Single nucleotide polymorphisms (SNPs) in human *abetalipoprotein epsilon* 4 (*APOE e4*) gene as a cause of Alzheimer’s disease: *In silico* analysis

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Alzheimer disease (AD) is an acquired disorder of cognitive and behavioural impairment that markedly interferes with social and occupational functioning. Single-nucleotide polymorphisms (SNPs) play a major role in the understanding of the genetic basis of this complex disease. In this work, we have analysed the genetic variation that can alter the expression and the function of the *APOE e4* gene by analysing the SNPs in the coding regions of *APOE e4* gene using computational methods. Genomic analysis of *APOE e4* was initiated by Polyphen and SIFT servers to retrieve 10 harmful mutations. Among these, six non-synonymous SNPs showed to be very damaging by highest PSIC score of the Polyphen server with a SIFT tolerance index of 0.00 (R50C, L115S, R132S, E139V, E150G, R168H). Another one (R154P) is found to be in very highly conserved region. Project HOPE was used to show the 3D structure of them. Analysis of the total 6 SNPs in 3’UTR region of *APOE e4* gene by its special tool PolymiRTS showed all the 3’ UTR containing alleles insignificant to make any distribution in conserved miRNA site. We predicted the function of related genes and gene sets by using GeneMANIA which finds other genes that are related to APOE genes, using a very large set of functional association data. Screening for these SNPs variants in coding region may help in Alzheimer disease molecular and genetic early diagnosis.

Biography

Abdelmohaymin A A Abdalla graduated in April 2015 from University of Khartoum, faculty of medicine with the best academic performance throughout the 6 academic years. He was awarded the University Prizes of Biochemistry, Internal Medicine, Paediatrics and Child health. Currently he is a teaching assistant in Department of Internal Medicine University of Khartoum and an active researcher in Daoud Research Group.

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