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Association of genetic variations of genes that play a role in vitamin D metabolism with susceptibility to tuberculosis in Kazakhstan

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Data from the WHO shows that in 2014, there are around 9.6 million people in the world diagnosed with tuberculosis (TB). Almost 95% of those TB related deaths occur in developing countries (WHO, 2015). TB remains an important health challenge and a significant economic burden for Kazakhstan and in Central Asia. The bacteria *Mycobacterium tuberculosis* is uniquely adapted to evade the host immune system to eventually establish infection in the host. Recent findings show a number of immunological related processes such as macrophage activation and recruitment and host *M. tuberculosis* defense are impacted by a variety of genes of the human host. These genes include those that play a role in host immune factors, those that regulate oxidative immune response, inflammatory response and vitamin D metabolism. These genes have been found to contribute to the susceptibility of the host to persistent TB infection. We are interested in the genetic variation of genes affecting immunological responses towards tuberculosis infection and their association with infection in different ethnic groups in Kazakhstan and Central Asia. We have genotyped 60 Kazakhs with and without TB, specifically looking at 10 SNPs belonging to the following genes *DHCR7*, *CYP2R1*, *GC-1*, *CYP24A1*, *CYP27A1*, *CYP27B1*, and the *VDR*. These genes are involved in the pathways of vitamin D metabolism playing a number of different roles including synthesis, activation, delivery and binding of the activated vitamin. Our preliminary results indicate association of these SNPs with TB susceptibility and we are presently developing strategies for a genetic based supplement intervention.

Biography

Chee Kai Chan has completed his PhD from the Australian National University, Canberra and his Postdoctoral studies from Johns Hopkins University School of Medicine, Baltimore. He has spent 12 years at the Department of Genetics at La Trobe University, Melbourne, Australia. Presently he is the Co-Director of Genetics at the School of Medicine at the Nazarbayev University, Astana. He has published more than 25 papers in reputed journals and has been serving as an Editorial Board Member of a number of international journals.

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