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Genetic susceptibility of Iraqis for obesity and type 2 diabetes: *LEPR* gene polymorphisms

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Abstract

Prevalence of obesity and diabetes over world encouraged researchers to expand their studies about genetic predisposition factors which increase individuals' risk for diseases. *LEPR* gene encodes for leptin receptor which regulates body weight, energy expenditure and insulin sensitivity by binding with adipose derived hormone (leptin). Therefore we sequenced *LEPR*'s promoter, coding exons, exon-intron boundaries and 3'UTR in 45 Iraqi individuals (24 were diagnosed with type 2 diabetes and 21 were not). Seventeen polymorphisms have been detected in this study, 6 in promoter region, 5 in coding exons, 5 in introns (2 were novel) and 1 Ins/Del in 3'UTR. Type 2 diabetic carriers of rs1137101 in exon 6 were 75% in comparison to non-diabetic

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(52.4%). Also 50% and 33.3% from diabetic patients and non-diabetics, respectively were carrying p.S343S in exon 9. GC allele in exon 14 increased the BMI of diabetics to 34.6 ± 7.8 but it was 32.4 ± 4.4 in patients with GG allele and both of them were higher in type 2 diabetics than other group (30.2 ± 5.2 and 29.9 ± 2.5 , respectively). BMI of diabetic patients with AA allele (P1019P) in exon 20 was 35.7 ± 4 but it was 32.7 ± 5.9 in patients with GG allele, the same was in non-diabetics which was 33.3 ± 4 and 30 ± 3.7 , respectively. Also CTTTA insertion allele increased the BMI of diabetics to 35.7 ± 4 in comparison to CTTTA deletion allele as well as 33.3 ± 4 and 29.6 ± 3.5 in other group, respectively. We have concluded that *LEPR* polymorphisms may increase the risk of developing type 2 diabetes in individuals with $\text{BMI} \geq 30$ and in general *LEPR* is a candidate gene for susceptibility to obesity and its outcomes.

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Abbreviations

PCR, Polymerase Chain Reaction; BMI, Body Mass Index; LEPR, Leptin Receptor Gene; SNPs, Single Nucleotide Polymorphisms; UTR, Untranslated Region

Keywords

Iraq; Genetic; LEPR; Polymorphisms; BMI; Type 2 diabetes

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