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Prenatal and early postnatal caffeine exposures influenced neuron and glial morphological destiniesOwolabi O Joshua¹, Adefule A K² and Shallie Philemon D²¹Babcock University, Nigeria²Olabisi Onabanjo University, Nigeria

This study investigated the effects of caffeine consumption on the brain in pregnancy and early postnatal life. Thirty two (n=32) adult mice (*Mus musculus*) were used for the study. They were maintained in Anatomy Department animal holding and given chow and water ad libitum. They were divided into four groups: Group-A animals as control, Group-B animals given low dose caffeine 10 mg/kg body weight, Group-C animals given medium dose caffeine 50 mg/kg body weight and Group-D animals given high dose caffeine 120 mg/kg body weight. The treatment duration was divided into Phases I and II to assess pre and post natal effects, respectively. Caffeine was dissolved in distilled water and Group-A animals received distilled water as placebo. Animals mated prior to treatment commencement and pregnant mice were administered caffeine throughout pregnancy. Half number of offspring were sacrificed at birth, the rest were used in Phase II and treatment continued till postnatal Day 35, marking puberty. Animals were sacrificed and brain specimens were excised and processed. Specimens were subjected to gross morphological assessments. Histological and histochemical demonstrations were done using the H&E, Bielschowsky, Luxol Fast Blue and Feulgen DNA Staining techniques. Immuno histochemical-molecular properties were demonstrated using the GFAP technique. At parturition, 50 mg/kg body weight caffeine dose disrupted deeper cortical layers histoarchitecture and extended to other layers when dosage increased to 120 mg/kg body weight. Neuronal morphological heterogeneity was observed at doses higher than 10 mg/kg body weight and some effects persisted till puberty. Astrocyte morphologies and dendritic patterns of elaboration were persistently altered. Caffeine exposure altered the pattern of brain cells development by altering morphologies, patterns of elaboration and spatial distribution, also neuronal communication and basal metabolism. Effects were dose dependent and moderate dose might be beneficial to morphological and functional parameters.

Biography

Owolabi O Joshua has received his PhD in Anatomy and Neuroscience and MBA with specialization in Clinical Research Management. He currently works as a Teacher and Researcher in the Ben Carson [Snr.] College of Medicine, Babcock University, Nigeria.

owolabijo@babcock.edu.ng

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