* MES showed 3.4% *ADH2*, 0% *ALDH2* and 16.1 % *CYP2E1*. Polymorphic Lys *ALDH2* allele frequency in HUI and MES was similar. Frequency of *ADH2* His allele was statistically ($p<0.001$) lower in HUI than in MES; while *RsaI CYP2E1* polymorphic allele was significantly higher ($p<0.0001$) in HUI than in MES. HUI were monomorphic for *ADH2* and MES for *ALDH2*. HUI resulted in the most prevalent population of the world regarding *CYP2E1* uncommon allele documented up to this date, probably reflecting a lesser degree of admixture. This report constitutes the first study dealing with gene polymorphisms of alcohol metabolizing enzymes conducted in HUI.

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Keywords: ethnicity, racial admixture, alcoholic liver disease, alcoholism, pharmacogenetics.