



American Journal of Histology and Cytology (ISSN:2637-5117)



ANTIDEPRESSANT-LIKE EFFECT OF DIMETHYL FUMARATE AND ASTROCYTE CHANGES IN HIPPOCAMPUS OF MICE SUBMITTED TO MODEL OF DEPRESSION

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ABSTRACT

Introduction: Depression is a psychiatric condition of high prevalence worldwide and is associated with inflammation. Dimethyl fumarate, used to treat psoriasis and multiple sclerosis, has demonstrated an anti-inflammatory effect. **Objective:** To evaluate the effect of dimethyl fumarate on depression, through the immobility time in the forced swim test, and on astrocyte proliferation, through the expression of glial fibrillary acidic protein in the hippocampus of mice submitted to Chronic Unpredictable Mild Stress- induced model of depression. **Methods:** Male mice were divided into three groups: control(1), stressed(2), stressed+dimethyl fumarate (3). Groups 2 and 3 were subjected to 28 days of exposure to unpredictably applied stressors. From the 14th day, group 3 was treated with dimethyl fumarate (oral). At the end, the hippocampus was removed to determination of glial fibrillary acidic protein expression by immunofluorescence. **Results:** The immobility time was increased by chronic stress compared to the control and the treatment with dimethyl fumarate decreased this parameter, compared to the stressed group [F (9, 92) = 6,460; 1vs2: p <0.01, 2vs3: p <0.001]. Glial fibrillary acidic protein expression was reduced by chronic stress compared to control in the two areas of the hippocampus analyzed and treatment with dimethyl fumarate did not interfere in this parameter [CA1: F (2, 6) = 5.173, 1vs2: p <0.05; Dentate gyrus: F (2, 7) = 31.44, 1vs2: p <0.001]. **Conclusion:** Dimethyl fumarate has antidepressant-like effect in mice, however more studies need to be carried out to elucidate the neuroinflammatory mechanism of this drug.

Keywords: chronic stress, depression, glial fibrillary acidic protein, neuroinflammation.

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How to cite this article:

Alana Gomes de Souza, Iardja Stéfane Lopes Sales, Talita Matias Barbosa Cavalcante, Michele Albuquerque Jales de Carvalho, Leonardo Peixoto Fernandes, Marta Maria de França Fonteles ANTIDEPRESSANT-LIKE EFFECT OF DIMETHYL FUMARATE AND ASTROCYTE CHANGES IN HIPPOCAMPUS OF MICE SUBMITTED TO MODEL OF DEPRESSION. American Journal of Histology and Cytology, 2021, 4:8.

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