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Detection of dengue serotypes/genotypes by molecular methods and development of rapid diagnostics

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Dengue virus (DENV) belongs to the family Flaviviridae, genus Flavivirus, and is transmitted to humans by Aedes mosquitoes, mainly Aedes aegypti. There are 4 different serotypes of DENV, i.e. DENV1, DENV2, DENV3, DENV4[1]. DENV infection is a major cause of disease in tropical and subtropical areas, with an estimated 50 million infections occurring each year and more than 2.5 billion people being at risk of infection. The research work focuses on the development of diagnostic method for detecting different dengue serotypes/genotypes and to correlate the serotype/genotype with disease severity. The standardised PCR method will be used for detection of dengue serotypes and those results will be used for the correlating will be clinical parameters. Moreover the new techniques "loop mediated amplification techniques will also be used to check the genotypes of the dengue. The new rapid diagnostic method will be developed based on the agglutination method to identify different dengue serotypes. After identifying different serotypes the, various clinical factors along with nitric oxide will be determined for the diagnosing the disease severity and for the early diagnosis of Dengue Haemorrhagic fever or dengue shock syndrome.

Dengue is diagnosed by isolation of the virus, either serologically, or by molecular diagnostic methods. Although several commercial kits for the diagnosis of dengue are available, concerns have arisen with respect to the performance characteristics of these kits. When such tests require the identification of the virus or the viral genome, they are expensive and require specialized laboratories. Affordable commercial kits of adequate sensitivity and specificity that are able to diagnose dengue infection during the acute stage have not been developed. Therefore considering the current problems in the diagnostics the main priorities are focused in the research project are early determination of acute dengue virus infection during the febrile phase, distinguishes between dengue and other flaviviruses, cost effective, easy to use at all levels of the health system, if possible, provides an early marker of severe disease, distinguishes between first and subsequent infections. Therefore, in order to develop this kind of ideal diagnostic kit we can evaluate the new technology in context of existing technology platform. This will shorten the development time for the introduction of new and improved diagnostic test of dengue.

Biography

Harvinder Singh Dhillon recently completed his MSc Biotechnology and Business Management from University of Warwick and currently started his Ph.D in Immunology and working on Dengue in Amity University (INDIA).

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