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

Rashin Khalaj1*, Akbar Hajizadeh Moghaddam1, Mahbobeh 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