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Association of Single Nucleotide Polymorphisms in Leptin and Leptin Receptors with Oral Cancer

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Abstract : Leptin (LEP) and leptin receptor (LEPR) both play a crucial role in the mediation of physiological reactions and carcinogenesis and may serve as a candidate biomarker of oral cancer. The present case-control study aimed to examine the effects of single nucleotide polymorphisms (SNPs) of LEP -2548 G/A (rs7799039), LEPR K109R (rs1137100), and LEPR Q223R (rs1137101) with or without interacting to environmental carcinogens on the risk for oral squamous cell carcinoma (OSCC). The SNPs of three genetic allele, from 567 patients with oral cancer and 560 healthy controls in Taiwan were analyzed. All of The three genetic polymorphisms exhibited insignificant (P > .05) effects on the risk to have oral cancer. However, the patients with polymorphic allele of LEP -2548 have a significant low risk for the development of clinical stage (A/G, AOR = 0.670, 95% CI = 0.454–0.988, P < .05; A/G+G/G, AOR = 0.676, 95% CI = 0.467–0.978, P < .05) compared to patients with ancestral homozygous A/A genotype. Additionally, an interesting result was found that the impact of LEP -2548 G/A SNP on oral carcinogenesis in subjects without tobacco consumption (A/G, AOR=2.078, 95% CI: 1.161-3.720, p=0.014; A/G+G/G, AOR=2.002, 95% CI: 1.143-3.505, p=0.015) is higher than subjects with tobacco consumption. These results suggest that the genetic polymorphism of LEP -2548 G/A (rs7799039), LEPR K109R (rs1137100), and LEPR Q223R (rs1137101) were not associated with the susceptibility of oral cancer; SNP in LEP -2548 G/A showed a poor clinicopathological development of oral cancer; Population without tobacco consumption and with polymorphic LEP -2548 G/A gene may significantly increase the risk to have oral cancer.

Keywords : carcinogen, leptin, leptin receptor, oral squamous cell carcinoma, single nucleotide polymorphism
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