

Lipid Related Genes Could Have a Link with the Regulation of Blood Pressure

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Hypertension is one of the most chronic diseases responsible for about 7.1 million premature deaths globally per year¹. The basic causes of blood pressure are multiple genetic loci, environmental factors and living lifestyle like dietary intake, smoking habits, obesity and physical inactivity². Genome Wide Association Studies (GWAS) have been conducted in different populations to investigate the genomic loci associated with blood pressure but the findings related with blood pressure traits are inconsistent in nature³. The different environmental modifiers having significant influence on blood pressure and hypertension are the main reasons for these inconsistencies. Smoking is linked with the development of various disease and hypertension is one of them having close relationship with smoking habit⁴. This assumption is based on the results of different studies in which hypertension was found to be more common among smokers than non-smokers². Previous studies on young and middle aged adults indicate that hypertension is more frequent among males than females. Another factor 'familial combined hyperlipidemia' has been found to have positive correlation with hypertension occurrence⁵. So, it may be assumed that the genes activated in lipid metabolism may be involved in the genetic component of hypertension development.

A research has been carried out by the Yin⁶ in the Guangxi Bai Ku Yao population of China to identify Single Nucleotide Polymorphisms (SNPs) in different lipid-related genes and their interactions with cigarette smoking on blood pressure levels. They found that numerous lipid-related gene polymorphisms in smokers and nonsmokers were associated with blood pressure levels in the targeted population. Ruixing² informed that nicotine, carbon monoxide, cadmium and reactive oxygen species are major toxins present in the cigarette smoke that are responsible for cardiovascular toxicity. Liu⁷ stated that there were no differences in the genotype and allelic frequencies of LDL-R AvaII (low-density lipoprotein receptor) between essential and

normotensive hypertensives in Shanghai. They conclude that hypertension is prevalent due to the existence of multiple factors and more research work is needed to explore the relationship between these SNPs and blood pressure variation.

References

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