Effect of Hesperetin During Pregnancy and Lactation on Locomotor Activity and Anxiety-Like Behaviors in Animal Model of Autism

Rashin Khalaj¹, Akbar Hajizadeh Moghaddam¹, Mahbobe Zare², Sedigheh Khanjani Jelodar³

¹Department of Biology, Faculty of Basic Sciences, University of Mazandaran, Babolsar, Iran
²Faculty of Herbs, Amol University of Special Modern Technologies, Amol, Iran
³Faculty of Biology, Shahid Beheshti University, Tehran, Iran

Abstract

Introduction: Autism spectrum disorders (ASD) are a heterogeneous group of neurodevelopmental disorders that are defined with a wide range of behavioral impairments including social and communication deficits. Apart from these core symptoms, a significant number of ASD individuals display higher levels of anxiety. The present study is designed to understand the antioxidant efficacy of hesperetin (HET) on locomotor activity and anxiety-like behaviors in an animal model of ASD. Materials and Methods: In the experimental research, pregnant rats were divided into four groups including: control, disease group (injected 500 mg/kg valproic acid at gestational day 13) and treatment groups (received 10 and 20 mg/kg/day hesperetin for 7 weeks during pregnancy and lactation). Locomotor activity and anxiety-like behavioral in offspring were measured in the open-field test. Results: The results showed that injection of valproic acid increases locomotor activity and anxiety-like behaviors (p≤0.001) and treatment of hesperetin effectively decrease locomotor activity (p<0.001) and increases duration that spends in middle area of Open field (p<0.01) compared with disease group. Conclusion: The results showed that oral administration of hesperetin improves locomotor disorder and anxiety-like behaviors in valproic acid model of autism-like.

Keywords: Locomotor Activity, Anxiety, Autism, Valproic acid

*Corresponding Author: Rashin Khalaj
Email: r.khalaj70@gmail.com