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Single Nucleotide Polymorphisms of the Alcohol Dehydrogenase Genes among the 28 Caste and Tribal Populations of India

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ABSTRACT We report single nucleotide polymorphisms (SNPs) at the four sites in ADH2 and ADH3 genes among the 28 populations from southern parts of Andhra Pradesh, India. A total of 1048 individuals belonging to 28 endogamous populations distributed in the contiguous areas of the 6 southernmost districts of Andhra Pradesh were enrolled for the present study. Genotyping involved PCR and sequencing. We sequenced exon 3 and 9 of *ADH2* and exon 8 of *ADH3,* besides the ADH2 3'UTR- rs17033 (72 bases down stream of ADH2 Arg369Cys). The two sites of ADH2 (Arg47His and Arg369Cys) are found to be completely monomorphic showing only Arg47 and 369Arg (ADH2*1 allele), the remaining two sites were polymorphic. None of the 28 populations of this study deviated significantly from Hardy Weinberg Equilibrium proportions. The allele frequencies do not show any clear trend across socioeconomic groups. The degree of heterogeneity in the genotype frequencies among the hierarchical groups is significant for Ile349Val (df = 12; $\chi^2 = 22.050$) and not for the 3'UTR rs17033 (df = 6; $\chi^2 = 9.765$). The haplotype distribution among the hierarchical groups is found to be highly homogeneous and statistically nonsignificant ($\chi^2 = 0.248$, df = 18). Linkage disequilibrium does not exist between the two-polymorhic loci. The results were interpreted in the light of cultural patterns of the Indian hierarchical society.