Proceedings of *Autism Challenges and Solutions XII International Research and Practice Conference*, ABU-DHABI UAE, 27-30th April 2024. Published and Indexed by Emirates Scholar Center for Research and Studies.

Artichoke (Cynara scolymus L.) as nutritional intervention strategy on propionic acid-induced rodent model of autism spectrum disorders.

Sana Razhan M. Alsubaiei
al_subaiei2007@yahoo.com
Development and Quality Officer in Intellectual Property Management, Center for Innovation and Entrepreneurship at (IMSIU) University

ARTICLE INFO

Doi: 10.54878/n6nmqq98

KEYWORDS

autism spectrum disorder (ASD), neurodevelopmental disorder, Nutritional Intervention therapy's, GABA, neuroinflammation

HOW TO CITE

Artichoke (Cynara scolymus L.) as nutritional intervention strategy on propionic acid-induced rodent model of autism spectrum disorders. (2024). *Autism Challenges and Solutions*, *2*(1). https://doi.org/10.54878/n6nmqq98

ABSTRACT

The connection between nutrition and autism spectrum disorder (ASD), a neurodevelopmental disorder characterized by notable delays or deviations in interaction and communication, has offered a novel perspective and suggests that nutrition may contribute to the development of ASD in addition to being a useful treatment modality by reducing symptoms Therefore, the majority of people with ASD employ nutritional therapies to reduce gastrointestinal and behavioral symptoms, both with and without therapeutic supervision A potent source of antioxidants and minerals, artichoke extract may be utilized to reduce oxidative damage related chronic non communicable diseases. Here, we evaluated Nutritional Intervention therapy's effects on the PPA model of autism by biochemical means. 42 male Sprague Dawley albino rat pups, split into seven groups, were employed in our study. Throughout the course of the 30-day trial, the control group was only given water and a typical diet. As a mouse model of ASD, the theird group was fed a usual diet until the end of the trial, after which they were given 250 mg/kg body weight (BW) of propionic acid (PPA) orally for three days. The second group was the PPA-induced ASD model, which was given a regular diet for 27 days before being given 250 mg/kg of PPA orally for three days. The other group was given artichokes (400 mg/kg) and luteolin (50 mg/kg) daily for 27 days, followed by three days of PPA (250 mg/kg BW) in addition to their regular diet. After receiving PPA (250 mg/kg body weight (BW)) for three days, the other two groups were given a regular diet along with 400 mL/kg BW/day of artichokes and 50 mg/kg BW/day of luteolin, which is the main antioxidant and anti-inflammatory component of artichokes, for a total of 27 days. Brain homogenates from all groups were evaluated using biochemical marker measurements, which included gamma-aminobutyric acid (GABA), reduced glutathione (GSH), glutathione peroxidase (GPx1), tumor necrosis factor-alpha (TNF-α), interleukin-6 (IL-6), and interleukin-10 (IL-10). The results revealed that luteolin, a prebiotic found in artichokes, was useful in reducing the biochemical symptoms of

ASD, even while PPA caused oxidative stress and neuroinflammation in the treated rats. Nutritional and pharmacological properties of artichoke are attributed mainly to polyphenolic compounds and inulin present at high concentration. Other classes of chemical compounds, including flavonoids, anthocyanins, sesquiterpenes, and triterpenes have been also found in the plant at lower amounts