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Interleukin 1 receptor antagonist and 2'-5'-oligoadenylate synthetase-like molecules as novel biomarkers for multiple sclerosis patients

Multiple sclerosis (MS) is a multi-factorial disease of the central nervous system (CNS) affecting young adults leading to significant disabilities over time. MS is now believed to be prevalent in Arabian Gulf area with high incidence due to environmental factors and unknown genetic variations. The objectives of this study was to detect up-regulated potential genes that might be involved in neuroinflammatory process in MS patients in Bahrain and to measure the protein levels of the expressed genes. A microarray was used to investigate mRNA expression from 12 MS patients and 12 control subjects in Bahrain where the mRNA came from peripheral blood leukocytes. Also, 80 MS patients and 80 control subjects were analyzed to measure serum protein levels of the expressed genes by ELISA. The data showed 15,480 genes expressed from over 47,000 transcripts and variants. Only 5 genes were significantly up-regulated in MS patients vs control subjects; namely TNF-AIP6, IL-1RA, OASL, CLC and DOCK4 (p<0.05). Conversely, KIAA0125 gene was significantly down-regulated (p<0.0003). Analysis of the effector molecules of the up-regulated genes revealed that 83 MS patients had positive serum level of OASL, 87 MS patients had positive serum levels of IL-1RA, and none of the 88 MS patients showed detectable serum levels of TNF-AIP6, CLC or DOCK4. In conclusion, OASL and IL-1RA genes were strongly expressed in MS patients and that their effector molecules may be considered as biomarkers associated with the inflammatory process of the disease and possibly treatment response.

Recent Publications

- 1. Safa Taha, Muna Aljishi, Isa Alsharoqi and Moiz Bakhiet. Differential upregulation of the hypothetical transmembrane protein 66 (TMEM66) in multiple sclerosis patients with potential inflammatory response, Biomedical Reports 3: 98-104, 2015
- Sahar Elhannan, Safa Taha, Noureddine Ben Khalaf, Halla Bakheit, M. Dahmani Fathallah and Moiz Bakhiet Induction of dissociated cytokine profiles by ISRAA with selective critical involvement of ERK1/2 in its signaling functions. Int J Mol Med. 36: 1583-1592, 2015
- Noureddine Ben Khalaf, Safa Taha, Moiz Bakhiet and M. Dahmani Fathallah. A Central Nervous System-Dependent Intron-Embedded Gene Encodes a Novel Murine Fyn Binding Protein. PLOS ONE. 11(2):e0149612. doi: 10.1371/journal.pone.0149612. eCollection 2016
- 4. Ghada Al-Kafaji, Mohamed Sabry and Moiz Bakhiet. Increased expression of mitochondrial DNA-encoded genes in human renal mesangial cells in response to high glucose-induced reactive oxygen species. Mol Med Rep. Feb; 13(2):1774-80. 2016



Biography

Moiz Bakhiet, Professor of Immunology, is the CEO (Founder) of Princess Al-Jawhara Center for Molecular Medicine, Genetics and Inherited Diseases. He is a Professor and Chairman of the Department of Molecular Medicine, College of Medicine and Medical Sciences, Arabian Gulf University and is a senior Consultant Neurologist at the Arabian Gulf University, Kingdom of Bahrain. Professor Bakhiet received his M.B.B.S. from the Faculty of Medicine, University of Khartoum and his Ph.D. in Medical Sciences in 1993 from Karolinska Institutet, Stockholm, Sweden. He also obtained a Clinical Specialty in Neurology from the Swedish Board of Health and Welfare. He published more than 100 papers in high rated scientific journals as Cell, Nature, J Exp. Med., J Immunol., etc., published more than 40 abstracts and had several International Patents. He participated in many PhD Examination Committees, acted as potential reviewer for many journals and several foundations, received several Awards and Fellowships.

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