IJMBS
Ibnosina Journal of Medicine and Biomedical Sciences



ARTICLE

Year : 2014 | Volume : 6 | Issue : 1 | Page : 25-30

# Neurohistochemical studies of adolescent rats' prefrontal cortex exposed to prenatal nicotine

Gabriel Olaiya Omotoso, Mercy Oluseyi Adekeye, Abayomi Ayo Ariyo, Josephine Olubanke Ibitolu, Olalekan Abiodun Oyeyemi, Bernard Ufuoma Enaibe

Department of Anatomy, Faculty of Basic Medical Sciences, College of Health Sciences, University of Ilorin, PMB 1515, Ilorin, 240003, Nigeria

**Correspondence Address**:
Gabriel Olaiya Omotoso
Department of Anatomy, Faculty of Basic Medical Sciences, College of Health Sciences, University of Ilorin, PMB 1515, Ilorin, 240003
Nigeria
Login to access the email ID

**Source of Support:** None, **Conflict of Interest:** None

crossref Citations Check

**DOI:** 10.4103/1947-489X.210352



**Background:** Exposure to tobacco has frequently been associated with adverse implications on many body organs and systems. Maternal smoking can influence fetal development, causing intrauterine growth restriction, preterm birth, or even fetal death and spontaneous abortion. **Objectives:** We investigated the effects of prenatal exposure to nicotine on the prefrontal cortex in adolescent rats. **Materials and Methods:** Twenty-four mature female Wistar rats were time mated and grouped according to Trimester into Control and Treated groups. Nicotine was administered intra-peritoneally to pregnant Wistar rats in the treated groups, while normal saline was given to the control groups, at each of the three Trimesters. The animals were allowed to litter and the pups were allowed to grow till postnatal day 35, when they were sacrificed and the brain removed and weighed. The prefrontal cortex was excised and either fixed in 4% paraformaldehyde for tissue histology or homogenized in sucrose solution for enzyme studies (alkaline phosphatase, lactate dehydrogenase and glucose-6-phosphate dehydrogenase). **Results:** Enzyme studies showed derangement in biochemical status of the prefrontal cortex of all the nicotine-exposed animals compared with their respective controls, and corresponding morphological and histological alterations, especially in animals exposed to nicotine during their 2nd and 3rd weeks of fetal life. **Conclusions:** The morphohistological and biochemical derangements that occur during neurodevelopment of nicotine-exposed offspring persist into adolescent life, and could underlie the neurological dysfunctions associated with such individuals.

[PDF]*

Print this article Email this Article to your friend

Next article

Previous article

Table of Contents

Similar in PUBMED

**Search Pubmed for**

- Omotoso GO
- Adekeye MO
- Ariyo AA
- Ibitolu JO
- Oyeyemi OA
- Enaibe BU

**Search in Google Scholar for**

- Omotoso GO
- Adekeye MO
- Ariyo AA
- Ibitolu JO
- Oyeyemi OA
- Enaibe BU

**Related articles**

- Adolescents
- Prenatal nicotine exposure
- Prefrontal cortex
- Enzymes
- Histology

Citation Manager

Access Statistics

Reader Comments

Email Alert *

Add to My List *

* Requires registration (Free)

**Article Access Statistics**

| | |
|---|---|
| Viewed | 69 |
| Printed | 3 |
| Emailed | 0 |
| PDF Downloaded | 10 |
| Comments | [Add] |











**ISSN**: Print -Awaited, Online - 1947-489X