NEUROBEHAVIOURAL AND ANALGESIC EFFECT OF Ocimum gratissimum LINN. LEAVES ESSENTIAL OIL IN Wistar albino MICE

Onosetale E. Aigbomian¹, Comfort T. Senjobi², S. A. Onasanwo³, M. O. Olatunde⁴, Taiye R. Fasola¹

¹ Department of Botany, University of Ibadan, Nigeria.
² Department of Plant Science, Olabisi Onabanjo University, Ago-Iwoye, Nigeria
³ Department of Physiology, University of Ibadan, Nigeria.
⁴ Department of Pharmacology and Therapeutics, University of Ibadan, Nigeria.
Studies have shown that pain relieving medications may be neuroprotective. *Ocimum gratissimum* Linn. that is widely used in traditional medicine for debility and many other illnesses neuropharmacologically related has not been fully explored.

**Aim.** This study was designed to investigate the safety of intake, neurobehavioral and analgesic effects of the Essential Oil of *Ocimum gratissimum* Linn leaves (EOOG) in mice.

**Methods.** Acute toxicity of EOOG was determined following standard method while the neurobehavioural properties were assessed using the open field for Novelty-Induced Rearing (NIR), Novelty-Induced Grooming (NIG) and locomotor activity in mice. The hole board apparatus was used for the frequency of head dips. The Y-maze was used for short- working memory. Mechanistic studies were conducted with Atropine (muscarinic blocker, 0.5 mg/kg), Propanolol (non-selective β-adrenoceptor blocker, 0.2 mg/kg), Haloperidol (dopamine receptor blocker, 0.2 mg/kg), Cyproheptadine (Serotonergic antagonist, 0.5 mg/kg) and Yohimbine (α-2 adrenergic blocker, 1 mg/kg). The analgesic activity of *Ocimum gratissimum* was investigated using acetic acid writhing test and thermally-induced pain.

**Results.** The median lethal dose (LD50) of *Ocimum gratissimum* was 2449 mg/kg. The EOOG significantly reduced novelty-induced behaviour in a dose-dependent manner. The exploratory activity of animals treated with the EOOG was observed to decrease non-dose dependently with the highest dose (40 mg/kg) showing no activity on the hole board apparatus. The EOOG produced a significant reduction in locomotor activity in all the doses in a non-dose dependent manner but at the lowest dose. In the Y-maze, EOOG did not produce any significant effect on working memory as the percentage alternation produced was not significantly different from the control. The EOOG in hot plate analgesic assay showed increased reaction time suggesting central nervous system analgesic property.

**Conclusions.** The results of the investigation showed that EOOG might possess sedative properties due to its ability to inhibit NIR and NIG, head dips, and locomotor activity. Furthermore, the inhibition of nociception marked in this research advocates antinociceptive activity which might be through the peripheral or central opioid receptor..

**Key words:** *Ocimum gratissimum*, neuroprotective, pain, sedative, medicinal plants.


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