



# The 1<sup>st</sup> International Neuroinflammation Congress and 1<sup>st</sup> Student Festival of Neuroscience

Shefa Neuroscience Research Center, Tehran, Iran, 11-13 April, 2017

*The Neuroscience Journal of Shefaye Khatam*

Volume 5, No. 2, Suppl 2

## Poster Presentation

### Inhibitory Effects of Curcumin, a Regulator of CD4<sup>+</sup> T Helper Cell, on HTLV-1-Associated Myelopathy/Tropical Spastic Paraparesis (HAM/TSP)

AliReza Hoseini<sup>1,2</sup>, Amirreza Memari<sup>1,2</sup>, Houshang Rafatpanah<sup>3</sup>, Hamid Reza Rahimi<sup>4\*</sup>

<sup>1</sup>Student Research Committee, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

<sup>2</sup>Neuroscience Department, Mashhad University of Medical Sciences, Mashhad, Iran

<sup>3</sup>Inflammation and Inflammatory Diseases Research Center, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

<sup>4</sup>Department of Modern Sciences and Technologies, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

**Published: 11 April, 2017**

#### Abstract

Human T-lymphotropic virus type I (HTLV-1) is an endemic virus in Iran and other regions that is associated with multiple diseases including adult T-cell leukemia/ lymphoma and a chronic debilitating neuroinflammatory disease, HTLV-1-associated myelopathy/tropical spastic paraparesis (HAM/TSP). HAM/TSP is seen in approximately 2% of HTLV-1-infected people with symptoms such as back pain, weakness or paralysis of the lower limbs, and urinary tract symptoms. Immunological and Inflammatory responses cause Tissue damage in HAM/TSP patients and influence proviral load of HTLV-1. Curcumin (Diferuloylmethane), a natural compound derived from rhizome of turmeric, has been shown to possess anti-oxidant, anti-inflammatory and anti-microbial characteristics. Turmeric is a GRAS (Generally Recognized as Safe) agent, which is used widely in Iranian traditional medicine. Several kinds of immune cells can be infected by HTLV-1, but CD4<sup>+</sup> cells as main target for htlv1 drew attention to themselves. Patients with HAM/TSP have an increased level of inflammatory cytokines. Recent researches focused on effect of curcumin on four subsets of cd4<sup>+</sup> cells: t regulatory (Treg), Th1, Th2, and Th17. curcumin drive the Th17/Treg balance toward the Treg dominance, which in turn suppresses the inflammatory process. Another presumable mechanism of curcumin, as an anti-inflammatory substance, is its regulatory effect that shifts immune system from Th1 to Th2 responses and could inhibit NF-KB inflammatory pathway. Curcumin has also showed Anti-viral properties that may be attributed to direct inhibition of virus replication or due to blockage of viral replication pathways. Considering the important role of proviral load in HAM/TSP development, curcumin may be efficient in lowering this load, too. Few studies have evaluated the efficacy of curcumin in treatment of HAM/TSP, but lack of randomized clinical trials and retraction of papers on this issue due to duplication caused doubts about the efficacy of this substance and urges new researches in this field.

**Keywords:** Human T-lymphotropic virus 1, Paraparesis, Tropical spastic, Curcumin, T-Lymphocytes

**\*Corresponding Author:** Hamid Reza Rahimi

**E-mail:** Rahimihr891@mums.ac.ir