Polymorphism detection ε2, ε3 and ε4 of the *Apo*E gene by denaturing gradient electrophoresis (DGGE)

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Introduction. Genetic polymorphisms can affect drug response. There are genetic polymorphisms that have an effect on the response to statin therapy (Guttmacher and Collins, 2002).

A polymorphism associated with the effect of statins is the apolipoprotein E (ApoE). ApoE genotype is likelly the most important polymorphish concerning LDL cholesterol reduction by statins. The use of statins has showed a reduction in cholesterol levels in individuals with alleles ε2 and ε3 but not to ε4 (Pena, *et al*. 2002)

This study aims to describe an assay for the simultaneous genotyping of the ApoE variants as support in the treatment of patients with hypercholesterolemia

Methods. A total of 30 anonymized genomic DNA samples were tested. Most samples came from Mexican mestizos. The amplification reaction was performed using the primers F4 and F6 designer by Hixon and Vernier, 1990. The alleles ε2, ε3 and ε4 of the ApoE gene were determined by DGGE technique whose principle is the mobility shifts in the agarose gel. Finally, the PCR product was sequenced to verify the allele type and relation with displacement in the gel.

Results. The PCR products were analyzed by DGGE gel, and the nucleotide differences among each allele of *Apo*E gene were clear (Fig. 1).

The sequences of each band confirmed the nucleotide differences among the alleles of *Apo*E gene (Fig. 2).

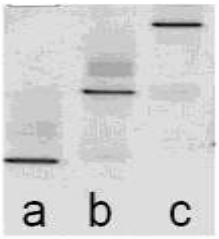

Fig.1. DGGE gel. Lane A shows the allele ε4, lane B allele ε3 and C allele ε2 of the *Apo*E gene

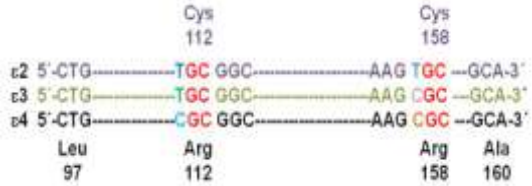

Fig 2. Sequence analysis. ApoE polymorphism alleles differ from each other by two amino acid substitutions at codons 112 and 158.

Conclusions. The DGGE method is effective in the detection of different alleles of *Apo*E gene.

References

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