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EFFECT OF EXPOSURE TO MOSQUITO COIL SMOKE ON SHORT-TERM MEMORY OF ADULT WISTAR RATS

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ABSTRACT

Mosquito coil is one of the preferred anti-mosquito products in low income communities because it is cheap and readily available. Burning mosquito coil generates smoke that can repel mosquitoes effectively. However, the smoke contains pollutants that could be detrimental to health. This study was designed to investigate the possible effects that exposure to mosquito coil smoke could have on short-term memory. Twenty-eight (28) adult male Wistar rats were grouped randomly into four of seven animals each. The control, 1 hour, 2 hours and 3 hours of mosquito coil smoke exposure per day. The exposure to the mosquito coil fumes was in a partially ventilated chamber for 21 consecutive days. Novel object recognition test was employed to determine short-term memory in the animals. Brain tissue specimens were collected and fixed in Bouin's fluid and processed for histological examination. The 1 hour, 2 hours and 3 hours smoke exposed showed significant preference for familiar objects. The histological examination of the hippocampus showed normal cellular architecture in the control while neuronal degenerations were observed in the experimental groups. Exposure to mosquito coil fumes for 21 days impaired short-term memory in addition to neurodegenerative changes in the hippocampus of adult Wistar rats.

Key words: *Mosquito coil, Short-term memory, Novel object, Hippocampus*

INTRODUCTION

Every year, millions of cases of insect related diseases are recorded, representing a serious threat to global public health. Insect-borne diseases accounted for about 17% of the estimated global burden of these vector-borne diseases (Akunna et al. 2013). Environmental changes together with operational, financial and managerial problems coupled with increasing population mobility and pesticide resistance have contributed to increase in the prevalence of many of such diseases in recent

decades (Akunna et al. 2013; Harsimran and Harsh 2014). Mosquito coil is one of the preferred anti-mosquito products in low income communities because it is cheap, easy to use and readily available. The coils are burned indoors as a common practice in households across Africa, Asia and South America including Nigeria (Garba et al. 2007;

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