Accepted Manuscript

Title: Alterations in behaviour, cerebral cortical morphology and cerebral oxidative stress markers following aspartame ingestion

Author: Adejoke Y. Onaolapo Olakunle J. Onaolapo Polycarp

U. Nwoha

PII: S0891-0618(16)30065-5

DOI: http://dx.doi.org/doi:10.1016/j.jchemneu.2016.08.006

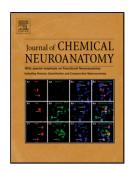
Reference: CHENEU 1432

To appear in:

Received date: 20-4-2016 Revised date: 21-8-2016 Accepted date: 22-8-2016

Please cite this article as: Onaolapo, Adejoke Y., Onaolapo, Olakunle J., Nwoha, Polycarp U., Alterations in behaviour, cerebral cortical morphology and cerebral oxidative stress markers following aspartame ingestion. Journal of Chemical Neuroanatomy http://dx.doi.org/10.1016/j.jchemneu.2016.08.006

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



ACCEPTED MANUSCRIPT

<a>AT>Alterations in behaviour, cerebral cortical morphology and cerebral oxidative stress markers following aspartame ingestion

<AU>Adejoke Y. Onaolapo^{a,c,*} ##Email##adegbayibiy@yahoo.com##/Email##, ##Email##olakunleonaolapo@yahoo.co.uk##/Email##, Olakunle J. Onaolapo^b, Polycarp U. Nwoha^c <AU>

<AFF>aDepartment of Anatomy, Faculty of Basic Medical Sciences, College of Health Sciences, Ladoke Akintola University of Technology, Ogbomosho, Oyo State, Nigeria <AFF>bDepartment of Pharmacology and Therapeutics, Faculty of Basic Medical Sciences, College of Health Sciences, Ladoke Akintola University of Technology, Oshogbo, Osun State, Nigeria

<AFF>cDepartment of Anatomy and Cell Biology, Faculty of Basic Medical Sciences, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria

<PA>M.B,B.S (Ibadan), Ph.D Anatomy (Ife), Department of Anatomy, Faculty of Basic Medical

Sciences, College of Health Sciences, Ladoke Akintola University of Technology, Ogbomosho, Oyo State, Nigeria.

<ABS-HEAD>HIGHLIGHTS▶ The artificial sweetener, aspartame, is an important component of many low-calorie and sugar-free food. ▶ If and how repeated administration of aspartame affects neurobehaviour, brain structure and oxidative stress have been the subject of a number of studies. ▶ The rationale for this study was the need to determine changes in behaviour, markers of oxidative stress, aspartate levels as well as morphological changes associated with acute and repeated administration of aspartame below and above the recommended dietary intake of 40 mg/kg.

<ABS-HEAD>Abstract

<ABS-P><ST>Objective</ST> The study evaluated changes in open field behaviours, cerebral cortical histomorphology and biochemical markers of oxidative stress following repeated administration of aspartame in mice.

<ABS-P>Methodology: Adult mice were assigned into five groups of twelve each. Vehicle (distilled water), or aspartame (20, 40, 80 and 160 mg/kg body weight) were administered orally for 28 days. Horizontal locomotion, rearing and grooming were assessed after the first and last dose of aspartame. Sections of the cerebral cortex were processed and stained for general histology, and also examined for neuritic plaques using the Bielschwosky's protocol. Glial fibrillary acidic protein (GFAP) and neuron specific enolase (NSE) immunoreactivity were assessed using appropriate antibodies. Aspartate and antioxidant levels were also assayed from cerebral cortex homogenates. Data obtained were analysed using descriptive and inferential statistics.

<ABS-P><ST>Results</ST> Body weight and food consumption decreased significantly with aspartame consumption. Locomotion, rearing and grooming increased significantly after first dose, and with repeated administration of aspartame. Histological changes consistent with neuronal damage were seen at 40, 80 and 160 mg/kg. Neuritic plaque formation was not evident; while GFAP-reactive astrocytes and NSE-reactive neurons increased at 40 and 80 mg/kg but decreased at 160 mg/kg. Superoxide dismutase and nitric

Download English Version:

https://daneshyari.com/en/article/1988673

Download Persian Version:

https://daneshyari.com/article/1988673

<u>Daneshyari.com</u>