

P-32**MicroRNAs as novel key players in multiple sclerosis**

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Abstract

Introduction: Multiple sclerosis (MS) is a chronic, neurodegenerative and progressive inflammatory disorder that attacks the central nervous system. MicroRNAs (miRNAs) are the class of small non-coding RNA with post-transcriptional gene expression functions. miRNAs are endogenous, single-stranded molecules approximately 22 nucleotides in length and have roles in multiple facets of immunity, from regulation of development of key cellular players to activation and function in immune responses. They control gene regulation by translational repression and cleavage. miRNAs are known to play essential roles in the immune system. Recent development in diverse miRNA profiling platforms may enable the identification of specific miRNA as novel diagnostic and predictive markers for MS.

Materials and Methods: All English language PubMed articles published between 2009 and 2013 were searched.

Results: In the last years, several works have studied miRNA expression in MS patients in a variety of tissues, peripheral blood, brain, and in experimental autoimmune encephalomyelitis (EAE), animal model of MS. Many miRNA expression profiling data sets, have been generated to better understand the disorder and the effects of particular treatments. Recently numerous, expression profiling studies have detected specific miRNA 'signatures' for a variety of diseases, including MS. miRNA expression is tightly regulated during hematopoiesis and lymphoid cell differentiation and disruption of the entire miRNA network or specific miRNAs may lead to dysregulated immune responses. Abnormalities in miRNA expression related to inflammatory cytokines, Th17 and Treg cells have been described in MS. Emerging evidence suggests that miRNA dysregulation might contribute to the pathogenesis of MS.

Conclusion: Consequently, miRNAs are involved in the misregulation of immune system and Blood Brain Barrier disruption in Multiple Sclerosis and potentially can be considered as pivotal agents in the pathogenesis of neurodegenerative diseases. miRNAs are also interesting molecules for developing therapeutic agents and targets.

Key words: *MicroRNA, Multiple sclerosis, Gene regulation, Immune system.*