

**Characterization of Polymorphisms of the CX3CR1 Co-receptor Gene among HIV  
infected Adults and Infants in Nairobi Province, Kenya.**

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## ABSTRACT

Understanding the mechanisms that confer protection against progressive infection with HIV-1 may be useful in the development of appropriate interventions. The impact of CX3CR1 gene polymorphisms on human immunodeficiency virus type 1 (HIV-1) pathogenesis is controversial, with conflicting reports of their role in disease progression in HIV-1 infected individuals. This study was carried out to characterize gene polymorphisms of the CX3CR1 co-receptor gene among HIV infected adults and infants in Nairobi Province. The CX3CR1 gene T280M and V249I mutations were identified by PCR-RFLP analysis after amplification of a 588 base pair sequence of CX3CR1 gene. In determining the presence of T280M and V249I haplotypes it was found that overall, infants had higher percentages of the wild type alleles at (42% and 45%) respectively compared to adults (37% and 36%) respectively ( $p>0.05$ ). In the case of heterozygous mutants, adults had higher percentages (11% and 12%) respectively than among infants (7% and 4%) respectively ( $p>0.05$ ). Adults had also higher percentages of homozygous mutants of (2%) compared to infants (1%) this was not statistically significant ( $p>0.05$ ) and that the differences in mutations of CX3CR1 gene allele in I249 and M280 was  $p=0.075$  and  $p=0.215$  respectively which was not statistically significant ( $p>0.05$ ). This study showed that CX3CR1 gene polymorphisms do exist in Nairobi Province though the numbers of mutations are at very low levels to warrant any meaningful impact in the population in terms of HIV-1 disease progression. It is probable that alternative mechanisms are operating in conferring resistance to HIV-I infection. Further *in vitro* cellular studies need to be carried out to determine the exact role of CX3CR1 gene

mutations in HIV/AIDS pathogenesis and that the results be used to form a baseline study for future cohort studies to be done in Kenya.