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SNPs in the promoter region of FOX P3 gene: A critical analysis of association with Graves's disease and Hashimoto's thyroiditis in terms of Th1/Th2 responses

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The forkhead box P3 (FOX P3) is a major transcriptional regulatory factor required for the development and functioning of T-regulatory cells (CD4+, CD25+, T-cells). Through interaction with the nuclear factor of the activated T-cells (NFAT), the FOX P3 molecule controls the functioning of the regulatory T-cells. In this presentation we analyze the association of two Single Nucleotide Polymorphisms (SNPs) in the promoter region of the FOX P3 gene -3279C/A and -2383C/T with Graves disease and Hashimoto's thyroiditis respectively. An important feature of these two autoimmune diseases is that a predominant Th2 type of immune response to thyroid antigens (eg. Anti-TSHR antibodies) is reported in Graves disease contrary to a predominant Th1 response in Hashimoto's thyroiditis. This indicates a profound influence of the genotypes of -3279C/A and -2383C/T SNPs of FOX P3 gene in determining the pattern of immune response (Th1 / Th2). The role of the above mentioned polymorphisms in affecting clonal expansion/functional efficiency of T regulatory cells and thus resulting in diverse patterns of immune response in autoimmune thyroid disorders will be discussed in combination with genotypes of certain pro- and anti-inflammatory cytokines. Ethnic differences in the association of genotypes of these SNPs and variations in the frequencies of their genotypes / alleles will also be discussed.

Biography

Mohammed Ishaq received Master's degree in Genetics in 1973 from Osmania University, Hyderabad, India. Later, he joined Ph.D. course in Genetics with emphasis on Immunogenetics and received Ph.D. in Genetics in 1979 from Osmania University. In 1979, he joined the Department of Genetics, Osmania University as a Lecturer teaching immunology and Genetics to M.Sc. Students. He was promoted as Associate Professor in 1992 and as a Professor in the year 2000. During his tenure as a faculty member, he guided 16 Ph.D. students and published 60 research papers. His main areas of research interests are molecular markers in risk prediction of complex human diseases (autoimmune conditions and Type II diabetes mellitus). He retired in the year 2010. Currently, he is working as Professor and Head, Research Center for Cellular and Molecular Medicine, Princess Esra Hospital, Deccan College of Medical Sciences, Hyderabad. He is actively engaged in research on SNPs in human genes and their role in predisposition to autoimmune thyroid diseases and Type II diabetes mellitus.

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