proceedings

Abstract

The Effect of Alantolactone on the Development of Multiple Sclerosis †

Mustafa Cakir [1,2,*], Mehmet Onder Karayigit [3], Ahmet Eken [1] and Hamiyet Donmez-Altuntas [1]

[1] Genome and Stem Cell Center (GENKOK), Department of Medical Biology, Faculty of Medicine, Erciyes University, 38030 Kayseri, Turkey; ahmet.eken@gmail.com (A.E.); donmezh@erciyes.edu.tr (H.D.-A.)
[2] Department of Medical Biology, Faculty of Medicine, YüzüncüYıl University, 65090 Van, Turkey
[3] Department of Pathology, Faculty of Veterinary Medicine, Cumhuriyet University, 058140 Sivas, Turkey; karayigit09@hotmail.com
* Correspondence: mustafacakir@erciyes.edu.tr; Tel.: +0507-845-49-01
† Presented at the 3rd International conference on Natural Products for Cancer Prevention and Therapy, Kayseri, Turkey, 18–20 December 2019.

Published: 25 December 2019

Abstract: Multiple Sclerosis (MS) is a chronic inflammatory, demyelinating neurodegenerative disease targeting the central nervous system. The pathogenesis of MS is an immune mediated process involving innate and adaptive immune system components. In particular, Th17 and Treg balance play an important role in the pathogenesis of MS. Several studies have shown that Th17 cells play a critical role in the pathogenesis. Alantolactone (ALT) is a sesquiterpene lactone produced by *Inula helenium*. The aim of this study was to investigate the therapeutic effect of ALT and its effect on the immune cell priming in a mouse model of experimental autoimmune encephalomyelitis (EAE). Mice were immunized with $MOG_{35–55}$ peptide. From day 0, the control group received DMSO, and the ALT group received intraperitoneal DMSO + ALT (10 mg/kg) every other day. On the 7th day, all mice were sacrificed and draining lymph nodes and spleens were removed. The Foxp3 expression, Stat3 phosphorylation and the cytokines of IL-17A, IFN-γ, GM-CSF, IL-6, IL-10 and IL-22 produced from lymphocytes were analyzed by flow cytometry. When the T lymphocytes obtained from lymph node analyzed, IL-6, IL-17 partial and IL-22, IL-10 cytokines and Foxp3 expression increased. When the spleen T lymphocytes analyzed, Stat3 phosphorylation and IL-17 cytokine decreased, while IL-10, IL-22 cytokines and Foxp3 expression increased. These results show that ALT increased Treg cells at the onset of EAE. In addition, EAE was scored for 18 days, ALT decreased the EAE scores compared to the control. These results show a therapeutic effect of ALT in murine MS model, and warrant further studies.

Keywords: Multiple Sclerosis (MS), lymphocyte; Alantolactone (ALT), Th17; Treg

Acknowledgments: This work was supported by Erciyes University Scientific Research Fund (EU-BAP), Grant Number: TDK-2018-7885 (Hamiyet Donmez-Altuntas).