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Altered miRNA expression in response to dengue virus infection in human monocytic cells

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Dengue hemorrhagic fever and dengue shock syndrome, the life-threatening forms of severe dengue virus (DENV) infection, are characterized by increased vascular permeability and plasma leakage. Human monocytes/macrophages are the primary target cells of DENV, also considered as the major sources of inflammatory cytokines that are associated with endothelial dysfunction during DENV infection. Recently miRNAs have been shown to play a regulatory role in cytokine production and inflammatory response.

In this study, we analyzed expression of microRNA (miRNA) in DENV-infected monocytic cells by miRNA PCR array, and demonstrated that miRNAs that potentially target inflammation-associated genes are universally down-regulated. Using miRNA 3' UTR luciferase reporters and miRNA mimics, we have identified and validated miRNAs/gene targets that are important in dengue disease development, including miR-23b, miR-19a/b, miR-320 and miR-592 targeting TNF-alpha, miR-19a/b targeting IL-8, miR-23b and miR-374b targeting MCP-1. Our result suggests that miRNAs function as essential modulators of inflammatory cytokine production during DENV infection and this study provides further understanding of the mechanism of dengue immunopathogenesis.

Biography

Hongwei Li received his Ph.D at National University of Singapore and completed his postdoctoral training at University of California at Riverside. His primary research interest is molecular virus-host interactions and currently focuses on the biological roles of RNAi in dengue virus-infected cells.

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