DEVELOPMENT OF A SIMPLE ARMS-PCR BASED GENOTYPING ASSAY FOR DIABETES RELATED GENE PPARGAMMA SNP (PRO12ALA, CCA>GCA)

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Major form of diabetes mellitus, type 2 diabetes (T2D) is quite prevalent worldwide. Research is underway on its various aspects including genetics to understand and control the global epidemic of T2D. Recently, several SNPs in various genes have been associated with T2D. These association studies are mainly carried out in the developed countries through Genome Wide Association Scan studies, with follow-up replication/validation studies by high-throughput genotyping techniques (e.g. Taqman Technology). Although, similar studies could be conducted in developing countries, however, the limiting factors are the associated cost and expertise. These factors hamper research into the genetic association and replication studies from low-income countries to figure out the role of putatively associated SNPs in diabetes. Although, there are several SNP detection methods (e.g. Taqman assay, Dot-blot, PCR-RFLP, DGGE, SSCP) but these are either expensive or labor intensive or less sensitive. Hence, our aim was to develop a low-cost and simple method for the validation of PPARGamma (Pro12Ala, CCA>GCA) SNP for its association to T2D. Here, we developed a cost-effective and rapid ARMS-PCR (Amplification Refractory Mutation Specific - PCR) method for this SNP detection. We successfully genotyped PPARGamma SNPs (Pro12Ala, CCA>GCA) in human samples and the validity of this method was confirmed by DNA sequencing of a few representative samples for the three different genotypes. Furthermore, ARMS-PCR was applied to human T2D patient and control samples for the screening of this SNP. To our knowledge, this is the first report to detect Pro12Ala polymorphism by ARMS-PCR method.