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Appraising the Neurobehavioural Toxicity Potential of Aqueous Ethanol Extracts of Leaf/Seed of *Mucuna pruriens*, *Datura metel* and *Tapinanthus globiferus* Growing on *Azadirachta indica* Host Tree

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ABSTRACT

Aqueous ethanol extracts of *Mucuna pruriens* seed (AEMPS), *Datura metel* leaf (AEDML) and seed (AEDMS), and *Tapinanthus globiferus* (AETGL) Growing on *Azadirachta indica* host tree are being evaluated for their anxiolytic, antidepressant, anti-Parkinsonian, and addictive activities in other studies. This study aimed to investigate the liability or otherwise of extracts of the selected medicinal plants for some benzodiazepines-related neurobehavioral toxicities in mice. Actophotometry was used for the evaluation of the locomotory activity related to central nervous system depressant effect, diazepam-induced sleep potentiation for hypnotic liability, rodent beam (rod)-walking assay for balance and motor co-ordination, and novel object recognition test (NORT) for cognitive deficit evaluation. The results indicate, compared to negative control (distilled water) treatment mean values of 4.69±0.95 % locomotory activity reduction, 430.71±16.80 sec. sleep onset and 168.43±10.56 min. duration, 5.00±0.00 balance/motor co-ordination performance, and 54.41±1.99 novel object recognition, treatments with high oral doses of AETGL and AEMPS (1500 mg/kg each) did not significantly negatively impact these behavioral indices but even enhanced novel object recognition. High oral doses of AEDML and AEDMS (750 mg/kg each), and tramadol (133 mg/kg) caused significant (p<0.05) 42.24±2.64, 27.73±2.17, and 36.74±4.44, mean % locomotory activity reductions, 196.86±10.12, 193.88±15.39, and 189.14±18.31 sec. mean sleep onsets and 319.71±18.85, 309.57±20.27, and 356.00±26.01 min. mean sleep durations, 1.67±0.42, 1.30±0.40, 1.833±0.48 mean balance/motor co-ordination performances, and 40.49±5.45, 31.33±5.23, 19.37±3.96 mean novel object recognitions, respectively. Diazepam (2 mg/kg) treatment caused 33.71±2.19 mean % locomotory activity reduction, 1.33±0.49 mean balance/motor co-ordination performance, and 29.91±2.81 mean novel object recognitions. Additionally, most mouse groups exposed to tramadol, AEDML, and AEDMS extracts displayed unusual (hallucination-like, predator-like) fearful trepidations when in proximity with the novel objects. These findings indicate AETGL and AEMPS extracts may be devoid of but tramadol, diazepam, AEDML and AEDMS extracts may be liable to significant sedative, hypnotic, myo-relaxant, and anti-cognitive effects. These findings justify the traditional uses of Tapinanthus species and *Mucuna pruriens* extracts for the treatment of memory deficits and related neurological disorders. They also justify the morbid and fatal toxicity risks associated with the use of *Datura metel* extracts, tramadol, and the benzodiazepines.

Keywords: *Mucuna pruriens, Tapinanthus globiferus, Datura metel, Azadirachta indica*

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