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# Medicinal Plants Used in The Management of Epilepsy in Nigeria: A Review of Potential Targets for Drug Discovery

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ABSTRACT

**Background**: Medicinal plants are continuously used to manage epilepsy and other neurological disorders. They provide major promising targets in pursuit of new drugs and lead compounds that are affordable, available and accessible to treat the debilitating neurological condition. Several experimental models employed to screen for seizures in laboratory animals provide beneficial information concerning diagnoses, treatment and possible prevention of the disease. This review aims to identify medicinal plants used in the management of epilepsy in Nigeria and to explore pharmacological basis to support their ethnobotanical claims.

**Methods**: Literature searches of relevant articles in electronic databases including PubMed, African journal online, Google Scholar and ScienceDirect databases were carried out, and information about how these medicinal plants are used traditionally in the management of epilepsy and other diseases in Nigeria were also obtained. Only studies conducted within Nigeria on medicinal plants tested for seizures and epilepsy between 2000 and 2022 were included.

**Results:** We identified sixty-eight (68) medicinal plants spanning across several families majorly Agavaceae, Amaryllidaceae, Annonaceae, Apocynaceae, Asteraceae, Bignoniaceae, Burseraceae, Compositae, Convolvulaceae, Euphorbiaceae, Lamiaceae, Leguminosae, Loranthaceae, Moraceae and Rubiaceae, that have been reported to contain bioactive compounds active against seizures using various pharmacological screening models. Plants that have not been fully studied and their main mechanisms of action not ascertained were recorded. We also identified those plants with unknown active constituents responsible for their activity. The review also identified potential medicinal plants for future studies of new as well as alternative therapies for the management of epilepsy and other neurological and neurodegenerative diseases.

**Conclusions**: This review provided evidence on the use of medicinal plants in the management of epilepsy and possibly rationalized the use of these plant extracts as alternatives in treating seizures and epilepsy.

## 1. Background

Epilepsy is a chronic neurological disorder characterized by recurrent seizures that occur due to abnormal electrical discharges of groups of neurons in the brain[1-3]. The commonest causes of epilepsy include severe hypoxia or birth asphyxia, brain tumors, intracranial trauma during birth, metabolic disturbances, traumatic head injuries, road traffic accidents and congenital malformations of the brain, perinatal insults or infection such as meningitis, cerebral malaria, febrile seizures and encephalitis[2,4-8]. Remission of

recurrent and unprovoked seizures can be achieved in most cases by treatment with anticonvulsant medication, surgical resection, or nerve-brain electrical stimulation. However, one-third of epileptic patients are still refractory to treatment, this necessitates addressing such challenges[9-13]. The currently available antiepileptic drugs (AEDs) neither provide a definite clinical cure nor prevent its occurrence or relapse. Moreso, the AEDs are often accompanied by several side effects, including cognitive dysfunction, sedation, blood dyscrasias and teratogenicity. The absence of disease-modifying therapies for epilepsy is also a major concern in the quality of life of these patients[12-16]. About 80% of people with epilepsy living in developing countries receive less or no drug treatment for epilepsy[17-19]. Inadequacy, cost of AEDs, lack of access to modern healthcare facilities and stigmatization of patients and their caregivers hinders these patients with epilepsy from seeking proper management[19-20].

Medicinal plants, however, provide major promising targets in pursuing new drugs and lead compounds that will be affordable and accessible to treat these debilitating neurological disorders[21-22]. In Northwestern Nigeria, about 11.9% of patients with epilepsy are reported to take at least a form of an alternative therapy before visiting the health care centres[23]. This is perhaps because medicinal plants are seen as natural, harmless to health, relatively cheap compared to orthodox medicines, easily accessible, locally and culturally acceptable and economically affordable, as well as efficacious in curing most ailments[24-26]. Despite appreciable studies on anticonvulsant activities of medicinal plants in Nigeria and other developing countries, paucity of reliable evidences regarding their efficacy and safety as well as inadequate information about their mechanism of action are domineering weaknesses regarding their effectiveness for use in treatments[25]. This review provides scientific evidence for using various medicinal plants with anticonvulsant activity and portrays the extent of the validated anticonvulsant profile of these plants in Nigeria.

## 2. Methods

Literature searches of relevant articles in electronic databases including PubMed, African journal online, Google Scholar and Science Direct databases was carried out using 'Epilepsy', 'Convulsion', 'Nigeria', 'Medicinal plants' as keywords for the search. Information about the traditional usage of these medicinal plants in the management of epilepsy and other diseases in Nigeria were also gotten from published papers and texts on ethnobotanical studies. Only research studies carried out in Nigeria that investigate the effect of medicinal plants on epilepsy and experimental models used to validate such ethnobotanical claims of these plants in Nigeria between January 2000 and November 2022 were included Table 1. This review excludes all articles published before the year 2000. Studies conducted on medicinal plants outside Nigeria were also not included. Several publications obtained from various universities and research institutions that fulfilled the inclusion criteria were also considered. The articles chosen were thoroughly scrutinized for eligibility (Figure 1).

## 4. Results

The extracts obtained from the references were prepared either from the whole plant, leaves, stem barks, and root barks extracted in different polar solvents; aqueous, methanolic, ethanolic, hydroalcoholic, butanol and ethyl acetate. Rodents such as mice and rats and day-old chicks were used for the screening for anticonvulsant activity. The medicinal plants reported in this review span across several families such as: Agavaceae, Amaryllidaceae, Anacardiaceae, Annonaceae, Apocynaceae, Asteraceae, Bignoniaceae, Burseraceae, Cochlospermaceae, Compositae, Convolvulaceae, Crassulaceae, Cucurbitaceae, Cyperaceae, Ebanaceae, Euphorbiaceae, Fabaceae, Icacinacae, Lamiaceae, Leguminosae, lilaceae, Loranthaceae, Meliaceae, Mimosaceae, Moraceae, Moringaceae, Ochnaceae, Olacaceae, Piperaceae, Poaceae, Polygalaceae, Rubiaceae Rutaceae, Sapindaceae, Sapotaceae, Scrophulariaceae, Solanaceae, Ulmaceae, Vitaceae [2-5]

Several medicinal plants in Nigeria have shown appreciable activity against MEST in this review. Notably, at doses of 25 and 50 mg/kg body weight, the methanolic extract of *Chrysanthellum Indicum* protected the chicks (80%) against MEST[26], as compared to the saline control group. Likewise, methanolic extract of *Olax subscorpioidea* at doses of 100 and 200 mg/kg provided 30 and 70% protection against MEST in chicks respectively. At all doses tested (100, 200, and 400 mg/kg), the extract significantly ($p < 0.05$) increased the latency of seizures induced by MEST compared to the normal saline control group[27]. A seizure protection (100%) against MEST-induced seizures at 400 mg/kg of *Evolvulus alsinoides* (in chicks) and *Leucas martinicensis* (in rats), respectively were also reported[28-29]. Other medicinal plants reported to have activity against MEST include *Laggera Aurita*[30], *Paullinia pinnata*[31], *Randia nilotica*[32], *Solanum nigrum*[33],

*Afrormosia Laxiflora*[34], *Securidaca longipedunculata*[35] and *Allium cepa*[36].

The extract of *Evolvulus alsinoides,* at all doses tested, significantly increased the latency of PTZ-induced seizure and protected 100% of the mice against seizure at the highest dose of 400 mg/kg[28]. The extract of *A. chevalieri* at 300 mg/kg significantly (P<0.01) increased the mean onset of seizures induced by PTZ[37]. The aqueous stem bark extract of *Securidaca longipedunculata* at 50 and 100 mg/kg body weight protected (80%) of animals and significantly (p<0.05) prolonged the onset of convulsion[35]. Dose-dependent protection against PTZ-induced seizure in mice, with complete protection (100%) against seizure at the dose of 30 mg/kg, was observed with aqueous extract of *Solanum nigrum*[33]. Other medicinal plants such as *Carissa edulis*[38], *Cissus cornifolia*[39], *Cochlospermum tinctorium*[31], *Diospyros mespiliformis*[40], *Ficus platyphylla*[16], *Globimetula braunii*[41], *Hymenocardia acida*[42-43], *Laggera Aurita*[30], *Paullinia pinnata*[31], *Albizia glaberrima*[44], *Moringa oleifera*[45], *Lannea barteri*[46], *Piper guineense*[47], *Securinega virosa*[48], *Afrormosia Laxiflora*[34], *Olax subscorpioidea*[27] and *Celtis integrifolia*[49] have demonstrated activity against PTZ induced seizures.

Extract of *Leucas martinicensis* at 200 mg/kg and 400 mg/kg offers protection (100%) to rats against STR-induced seizures[50]. The methanolic extract of *Olax subscorpioidea* offers 50% protection against strychnine-induced seizures in mice at a dose of 100 mg/kg. The extract significantly (p<0.01) prolonged the mean onset of seizures[27]. Other medicinal plants identified in this review that offers protection to mice against strychnine-induced seizures include *Carissa edulis*[38], *Cissus cornifolia*[39], *Ficus platyphylla*[16], *Hymenocardia acida*[42-43], *Sanseviera liberica*[51], *Mitragyna africanus*[52].

*Cissus cornifolia*[39], *Hymenocardia acida*[42-43], *Celtis integrifolia*[49], *A. chevalieri*[37] have been reported to show activity against 4- aminopyridine induced seizures. Medicinally active plants such as *Diospyros mespiliformis*[40], *Laggera Aurita*[30], *Solanum nigrum*[33], *Sanseviera liberica*[51], *Russelia equisetiformis*[53] and *A. chevalieri*[37] have been found to be active against picrotoxin induced seizures in this review.

*Sanseviera liberica*[51] offer protection to mice against bicuculline-induced seizures. *Carissa edulis* have been reported to offer protection to mice against NMDA-induced seizures and aminophylline-induced seizures[38].

The Residual aqueous fraction of *Carissa edulis* at the dose of 300 mg/kg reduced both the behavioral seizure scores and the mean seizure duration[38]. The extract of *A. chevalieri* also, at all doses tested, decreased the severity of seizures on the Racine scale in PTZ kindled rats, suggestive of antiepileptogenic potentials[37]. However, there was no protection against seizure nor significant increase or decrease in seizure threshold to animals in which aqueous extract of *Solanum nigrum* was administered for 28 days and later challenged after 24-hours to electrically-induced, picrotoxin (5 mg/kg) and pentylenetetrazol (85 mg/kg) groups[33].

In an attempt to identify, isolate and characterize the active constituents responsible for anticonvulsant activity in the reported medicinal plants, the n-butanol fraction of *Securinega virosa* rich in flavonoids and saponins, protect mice against PTZ-induced seizures[48]. Flavonoids and saponins are implicated to be responsible for anticonvulsant activity[54-55]. Several other authors, have also reportedly attributed the anticonvulsant activity to bioactive constituents such as flavonoids, saponins, tannins and alkaloids[55]. Methysticin; a pyrone from the rhizomes of *Piper methysticum*. a triterpenoid glycoside from *Tetrapleura tetraptera* and *Spathodea campanulata* and Linalool; monoterpene from *Aeolanthus suaveolens*[56-57] have been isolated from medicinal plants with anticonvulsant activity. Alkaloids with anticonvulsant activity have also been isolated from *Capparis baduca*, *Pithecellobium saman*, *Picnomon acarna* while cannabinoids and flavonoids from *Cannabis sativa*[56].

This review also identified a few authors that isolated active constituents and assayed for anticonvulsant activity. Bioactive-guided fractionation of methanol-methylene chloride root bark extract of *Annona senegalensis* isolated kaurenoic acid which protected mice against PTZ-induced seizures[56]. Lupeol acetate, an ursolic acid also isolated from the leaf of *Milicia excelsa*[58]. Ursolic acid; a triterpenoid carboxylic acid was Hitherto shown to possess anticonvulsant effects[59-60]. Two compounds isolated and characterized from leaf extract of *Pyrenacantha staudtii* are bis(8-hydroxyl-2-methylnonyl) phthalate and bis(8-methylnonyl) phthalate. However, an assay of their anticonvulsant activity only reveals slight activity with the former while the latter does not[57].

## 5. Discussions

### 5.1 *Experimental evidence in Epilepsy*

Experimental models of epilepsy and seizures remain essential in understanding the mechanisms underlying ictogenesis and epileptogenesis that are instrumental in the drug discovery and development of novel antiepileptic drugs[15,61]. Several experimental models are employed to

screen for seizures in laboratory animals either in acute or chronic models of seizures and epilepsy. Among the commonly used acute models, the Maximal electroshock seizure test (MEST) and Pentylenetetrazol (PTZ) models remain the two-goal standard models of acute seizure screening. They have clearly defined endpoints foretelling equitable effects in humans and require only basic technical expertise[19].

The MEST is a standard antiepileptic drugs (AEDs) test that assesses the testing material's ability to protect against the hind limb tonic extension (HLTE) phase of the seizure[62]. The MEST model induces seizures by sending electrical signals that hyper excite the neurons. MEST recognizes activity against generalized tonic-clonic/ grand mal seizures, and such activity epitomizes action on the seizure focus[63]. Experimentally, the testing animals are observed for seizures manifesting as hind limb tonic extension (HLTE). The ability of extracts to prevent HLTE and prolong the latency and/or onset of HLTE is considered an indication of anticonvulsant activity[64-66]. Seizures induced by MEST can be prevented by agents inhibiting sodium channels such as valproate, phenytoin, lamotrigine and felbamate and those blocking glutamatergic excitation mediated by N-Methyl-D-Aspartate (NMDA) receptors.

PTZ exerts its convulsive effect by inhibiting the activity of gamma-amino-butyric acid (GABA) thus a suitable model to primarily identify compounds that raise the seizure threshold. GABA is the major inhibitory neurotransmitter implicated in epilepsy at $GABA_A$ receptors, enhancement and inhibition of GABA neurotransmission do result in attenuation and enhancing convulsion, respectively[67-68]. Studies also suggested the possible involvement of the glutamatergic mechanism through activation of the NMDA receptor system in the initiation and propagation of PTZ-induced convulsions[69-70].

Experimental animals are observed with the experimental timeline for the absence of an episode of clonic spasm for at least 5s duration, which is indicative of an extract's ability to abolish the effect of PTZ[71]. AEDs effective against this type of seizure are also effective in treating absence and myoclonic seizures[72].

Strychnine is a selective and competitive antagonist that acts by blocking the inhibitory effects of glycine at the glycine receptors, extracts that are able to protect mice against lethality within 30 minutes of observation are considered to have anticonvulsant activity[73-75].

4-aminopyridine (4-AP) is a potassium channel antagonist and a potent chemoconvulsant that induces tonic-clonic-convulsion and lethality[76]. It interferes with neuronal excitability both at resting membrane potential, responsiveness to synaptic inputs, frequency adaptation and neurotransmitters release[77]. The ability of extracts to protect mice from lethality within a 30-minute observational period is considered an indication of anticonvulsant activity[76].

Picrotoxin also antagonizes the central action of GABA raising the seizure threshold, therefore drugs effective in suppressing seizures induced by picrotoxin in rodents are also beneficial in the absence seizures[78]. They abolish the HLTE or prolong the onset of HLTE induced by picrotoxin[79-80].

Bicuculline also acts by blocking the action of GABA at $GABA_A$ receptors[81-82]. In experimental animals, the animals that did not elicit the characteristic turning behavior of two consecutive 360 cycles within 30 min observational period are considered protected[83-84].

There is no clear explanation of the mechanism of Aminophylline-induced seizure[85]. However, theophylline used in therapeutics often induces intractable seizures and mortality. The possibility of free radicals and oxidative stress involvement in AMI-induced seizures has also been demonstrated in various Studies[86-88]. The testing animals are observed for the onset of myoclonic seizures, THLE, and mortality within the observable period of 30 minutes[89].

The chronic model of epilepsy provides more information on the processes of epileptogenesis occurring from an initial epileptogenic insult to the brain to the occurrence of spontaneous seizures[14,61,90]. To mimic spontaneous seizures occurring in an epileptic brain, the kindling model has been beneficial both as a tool for understanding chronic epileptogenesis as it relates to epilepsy in humans and as a model for testing AEDs with the potentials for treating complex partial seizures[15,90]. Seizures beget seizures, through kindling, a normal functioning brain can be epileptic through repeated focal stimulation. It induces progressive intensification of seizures and may be useful in the identification of promising agents necessary for the prevention of seizures, seizure modification as well as a possible correction[15,91].

### *4.3 Experimental evidence in Safety*

Toxicological evaluations of medicinal plants are critical to drug development and safety. These toxicities to plants are usually dependent on the plant part and amount consumed, the species and stage of development, as well as the susceptibility of the victim[92]. Noting that the cumulative effects of plants ingested over time are not well understood in traditional medicine, toxicological evaluations such as

acute toxicity, sub-acute toxicity, sub-chronic toxicity, and chronic toxicity studies are commonly employed in predicting the safety of medicinal plants.

Knowledge of the traditional method of preparation and use of such plants is necessary to anticipate the ingestion of such toxic plants and their parts or other finished herbal products. Although the safety of herbal products use is still a major concern among healthcare practitioners in promoting their integration into healthcare systems[93], the trend of traditional medicines (TM) use is increasing even among healthcare personnel as a reflection of its increasing acceptance in the health system[94].

This review identified that the median lethal dose (LD50) of these plants were reported, further toxicological studies should be carried out on these plants. A comprehensive analysis of plant's extracts and phytochemical constituents presents, identification, isolation and characterization of the individual bioactive constituents in the medicinal plants, as well as determination of their exact mechanisms of action, will ensure a critical assessment of their therapeutic potential. This will also be beneficial in the development of potential inexpensive remedies to reduce the epilepsy treatment gap in developing countries and also could provide new treatments for drug-resistant seizures.

## 5. Conclusions

This review provided evidence for the use of medicinal plants in the management of epilepsy and possibly rationalized the use of plant extracts as alternatives in treating seizures and epilepsy. This review also identifies the screening models carried out on the medicinal plants and thus identifies those that have not been fully studied and their mechanisms of action not ascertained. It also identified those whose active constituents are responsible for their activity remain unknown. The review also identifies potential target plants for future studies of new and alternative therapies for managing epilepsy and other neurological and neurodegenerative diseases.

## List of abbreviations

4-AP: 4-aminopyridine; AEDs: Antiepileptic drugs; AMI: Aminophylline-induced; BRU: brucine; ELT KIND: Electrically induced kindling; GABA: Gamma amino butyric acid; HLTE: Hind limb tonic extension; INH: Isoniazid; LD50: median lethal dose; MEST: Maximal electroshock seizure test; NMDA: N-Methyl-D-Aspartate; PIC: Picrotoxin; PIL: Pilocarpine; PTZ KIND: PTZ induced kindling; PTZ: Pentylenetetrazol; STR: Strychnine; STR: Strychnine; WHO: World health organization;

## Declarations

### Ethics Approval and consent to participate

Not applicable

### Consent for Publication

Not applicable

### Availability of data and materials

Not applicable

### Competing interests

The authors declare no conflict of interest.


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### Authors' contributions

*ASW* conceptualized the original idea. *ASW* and ARA developed the study methods and co-wrote the manuscript. *ASD, MM and MHA* performed the literature review and co-wrote the manuscript. *ASW and SM* edited the final draft and critically reviewed the manuscript for intellectual content. *AHY* reviewed and approved the final version of the manuscript.


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### References


1. Scheuer ML and Pedley TA (1990) The evaluation and treatment of seizures *New Engl. J. Med.* 323: 1468–74 https://doi:10.1056/NEJM199011223232107
2. Berg AT, Berkovic SF, Brodie M J, Buchhalter J, Cross J H, et al (2010) Revised terminology and concepts for organization of seizures and epilepsies: report of the ILAE commission on classification and terminology, 2005–2009 *Epilepsia* 51: 676- 85 https://doi:10.1111/j.1528-1167.2010.02522.x

3. Clossen BL and Reddy DS (2017) Novel therapeutic approaches for disease modification of epileptogenesis for curing epilepsy *Biochim Biophys Acta*. 1863: 1519–38 https://doi:10.1016/j.bbadis.2017.02.003
4. Rang HP, Ritter JM., Flower R, Henderson G, MacEwan D, et al (2020) Pharmacology. 9th edition. Churchill Livingstone, Elsevier science limited, Pp, 479-530
5. Browne TR, Holmes GL (2001) Epilepsy *N Engl J Med* 344: 1145-51 https://doi:10.1056/NEJM200104123441507
6. Sander JW, Dhillon S (2012) Epilepsy in: Roger W, Cate W. Clinical pharmacology and therapeutics. 5th edition. Churchill Livingstone, Elsevier Science Limited. pp. 489- 505
7. Scheffer IE, Berkovic S, Capovilla G, Connolly MB, French J, et al (2017) ILAE classification of the epilepsies: Position paper of the ILAE commission for classification and terminology *Epilepsia* 58: 512–521 https://doi:10.1111/epi.13709.Epub 2017 Mar 8
8. Guerrini R, Marini C, Barba C (2019) Generalized epilepsies. *Clinical neurophysiology: diseases and disorders*. In: *handbook of clinical neurology*. 161 (3rd series). K. H. Levin and P. Chauvel, Editors
9. Klitgaard H, Matagne A, Schachter SC. White HS (2008) Chapter 8: Animal and translational models of the epilepsies. In: Robert, A. M. & Franco Borsini, P. (eds.) *Animal and translational models for CNS drug discovery* San Diego: Academic Press
10. Laxer KD, Trinka E, Hirsch LJ, Cendes F, Langfitt J, et al (2014) The consequences of refractory epilepsy and its treatment *Epilepsy Behav* 37: 59-70 https://doi:10:1016/j.yebeh.2014.05.031
11. Simonato M, Brooks-Kayal RA, Jerome EJ, Aristea SG, Frances EJ, et al (2014) The challenge and promise of anti-epileptic therapy development in animal models *Lancet Neurol* 13 (9): 949–60 https://doi.org/10:1016/S1474-4422(14)70076-6
12. Krishna V, Sammartino F, King NK, So RQ, Wennberg R (2016) Neuromodulation for epilepsy *Neurosurg Clin*. 27:123–31 https://doi:10:1016/j.nec.2015.08.010
13. Schachter SC (2016) Antiseizure drugs: mechanism of action, pharmacology, and adverse effects. In: *up to date (Post TW, Rutgeerts P, Grover S, eds)*. Wellesley, MA
14. Loscher W, (2002) Current status and future directions in the pharmacotherapy of epilepsy *Trends Pharmacol Sci* 23 (3): 113–18 https://doi:10.1016/S0165-6147(00)01974-X
15. Löscher, W, Schmidt, D. (2011) Modern antiepileptic drug development has failed to deliver: ways out of the current dilemma *Epilepsia*. 52: 657–78 https://doi:10.1111/j.1528-1167:2011.03024.x
16. Chindo BA, Ya'u J, Danjuma, NM, Okhale S E, Gamaniel KS, et al (2014) Behavioral and anticonvulsant effects of the standardized extract of *Ficus platyphylla* stem bark *J Ethnopharmacol* 154 351–60 https://doi.org/10.1016/j.jep.2014.03.061
17. WHO Epilepsy in the WHO Africa region, bridging the gap. The global campaign against epilepsy "out of the shadows". In: WHO, Editor. Geneva: World Health Organization; 2004. Accessed 24th of April 2019
18. Mbuba CK, Ngugi AK, Newton CR, Carter JA (2008) The epilepsy treatment gap in developing countries: A systematic review of the magnitude, causes, and intervention strategies *Epilepsia* 49:1491–503 https://doi:10.1111/j.1528-1167.2008.01693.x
19. Sucher NJ, Carles MC (2015) A pharmacological basis of herbal medicines for epilepsy *Epilepsy Behav* :2015 https://doi:10.1016/j.yebeh.2015.05.012
20. Baskind R and Birbeck GL (2005) Epilepsy-associated stigma in sub-saharan Africa: the social landscape of a disease *Epilepsy Behav* 7: 68–73 https://doi:10.1016/j.yebeh.2005.04.009
21. Adeyemi OO, Akindele AJ, Yemitan OK, Aigbe FR, Fagbo FI (2010) Anticonvulsant, anxiolytic and sedative activities of the aqueous root extract of *Securidaca longepedunculata* Fresen *J Ethnopharmacol* 130: 191–95 doi:10.1016/j.jep.2010.04.028
22. Bum EN, Taiwe GS, Moto FCO, Ngoupaye GT, Nkantchoua GCN (2009) Anticonvulsant, anxiolytic, and sedative properties of the roots of *Nauclea latifolia* Smith in mice *Epilepsy Behav* 15 434–40 https://doi:10.1016/j.yebeh.2009.05.014
23. Owolabi LF, Sale S (2011) Clinical profile of

patients with epilepsy in developing countries: experience at Kano *Borno Med J* 8 (2): 1–14 https://doi:10.4314.smj2.v1314.67508
24. Muhammad BY, Awaisu A, (2008) The need for enhancement of research, development, and commercialization of natural medicinal products in Nigeria: lessons from the Malaysian experience *Afr J Tradit Complement Altern Med* 5(2): 120–30
25. Kakooza-Mwesige A (2015) The importance of botanical treatments in traditional societies and challenges in developing countries. *Epilepsy Behav* (2015) https://doi:10.1016/j.yebeh.2015.06.017
26. Yaro AH, Anuka JA, Salawu OA, Magaji MG (2007) Anticonvulsant activities of methanol extract of *Chrysanthellum Indicum* Linn. Vatke in mice and chicks *Niger J Pharm Sci*. 6 (2): 22 – 7
27. Nazifi AB, Saidi O, Ismail HF (2015) Evaluation of anticonvulsant effects of methanolic extract of *Olax subscorpioidea* Oliv. leaves in chicks and mice *J Pharm Bioresources* 12 (2): 165-71 https://doi.org/10.4314/jpb.v12i2.12
28. Abubakar K, Ugwah-Oguejiofor CJ, Usman MN, Abubakar SB, Abdulkadir R (2013) Evaluation of the anticonvulsant effect of the methanol extract of *Evolvulus alsinoides* in mice *Sch Acad J Pharm* 26: 436-41
29. Eze UA, Bello SO, Etuk EU, Ameh GI, Ugwah OM, et al (2013) Phytochemical and preliminary toxicological studies of the aqueous leave extract of *Leucas martinicensis* in Wistar rats *Int J Med Plant Res* 2**:** 166-69
30. Malami S, Kyari H, Danjuma NM, Ya'u J, Hussaini IM (2016) Anticonvulsant properties of methanol leaf extract of *Laggera aurita* Linn. F. (Asteraceae) in laboratory animals *J Ethnopharmacol* 191: 301–6 https://doi.org/10.1016/j.jep.2016.06.035
31. Maiha BB, Magaji MG, Yaro AH, Hamza AH, Ahmed ST, et al (2009) Anticonvulsant studies on *Cochlospermum Tinctorium* and *Paullinia Pinnata* extracts in laboratory animals *Niger J Pharm Sci* 8 (1): 102-8
32. Danjuma NM, Chindo BA, Abdu-Aguye I, Anuka JA, Hussaini IM (2014) Psychopharmacological properties of saponins from *Randia nilotica* stem bark *Pharm Biol* 52(1): 1–7 https://doi:10.3109/13880209.2013.784343
33. Wannang NN, Anuka JA, Kwanashie HO, Gyang SS, Auta A (2008) Anti- seizure activity of the aqueous leaf extract of *Solanum nigrum* linn (solanaceae) in experimental animals *Afr Health Sci*. 8(2): 74-9
34. Haruna A K (2000) Depressant and anticonvulsant properties of the root decoction of *Afrormosia Laxiflora* (Leguminosae) *Phytother Res* 14: 57–59
35. Abubakar US, Danmalam UH, Ibrahim H, Maiha BB (2020) Anticonvulsant activity of aqueous stem bark extract of *Securidaca longipedunculata* Fresen (Polygalaceae) *Dutse J of Pur App Sci* 6 (2): 277 – 86
36. Anaka ON, Ozolua RI, Ikpefan EO, Ogieva DO (2014) Anticonvulsant activity of the aqueous extract of *Allium cepa* L. (Amaryllidaceae) in rats and mice *J Pharm Biores* 11(1): 1-7 https://doi.org/10.4314/jpb.v11i1.1
37. Ahmed AD, Maiha BB, Danjuma NM, Nazifi AB (2019) Methanol leaf extract of *Albizia chevalieri* Harms possesses anticonvulsant activity in acute and chronic models of epilepsy *J Herb Dr* 10 (1): 1-9
38. Ya'u J, Yaro AH, Malami S, Musa MA, Abubakar A, et al (2015) Anticonvulsant activity of aqueous fraction of *Carissa edulis* root bark *Pharm Biol* 53(9): 1329-38 https://doi.org/10.3109/13880209.2014.981280
39. Yaro AH, Musa AM, Ya'u J, Nazifi AB (2015) Anticonvulsant properties of methanol root bark extract of *Cissus Cornifolia* Planch (Vitaceae) in mice and chicks *Biol Environ Sci J Tropics* 12(1): 634-9
40. Muhammad K, Magaji MG, Danjuma NM, Zezi AU, Gyang SS (2017) Methanol leaf extract of *Diospyros mespiliformis* Hochst. offers protection against some chemoconvulsants *Trop J Nat Prod Res* 1(3): 113-7 https://doi.org/10.26538/tjnpr/v1i3.6
41. Aliyu MM, Musa AI, Kamal MJ, Mohammed MG (2014) Phytochemical Screening and Anticonvulsant Studies of Ethyl Acetate Fraction of *Globimetula braunii* on Laboratory Animals *Asian Pac J Trop Biomed* 4 (4): 285-89 https://doi:10.12980/APJTB.4.2014C925
42. Wada AS, Yaro AH, Aliyu M, Danjuma NM Mohammed M (2017) Evaluation of anticonvulsant activities of ethanol leaf extract of *Hymenocardia acida* TUL (Euphorbiaceae) in

mice and chicks *Bayero J Pure Appl Sci*. 10 (1): 368-71 https://doi.org/10.4314/bajopas.v10i1.73S

43. Wada AS, Yaro AH, Aliyu M, Danjuma NM (2017) Evaluation of anticonvulsant activities of ethanol stem bark extract of *Hymenocardia acida* TUL (Euphorbiaceae) in mice and chicks *Niger J Pharm Sci.* 16(2): 06-13
44. Adebesin IF, Akindele AJ, Adeyemi OO (2015) Evaluation of neuropharmacological effects of aqueous leaf extract of *Albizia glaberrima* (Leguminosae) in mice *J Ethnopharmacol* 160: 101–08 https://doi.org/10.1016/j.jep.2014.11.040
45. Bakre AG, Aderibigbe AO, Ademowo OG (2013) Studies on neuropharmacological profile of ethanol extract of *Moringa oleifera* leaves in mice *J Ethnopharmacol* (2013) https://doi.org/10.1016/j.jep.2013.08.006i
46. Garba K, Yaro AH, Ya'u J (2015). Anticonvulsant effects of ethanol stem bark extract of *Lannea barteri* (Anacardiaceae) in mice and chicks *J Ethnopharmacol*. 172: 227–231 https://doi.org/10.1016/j.jep.2015.06.039
47. Oyemitan IA, Olayera OA, Alabi A, Abass LA, Elusiyan CA, et al (2015). Psychoneuropharmacological activities and chemical composition of essential oil of fresh fruits of *Piper guineense* (Piperaceae) in mice *J Ethnopharmacol* 166: 240–9 https://doi.org/10.1016/j.jep.2015.03.004
48. Magaji MG, Yaro AH, Musa AM, Anuka JA, Abdu-Aguye I, et al (2013) Anticonvulsant activity of butanol fraction of methanol root bark extract of *Securinega virosa* Roxb (ex Willd) Baill. in laboratory animals *J Med Plant Res* 7 (28): 2128-35 https://doi:10.1016/j.jep.2016.06.035
49. Musa A, Adam AB (2017) Anticonvulsant activity of methanol leaf extract of *Celtis integrifolia* Lam (Ulmaceae) in chicks and mice *Afr J Pharmacol Ther* 6*(2):* 117-22
50. Ugwah-Oguejiofor CJ, Eze UA, Bello SO, Etuk EU, Ameh GI, et al (2015) Anticonvulsant and sedative activities of aqueous leave extract of *Leucas martinicensis* (Jacq.) R. Br *Nig J Basic Appl Sci*. 23(2): 87-91 https://doi.org/10.4314/njbas.v23i2.1
51. Adeyemi OO, Yemitan OK, Adebiyi OO (2007) Sedative and anticonvulsant activities of the aqueous root extract of *Sanseviera liberica* Gerome & Labroy (Agavaceae) *J Ethnopharmacol* 113: 111–14 http://dx.doi:10.1016/j.jep.2007.05.007
52. Aji BM, Onyeyili PA, Osunkwo UA (2001) The central nervous effects of *Mitragyna africanus* (Willd) stem bark extract in rats *J Ethnopharmacol* 77: 143–149 https://doi.org/10.1016/S0378-8741(01)10267-7
53. Emmanuel AO, Janet MM, Ayoka AO (2010) Evaluation of the anticonvulsant property of *Russelia equisetiformis* (Schlecht & Chan) *J Nat Remedies* 10 (1): 74-80
54. Kavvadias D, Sand P, Youdim KA, Qaiser Mz, Rice- Evans C, et al (2004) The flavone hispidulin, a benzodiazepine receptor ligand with positive allosteric properties, traverses the blood brain barrier and exhibit anticonvulsant effects *Br J pharmacol* 142: 811-20 https://doi:10.1038/sj.bjp.0705828
55. Muhammad HD, Dawud FA, Yau J, Abdulrauf RA (2018) Evaluation of the anticonvulsant effect of *Pennisetum glaucum* supplement in some laboratory animal seizure models *Res Neurosci* 7(1): 6-13 https://doi:10.5923/j.neuroscience.20180701.02
56. Okoye TC, Akah PA, Omeje EO, Okoye FBC, Nworu CS (2013) Anticonvulsant effect of kaurenoic acid isolated from the root bark of *Annona senegalensis Pharmacol, Biochem Behav* 109: 38–43 https://doi.org/10.1016/j.pbb.2013.05.001
57. Ilodigwe EE, Akah PA, Okoye TC, Omeje EO (2010) Anticonvulsant effects of a glycoside isolated from the leaf of *Spathodea campanulata* P. Beauv *J Med Plant Res* 4: (1)895–900 https://doi:10.5897/jmpr10.360
58. Ouete JL, Sandjo LP, Kapche DW, Yeboah SO, Mapitse R, et al (2014) Excelsoside: A new benzylic diglycoside from the leaves of *Milicia excelsa Z Natur forsch C* 69(7-8): 271-5 https://doi.org/10.5560/znc.2014-0087
59. Nieoczym D, Socała K, Wlaź P (2018) Assessment of the anticonvulsant potency of ursolic acid in seizure threshold tests in mice *Neurochem Res* 43(5): 995– 1002

https://doi:10.1007/s11064-018-2505-z
60. Taviano MF, Miceli N, Monforte MT, Tzakou O, Galati EM (2007) Ursolic acid plays a role in *Nepeta sibthorpii* bentham CNS depressing effects *Phytother Res*. 21: 382–85 https://doi:10.1002/ptr.2076
61. Löscher W (2011) Critical review of current animal models of seizure and epilepsy used in the discovery of new antiepileptic drugs *Epilepsy Res* 20: 359-68 https://doi.10.1016/j.seizure.2011.01.003
62. DeLorenzo RJ, Raza M, Saheen F, Choudhary MI, Suria AA et al (2001). Mechanism of action of new antiepileptic drugs *Adv Neurol* 76: 1-9
63. Porter RJ, Meldrum BS, (2012) Antiseizure drugs. In K. G. Katzung SB Masters, A J Trevor, eds. *Basic Clinical Pharmacology* New York, 1403–25
64. Swinyard EA, Kupferberg HJ (1985) Antiepileptic drugs: detection, quantification and evaluation *Federal Proceedings* 44: 39–43
65. Swinyard EA (1969) Laboratory evaluation of antiepileptic drugs: review of laboratory methods *Epilepsia* 10: 107–19 https://doi.org/10.1111/j.1528-1157.1969.tb03838.x
66. Sayyah M, Valizadeh J, Kamalinejad M (2002) Anticonvulsant activity of the leaf essential oil of *Laurus nobilis* against pentylenetetrazol and maximal electroshock-induced seizures *Phytomedicine* 9: 212–16 https://doi:10.1078/0944-7113-00113
67. DeSarro A, Cecchetti V, Fravolin V, Naccari F, Tabarrini O, et al (1999). Effects of novel 6-defluoroquinolones and classic quinolones on pentylenetetrazol induced seizures in mice *Antimicrob Agents Chemother* 43, 1729–36 https://doi:10.1128/aac.43.7.1729
68. Gale MK (1992) GABA and epilepsy basic concept from preclinical research *Epilepsia* 33: 33-52
69. Nevins ME, Arnolde SM (1989) A comparison of the anticonvulsant effects of competitive and noncompetitive antagonists of the D N-methyl-D-aspartate *Brain Res* 503: 1–4 https://doi:10.1016/0006-8993(89)91695-8
70. Velisek L, Kusa R, Kulovana M, Mares P (1999) Excitatory amino acid antagonists and pentylenetrazole-induced seizures during ontogenesis I. The effects of 2-amino-7 phosphonoheptanoate *Life Sci* 46: 1349–57 https://doi:10.1007/BF02245458
71. Swinyard EA, Woodhead JH, White HS, Franklin MR (1989) General principles: experimental selection, quantification, and evaluation of anticonvulsants. In: Levy RH, Mattson B, Meldrum JK, Dreifuss FE, eds. *Antiepileptic Drugs*, 3rd ed. New York, USA: Raven Press, 85–103
72. Löscher W, Honack D, Fassbender CP, Nolting B (1991) The role of technical, biological and pharmacological factors in the laboratory evaluation of anticonvulsant drugs. III pentylenetetrazol seizures models *Epilepsy Res* 8: 171-89 https://doi:10.1016/0920-1211(91)90075-q
73. Porter Rj, Cereghino JJ, Gladding GD (1984) Antiepileptic drug development program *Cleve Clin Quart* 51(2): 293-305
74. Lehmann J, Hutchison A, McPherson S, Mondadori C, Schmutz M, et al (1988) Cas 19755, a selective and competitive Nmethyl-D-aspartate-type excitatory amino acid receptor antagonist *J Pharmacol Exp Ther* 246: 65–75
75. Parmar NS, Prakash S (2006) Screening methods in pharmacology. *Narosa Publishing House*, New Delhi
76. Yamaguchi S, Rogawski MA (1992) Effects of anticonvulsant drugs on 4-aminopyridine-induced seizures in mice *Epilepsy Res* 11 (1): 9-16 https://doi.1016/0920-1211(92)90016-m
77. Wickenden AD (2002) Potassium channels as antiepileptic drug targets *Neuropharmacology* 43: 1055-60 https://doi:10.1016/s0028-3908(02)00237-x
78. Corda MG, Giorgi O, Longoni B, Orlandi M, Biggio G (1990) Decrease in the function of the gamma-aminobutyric acid-coupled chloride channel produced by the repeated administration of pentylenetetrazol to rats *J Neurochem* 55: 1216-21 https://doi:10.1111/j.1471-4159.1990.tb03127.x
79. Salih MA, Mustafa MM (2008) A substance in broad beans (*Vicia faba*) is protective against experimentally induced convulsions in mice *Epilepsy Behav* 12: 25-29
80. Navarro RA, Bastidas RBE, Garcia EJ, *et al.* (1995) Anticonvulsant activity of *Casimiroa*

*edulis* in comparison to phenytoin and phenobarbital *J Ethnopharmacol* 45: 199–206 https://doi.org/10.1016/0378-8741(94)01216-m
81. Rang HP, Dale MM, Ritter JM (Eds.), (2000) *Pharmacology*, 4th ed. Churchill Livingstone, 604–13
82. Bloom FE (1996) Neurotransmission and the central nervous system. In: Goodman and Gilman's, the pharmacological basis of therapeutics, 9th ed. McGraw Hill pp 267–93
83. Schmutz M, Portet CH, Jeker A, Klebs K, Vassout A *et al.* (1990) The competitive NMDA receptor antagonists CGP 37849 and CGP 39551 are potent, orally-active anticonvulsants in rodents. *Naunyn Schmiedebergs Arch Pharmacol* 342: 61–6
84. Ngo Bum E, Ngoupaye GT, Talla E, Theophile D, Nkantchoua GCN*et al.* (2008) The anticonvulsant and sedative properties of stems of *Cissus quadrangularis* in mice. *Afr J Pharmacy Pharmacol* 2:42–7
85. Hornfeldt CS, Larson AA (1994) Adenosine receptors are not involved in theophylline induced seizures *J Toxicol Clin Toxicol* 32 (3): 257–65 https://doi:10.3109/15563659409017958
86. Barnes PJ, (1998) Theophylline In: Barnes PJ, Rodger IW, Thomson NC (Eds.), Asthma: *Basic Mechanisms and Clinical Management*, 3rd edition Academic press, San Diego, pp. 689–706 https://doi:10.3390/ph3030726
87. Gulati K, Ray A, Pal G, Vijayan VK, (2005) Possible role of free radicals in theophylline induced seizures in mice *Pharmacol Biochem Behav* 82: 241–45 https://doi.org/10.1016/j.pbb.2005.06.019
88. Ray A, Gulati K, Anand S, Vijayan VK (2005) Pharmacological studies on mechanisms of aminophylline seizures in rats Indian *J Exp Biol* 43: 849–53
89. Mamatha SG, John J, Preethilatha R, *et al.* (2009) Protective effects of graded doses of gabapentin on aminophylline-induced experimental status epilepticus in mice *Ann Neurosci* 16:150–4 https://doi:10.5214/ans.0972-7531.0916404
90. White HS, Smith-Yockman M, Srivastava A, Wilcox KS (2006) Chapter 44 - Therapeutic Assays for the Identification and Characterization of Antiepileptic and Antiepileptogenic Drugs. In: Moshé APASL, editor. Models of Seizures and Epilepsy. Burlington: Academic Press. p. 539–49
91. Goddard G, Malntyre D, Leach C (1969) A permanent change in brain function resulting from daily electrical stimulation *Exp Neurology* 25:285-330 https://doi:10.1016/0014-4886(69)90128-9
92. Teke GN, Kuete V, (2014) Acute and Subacute Toxicities of African Medicinal Plants. In: Toxicological Survey of African Medicinal Plants *Elsevier Inc*. 63-98
93. Ezuruike UF, Prieto JM (2014) The use of plants in the traditional management of diabetes in Nigeria: pharmacological and toxicological considerations. *J Ethnopharmacol* 155: 857–924 https://doi.10.1016/j.jep.2014.05.055
94. Wada A, Jatau A, Bala A, Haruna A, Isa A, et al (2019) Use of traditional medicines among pharmacists in Nigeria. *Complement Ther Clin Pract* 35:53-6 https://doi.org/10.1016/j.ctcp.2019.01.014
95. Okoli CO, Onyeto CA, Akpa BP, Ezike AC, Akah PA, et al (2010) Neuropharmacological evaluation of *Annona senegalensis* leaves**.** *Afr J Biotechnol* 9(49): 8435-44 https://doi:10.5897/AJB10.033
96. Igwe SA, Nwobodo NN (2014) Anticonvulsant activity of aqueous root extract of *Annona Senegalensis* Pers. *Int J Adv Biol Biomed Res* 2 (8): 2441-47
97. Kemelayefa OJ and Kagbo2 HD (2018) Anticonvulsant potential of ethanolic extract of *Aspilia africana* leaf in mice. *J. Appl. Life Sci Int* 16(2): 1-7 https://doi.org:10.9734/JALSI/2018/38808
98. Nazifi AB, Danjuma NM, Olurishe TO, Ya'u J (2017) Behavioural effects of methanol stem bark extract of *Boswellia dalzielii* Hutch (Burseraceae) in mice *Afr. J. Biomed. Res* 20: 103- 108
99. Salahdeen HM, Yemitan OK (2006) Neuropharmacological effects of aqueous leaf extract of *Bryophyllum Pinnatum* in mice. *Afr J Biomed Res* 9: 101 – 7
100. Yaro AH, Musa AM, Magaji MG, Nazifi AB (2015) Anticonvulsant potentials of methanol leaf extract of *Cissus Cornifolia* Planch (Vitaceae) in mice and chicks *Int J Herb Pharmacol Res* 4(2): 25 – 32

101. Mbah CJ, Kenechukwu FC (2009) Preliminary screening of ethanolic extracts of *Clausena anisata* for anticonvulsant activity *Bio-Res 7(2): 548 – 50*
102. Khan1 F, Musa1 Y, Yaro2 AH, Yahuza N (2013) Anticonvulsant activity of methanol leaf extract of *Commiphora kerstingii* Engl *Basic Sci Med* 2(1): 9-13 https://doi.0rg: 10.5923/j.medicine.20130201.02
103. Azikiwe CCA, Siminialayi IM, Brambaifa N, Amazu LU, Enye JC, et al (2012) Anticonvulsant activity of the fractionated extract of *Crinum jagus* bulbs in experimental animals *Asian Pac J Trop Dis.* S446-52
104. Edema MO, Okieimen, FE (2002) Chemical and anticonvulsant screening of *Crinum Jagus Niger J Chem Res* 7 (9): 25-28
105. Alhassan AW, John M1, Saleh MIA, Yusuf A, Yarube IU (2016) Evaluation of the protective effect of hydro-methanolic extract of tiger nut (*cyperus esculentus* l.) on pentylenetetrazol induced seizures in mice *Nat Sci* 14 (10): 57-62 https://doi:10.7537/marsnsj141016.10
106. Finbarrs-Bello E, Ozor II, Ojuolape SG, Obinna AE (2019) Antioxidant and anticonvulsant effect of *Dennettia Tripetala* on rat model of isoniazid-induced seizure. *European J Med Plants* 30 (2): 1-10 https://doi: 10.9734/EJMP/2019/v30i230172
107. Nwachukwu EO, Akuodor GC, Oyindamola JO, Chilaka KC, ILO CE, et al (2022) Evaluation of the anticonvulsant properties of the ethanol extract of *Detarium senegalense* leaves in mice *Int J. Biol and Pharm Sci Arch* 03(02): 067–073
108. Asije O, Adelusi SA, Usifoh CO. (2006) Anticonvulsant activity of *Emilia sonchifolia* leaf extracts *Pak. J. Sci. Ind. Res* 49(4): 269-275
109. Bassey A, Nwafor P, Okokon Jude (2017) Anticonvulsant activity of ethanol extract of *Enantia chlorantha* stem bark on rodents. *Int J Herb Med* 5(3): 98-100
110. Abubakar US, Danmalam UH, Musa KY, Ahmed A, Jajere UM, et al (2017) Anticonvulsant activity of the methanol root bark extract of *Ficus sycomorus* Linn. (Moraceae) *J Pharm & Pharmacogn Res* 5 (1): 69-77
111. Sandabe UK, Onyeyili PA, Chibuzo GA (2003) Sedative and anticonvulsant effects of aqueous extract of *Ficus sycomorus* L. (*Moraceae*) stem bark in rats *Veterinarski Arhiv 73* (2): 103-110
112. David-Oku E, Ekpenyong EU, Edet EE, Akuodor GC, Obiajunwa-Otteh JI, et al (2017) Anticonvulsant activities of *Ipomea involucrata*, *Milletia aboensis, and Rauvolfia vomitoria* on 4-aminopyridine induced seizure in mice *Saudi J. Med. Pharm. Sci* 3:1210-1215 https://doi:10.21276/sjmps.2017.3.11.13
113. Uthman GS, Lawal AM (2019). Proceedings of sona 2019 (14th meeting of society of neuroscientists of Africa/17th meeting of neuroscience society of Nigeria) *IBRO Reports* 7: S2–S51
114. Yaro AH, Aliyu M, Garba K, Hassan S (2018) Anti-seizure activity of extract of *Jatropha gossypiifolia* Linn (Euphorbiaceae) *Trop J Nat Prod Res* 2(2): 99-102 https://doi.org/10.26538/tjnpr/v2i2.8
115. Garba K, Yaro AH (2015) Evaluation of anticonvulsant properties of ethanol stem bark extract of *Lophira Lanceolata (Ochnaceae)* In mice and chicks *Bayero J of Pure and Appl Sci* 8(1): 132 – 135 https://doi.org/10.4314/bajopas.v8i1.22
116. Timothy SY, Wazis CH, Helga BI, Maina A1, Bomai HI (2014). Anticonvulsant screening of the aqueous and ethanol extracts of *Mitragyna inermis* bark in pentylenetetrazole and strychnine induced seizures in albino rats. *Int J. Pharm & Therap* 5(5): 358-363.
117. Fageyinbo MS, Odumeso AO, Rotimi K, Fasipe OJ, Olayemi SO (2018) Anticonvulsant, anxiolytic and sedative activities of hydro-ethanolic leaf extract of *Mitragyna stipulosa J. Herbs Spices Med. Plants* https://doi: 10.1080/10496475.2018.1556373
118. Fred-Jaiyesimi AA, Ogunjobi OF (2013) Antiepileptic activities of the extract and fractions of *Mondia whitei* (Hook f.) skeel leaves. *Pharmacogn J* 5: 256-58 https://doi.org/10.1016/j.phcgj.2013.10.004
119. Adeoluwa OA, Aderibigbe AO, Agu GO (2015) Pharmacological evaluation of central nervous system effects of ethanol leaf extract of *Olax subscorpioidea* in experimental

animals *Drug Res* 1-8 http://dx.doi.org/0.1055/s-0035-1564137

120. Akuegbe ED, Oyemitan IA, Olawuni IJ, Oyedeji AO (2019) Sedative, anticonvulsant and analgesic activities of fresh leaf essential oil of *Plectranthus aegyptiacus* from southwest nigeria in mice *Invest Med Chem Pharmacol* 2(2): 29 https://dx.doi.org/10.31183/imcp.2019.00029

121. Oladoye SO, Fakunle CO, Adeoye OA, Fashola GO (2013) Isolation and characterization of an anticonvulsant principle from leaf extract of *Pyrenacantha staudtii*. *J Nat Sci Res* 3(3): 69-73

122. Olatokunboh AO, Kayode YO, Adeola OK (2009) Anticonvulsant activity of *Rauvolfia vomitoria* (Afzel). *Afr. J. Pharm. Pharmacol* 3(6): 319-322

123. Kolawole OT, Makinde JM, Olajide OA (2007) Central nervous system depressant activity of *Russelia equisetiformis Niger J Physiol Sci* 22 (1-2): 59-63

124. Ching FP, Omogbai EK, Otokiti IO (2009) Aqueous stem bark extract of *Stereospermum Kunthianum* (Cham, Sandrine Petit) protects against generalized seizures in pentylenetetrazol and electro-convulsive models in rodents. *Afr J Tradit, Complement Altern Med* 6 (4): 544 – 48

125. Jeremiah OJ, Ilesanmi OR, Ige MM. (2015) Evaluation of the anticonvulsant potential of aqueous fraction of *Synsepalum dulcificum* seed extract in mice**.** *European J Med Plants* 9(3): 1-8 https://doi:10.9734/EJMP/2015/19137

126. Abubakar K, Adebisi IM, Ugwah-Oguejiofor JC, Idris GO, Idris B, et al (2016) Phytochemical screening and anticonvulsant activity of the residual aqueous fraction of *Tapinanthus globiferus* growing on Ficus glums. *Herb Med* 2: 1-6 https://doi:10.21767/2472-0151.100013

127. Imoru OJ, Ajayi OI, Rufus IO (2015) Evaluation of anticonvulsant activity of aqueous leaf extract of *Telfairia occidentalis* in mice. *European J Med Plants* 5(3): 272-280. https://doi:10.9734/EJMP/2015/13665

128. Garba K, Yaro AH (2015). Anticonvulsant actions of ethanol stem bark extract of *Trichilia roka* (Meliaceae) in mice and chicks *J Phytopharm* 4(4): 231-234

129. Adzu B, Amizan MB, Njan AA, Ezeowumelu JOC, Akumka DD (2008) Anticonvulsant effect of the aqueous extract of *Xeromphis nilotica* in mice. *Int J of Biol Chem* 2(3): 359-62

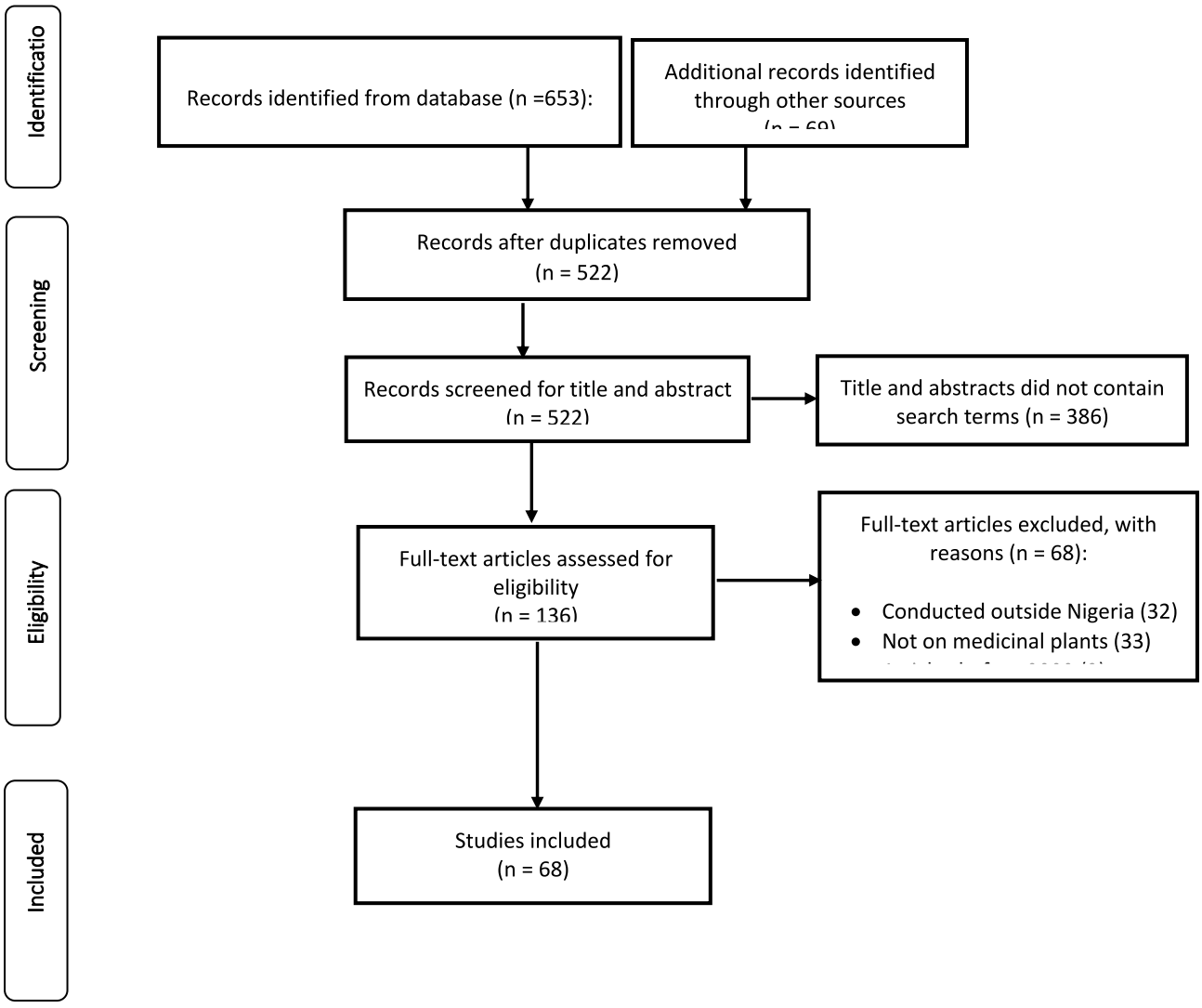


**Figure 1. PRISMA Flowchart for the study selection process**

Table 1. Medicinal plants with reported anticonvulsant activity in Nigeria

| S/N | Plants Name | (Family) | Local Names | Other Ethnobotanical Uses | Part used (Solvent) | Methods of Screening | References |
|---|---|---|---|---|---|---|---|
| 1. | *Afrormosia Laxiflora* Benth. Ex Baker Harms | Leguminosae | Satin wood (E), Shedun, Makarho, Abua ocha | Headache, body pains, edema, dysentery. | Root bark (Aqueous) | MEST, PIC | 34 |
| 2. | *Albizia chevalieri* Harms | Mimosaceae | Silk tree (*E)* | Diabetes mellitus, asthma, hemorrhoids, gonorrhea, leprosy, diarrhoea, bronchitis | Leaf (Methanol) | MEST, PTZ, PIC, 4-AP, PTZ KIND | 37 |
| 3. | *Albizia glaberrima* Schum & Thonn | Leguminosae | White Nongo (E), Ayunre (Y) | Anemia, liver complaints, bilharzia, and chest pain | Leaf (Aqueous) | PTZ, PIC, STR | 44 |
| 4. | *Allium cepa L.* | Amaryllidaceae | Onion (E), Albasa (H), Alubosa (Y) | Cough, bronchitis, asthma, dysentery, ulcer wounds, pains | Bulb (Aqueous) | MEST, PTZ | 36 |
| 5. | *Annona senegalensis* Pers. | Annonaceae | Wild Custard Apple (E), Gwandar daji (H), Abo (Y), Uburu ocha (I) | Sleeping sickness, cancer, chest pain, coughs, anemia, urinary tract infections, stomach ache, diarrhea, dysentery, arthritis, rheumatism, intestinal and guinea worms, venereal diseases, head and body ache, trypanasomiasis, lice infestation, leishmaniasis, eyelid swelling, and snakebites | Leaf (Methanol); Root bark (Aqueous) Root bark (Kaurenoic acid) | PTZ; MEST, PTZ; MEST, PTZ, PIC | 56, 95-96 |
| 6. | *Aspilia Africana* Pers. C.D Adams | Asteraceae | Wild sunflower, iodine or hemorrhage plant (E) | Osteoporosis, tuberculosis, cough, measles, diabetes, malaria | Leaf (Ethanol) | MEST, PTZ, STR | 97 |

| S/N | Plants Name | (Family) | Local Names | Other Ethnobotanical Uses | Part used (Solvent) | Methods of Screening | References |
|---|---|---|---|---|---|---|---|
| 7. | *Boswellia dalzielii* Hutch | Burseraceae | Frankincense tree (E), Hano (H), Andakehi (F) | Fever, arthritis, rheumatism, gastro-intestinal problems. Emesis, mental derangement | Stem bark (Methanol) | MEST, PTZ, PIC, STR, 4-AP | 98 |
| 8. | *Bryophyllum Pinnatum* Lam. Oken | Crassulaceae | Never die, Air plant, Life plant (E), Abamoda, Eru-odundun (Y) | Tranquilizer, fever, inflammation, refractory cough, intestinal pains. | Leaf (Aqueous) | PIC, STR | 99 |
| 9. | *Carissa edulis* Vahl | Apocynaceae | Cizaki, Bagazaki, Lemun tsuntsuu, Uwaa banzaa (H) Arabic num-num (E), Kanboro (F) | Toothache, hernia, fever, sickle cell anemia, edema, cough, ulcer, cancer and worm infestation | Root bark (Aqueous) | MEST, PTZ, PIC, STR, NMDA, INH, AMI, ELT KIND | 38 |
| 10. | *Celtis integrifolia* Lam | Ulmaceae | African Hackberry (E), Zuwo (H), Aspe (Y), Ngezo (K), Gamki (F) | Leprosy, microbial infections and measles | Leaf (Methanol) | MEST, PTC, 4-AP, STR | 49 |
| 11. | *Chrysanthellum indicum* Linn | Compositae | Rariyar kasa, dunkufe, Goshin bu'ana (H) Oyigi, Abilere (Y) | Boils, fevers, jaundice, gonorrhea, hepatitis, heart problems. | Whole plant (Methanol) | MEST, PTZ, STR | 26 |
| 12. | *Cissus cornifolia* Planch | Vitaceae | Rigarbiri or Duwawun biri (H) | Gonorrhea, septic tonsil and pharyngitis and malaria (Burkill, 1985) | Root bark; Leaf (Methanol) | MEST, PTZ, STR, 4AP, PIC | 39, 100 |
| 13. | *Clausena anisata* (Wild.) Hook.f.ex Benth*)* | Rutaceae | Agbasa, Atapari obuka (Y). | Antidiabetic, antihypertensive, anti-inflammatory, gastrointestinal disorders, mental disorders, Toothache | Leaves; root bark; stem bark (Ethanol) | PTZ | 101 |

| S/N | Plants Name | (Family) | Local Names | Other Ethnobotanical Uses | Part used (Solvent) | Methods of Screening | References |
|---|---|---|---|---|---|---|---|
| 14. | *Cochlospermum tinctorium* A. Rich | Cochlospermaceae | Rawaya, kyamba (H), Obazi (I), Sewutu (Y). | Jaundice, yellow fever, heart irregularities, diarrhea, dysentery and colic. | Root bark (Methanol) | MEST, PTZ, STR | 31 |
| 15. | *Commiphora Kerstingi* Engl. | Burseraceae | Ararrabi, Dashi, Dali, Kwaor (H) | Venomous stings, antibacterial, laxative | Leaf (Methanol) | MEST, PTZ, STR, 4-AP | 102 |
| 16. | *Crinum jagus* L. | lilaceae Amaryllidaceae | Edesuku (Y), Gaadal (F), Ede chukwu, Olodi (I) | Boils, open wounds, chronic cough | Bulb (Aqueous); (Methanol) | MEST, PTZ, STR, PIC; MEST | 103-104 |
| 17. | *Cyperus esculentus* L. | Cyperaceae | Tiger nut (E), aya (H), ofio (Y), akihausa (I) | Lactogenic | Seeds (Methanol) | PTZ | 105 |
| 18. | *Dennettia Tripetala* Bak.f. | Annonaceae | Pepper fruit (E) | Source of vitamins | Fruit (ethanol) | ISO | 106 |
| 19. | *Detarium senegalense* J.F. Gmelin | Fabaceae | Tallow tree (E), Ofo (I) | fever, anemia, diarrhea, cough, ulcer, worm infestation, cancer | Leaves (Ethanol) | PTZ, BRU, INH | 107 |
| 20. | *Diospyros mespiliformis* Hochst. | Ebanaceae | West African ebony, Monkey guava (E), Kanya, Kaiwa (H), Igi dudu (I) | Malaria, pneumonia, syphilis, leprosy and dermatomycoses, antihelmintic, mild laxative, fever, dysentery, hemostatic agent to wounds, gingivitis and toothache | Leaf (Methanol) | MEST, PTZ, STR, PIC, 4AP | 40 |
| 21. | *Emilia sonchifolia* (L.), DC. | Compositae Asteraceae | Cupid shaving brush, Sow thistle (E), | Fever, measles, sore throat, rashes, inflammatory diseases, eye and ear ailments, vertigo, regenerating bath therapy anti-inflammatory antidiabetic cytotoxic, antitumor, antioxidant, and properties | Leaf (Ethanol, chloroform and aqueous) | MEST, STR | 108 |

| S/N | Plants Name | (Family) | Local Names | Other Ethnobotanical Uses | Part used (Solvent) | Methods of Screening | References |
|---|---|---|---|---|---|---|---|
| 22. | *Enantia chlorantha* Oliv | Annonaceae | African white wood (E), Osopupa, Ikale (Y) | Febrile illnesses, stomach upset, toothache, wounds infections, jaundice, high blood pressure, dysentery, painful and swollen joints. | Stem bark (ethanol) | PTZ, PIC | 109 |
| 23. | *Evolvulus alsinoides* (Linn.) Linn | Convolvulaceae | kaafi- mallam or matakin kurciya, (I) Efunje, Efunle (Y) | dysentery and depression, asthma mental disturbances fever, loss of memory, syphilis and to promote hair growth | Whole plant (Methanol) | MEST, PTZ | 28 |
| 24. | *Ficus platyphylla* Del. Holl. | Moraceae | Flake rubber, Red Kano rubber (E), Danko gawi, Dnko, gamjii (H) | Depression, psychoses, pain and inflammation | Stem bark (Methanol) | MEST, PTZ, STR, PIC, INH | 16 |
| 25. | *Ficus sycomorus* Linn | Moraceae | Farin Baure (H), Tarmu (K), | Diarrhea, dysentery, painful urination and vaginal infections, mental illness, diarrhea, pain relief | Root bark (Methanol); Stem bark (Aqueous) | MEST, PTZ, 4-AP; PTZ, STR | 110-111 |
| 26. | *Globimetula braunii* (Eng.) Van Tiegh | Loranthaceae | Kauchii (H), Afomoonishano (Y). | Cardiovascular diseases, hepatic illness, malaria. rheumatism, infertility and stomach problems | Leaf (Ethyl acetate) | MEST, PTZ, 4-AP | 41 |
| 27. | *Hymenocardia acida* Tul | Euphorbiaceae | Heart-fruit (E), jan yaro *(H)* yawa satoje (F), ikalaga (I), Orunpa (Y). | Abdominal and menstrual pains, tumors, arthritis, chest complaints, small pox, headaches, rheumatic pains, | Leaf, Stem bark (Ethanol) | MEST, PTZ, STR, 4AP | 42-43 |

| S/N | Plants Name | (Family) | Local Names | Other Ethnobotanical Uses | Part used (Solvent) | Methods of Screening | References |
|---|---|---|---|---|---|---|---|
| | | | | toothaches, hypotension, sickle cell, schizophrenia, diabetes | | | |
| 28. | *Ipomea involucrate* P. Beauv. | Convolvulaceae | Duman-kwaadu (H), Fifi lori (I), Apiti, ododo (Y) | Asthma, fever, headache, gonorrhea, jaundice, dysmenorrohoea | Root bark *(*Ethanol) | 4-AP | 112 |
| 29. | *Jatropha curcas* Linn | Euphorbiaceae | Purging nuts, Barbados nut, Physics nut (E). Butuje (Y) | Cancer, skin rashes, oral candidiasis, scabies, eczema, dermatitis, helmiths, snake bite, rheumatism, dropsy. | leaf (Ethanol & Chloroform) | PTZ, STR | 113 |
| 30. | *Jatropha gossypiifolia* Linn | Euphorbiaceae | Binidazugu (H), Lapalapa (Y), Wluluidi (I) | Anti-inflammatory, antidiarrheal, analgesic, antipyretic, antidiabetic, antimicrobial & antihaemorrhagic activities. | Leaf (Methanol) | MEST, PTZ, STR, 4-AP | 114 |
| 31. | *Laggera aurita* Linn | Asteraceae | Abanaadene (I), Eru-taba (Y), taba taba (H) | pediatric malaria, inflammation, fever, rheumatic pain, stomatitis, asthma, bronchitis, dyspepsia, nasal congestion, antibacterial, constipation, dysentery and cancer | Leaf (Methanol) | MEST, PTZ, STR | 30 |
| 32. | *Lannea barteri* (Oliv.) Engl. | Anacardiaceae | Babban baraa, Faaru, Faarun birri (H), Aka (Y) | Gastritis, childhood convulsions and inflammation | Stem bark (Ethanol) | MEST PTZ, STR, PIC | 46 |

| S/N | Plants Name | (Family) | Local Names | Other Ethnobotanical Uses | Part used (Solvent) | Methods of Screening | References |
|---|---|---|---|---|---|---|---|
| 33. | *Leucas martinicensis* Jacq. R. Br. | Lamiaceae | Whitewort or mosquito plant (E), Bunsurun fadama (H) | Cough, kidney disorders, rheumatism, diarrhoea, fevers, skin rashes. | Leaves (Aqueous) | MEST, STR | 50 |
| 34. | *Lophira Lanceolata* Tiegh. ex Keay | Ochnaceae | Namijin Kadanya (H) | Erectile dysfunction | Stem bark (Ethanol) | MEST, PTZ, PIC | 115 |
| 35. | *Milicia excelsa* (Welw.) C.C. Berg | Moraceae | African teak, Iroko (E) | Malaria, anaemia, lactation failure, mental illnesses, sexual dysfunction, rheumatism | Leaf (Ethanol) | PTZ, PIC, STR | 58 |
| 36. | *Milletia aboensis* Hook. F. | Leguminosae | | Ring worm | Leaf (Ethanol) | 4-AP | 112 |
| 37. | *Mitragyna africanus* Willd | Rubiaceae | Uburu (I), abura (Y), guljeya or gyayya (H), Kawui (K) | Bacterial infections especially gonorrhea, dysentery, mental disorder, treatment of sterility and African sleeping sickness | Stem bark (Methanol) | STR | 52 |
| 38. | *Mitragyna inermis* (Willd.) O Kuntze | Rubiaceae | Giyayya (H), | antimicrobial, antidiabetic, antimalarial, antihypertensive | Stem bark (Ethanol) | PTZ, STR | 116 |
| 39. | *Mitragyna stipulosa* (DC.) Kuntze | Rubiaceae | African linden (E), Opepe (Y). | fever, hypertension, dysentery, gonorrhea, leprosy, ulcers, amenorrhea, colds, cough, chest pain, and stomach ache | Leaf (Ethanol) | PTZ, PIC, STR | 117 |
| 40. | *Mondia whitei* (Hook f.) Skeel | Apocynaceae | White ginger (E) | Urinary infections, impotence and sexual dysfunction, constipation, gonorrhoea, abdominal pain, inducement of | leaf (Methanol) | PIL | 118 |

| S/N | Plants Name | (Family) | Local Names | Other Ethnobotanical Uses | Part used (Solvent) | Methods of Screening | References |
|---|---|---|---|---|---|---|---|
| | | | | labour. stress, paralysis, antimalarial and anthelminthics | | | |
| 41. | *Moringa oleifera* Lam | Moringaceae | Horseradish or tree of life (E) | Gastric ulcers, skin diseases, lowering blood sugar, diabetes, cancer, fatigue, hay fever, impotence, edema, headaches, sore gums | Leaf (Ethanol) | PTZ, PIC, STR | 45 |
| 42. | *Olax subscorpioidea* Oliv. | Olacaceae | Ifon (Y) | Pains, mental illness, asthma, rheumatism and articular pains, Cancer, typhoid fever, microbial diseases, yellow fever, jaundice, venereal diseases and guinea worm infestation. | Leaf (Ethanol); (Methanol) | PTZ, PIC, STR; MEST, PTZ, STR | 27, 119 |
| 43. | *Paullinia pinnata* Linn | Sapindaceae | Goron dorina, Yatsu biyar (H) Edefina, Aliligo (I) Ogbe-okiye *(Y).* | Yellow fever, Jaundice, and heart irregularities, diarrhea, dysentery and colic | Root bark (Methanol) | MEST, PTZ, STR | 31 |
| 44. | *Pennisetum glaucum* (L.) R.Br. | Poaceae | Pearl millet (E), gero *(H),* oka (Y) | | Seeds (Aqueous) | MEST, PTZ, PTZ KIND | 55 |
| 45. | *Piper guineense* Schumach. & Thonn. | Piperaceae | West African Black Pepper (E) Uziza (I) and Iyere (Y) | Cough, stomach disorder, rheumatism and bronchitis, intestinal diseases, gonorrhea, aphrodisiac, mental illness | Fruit (hydrodistillation ) | PTZ | 47 |

| S/N | Plants Name | (Family) | Local Names | Other Ethnobotanical Uses | Part used (Solvent) | Methods of Screening | References |
|---|---|---|---|---|---|---|---|
| 46. | *Plectranthus aegyptiacus* (Forssk.) C.Chr. | Lamiaceae | Efinrin-Oyinbo (Y) | Pain, cough, fever, sore throat, ear ache, sensory diseases, respiratory system infections, & abdominal disorders | Leaf (hydro-distillation) | MEST, PTZ, STR | 120 |
| 47. | *Pyrenacantha staudtii* Engl. | Icacinacae | | Hypertension, ulcer, inflammation, intestinal pain, blenorrhoea, hernia, and insomnia | Leaf (ethanol) | DMSO | 121 |
| 48. | *Randia nilotica* Stapf. | Rubiaceae | Tsibra, barbaji (H), Gial goti (F) | | Stem Bark (Ethanol) | MEST, PTZ, STR | 32 |
| 49. | *Rauvolfia Vomitoria* (Afzel) | Apocynaceae | Asofeyeje (Y), Akanta (I) | Blood pressure, antimalarial, antipyretic, analgesic, haematinic | Leaf (Aqueous) | PTZ, STR, PIC | 122 |
| 50. | *Russelia equisetiformis* Scgldl. & Cham. | Scrophulariaceae | Firecracker, coral and fountain plant (E) | Diabetes and leukemia | Whole plant (Methanol) | PIC, STR | 53, 123 |
| 51. | *Rauvolfia vomitoria* Afzel | Apocynaceae | Poison devils pepper (E) | Cancer, diabetes, fever, high blood pressure | Root bark (Ethanol) | 4-AP | 112 |
| 52. | *Sanseviera liberica* Gerome & Labroy | Agavaceae | African Bowstring or Leopard Lily (E) | Headache, fever, cold, analgesic, anti-inflammatory and antibiotic | Root bark (Aqueous) | STR, PIC, BIC, PTZ | 51 |
| 53. | *Securidaca longepedunculata* Fresen | Polygalaceae | Violet tree (E), *Sanya* or *Uwarmagunguna* (H), *Ezeogwu* (I) and *Alali* (F) | Pain and inflammation, | Root bark (Aqueous); Stem bark (Aqueous) | STR, PIC; MEST, PTZ, 4-AP | 21, 35 |

| S/N | Plants Name | (Family) | Local Names | Other Ethnobotanical Uses | Part used (Solvent) | Methods of Screening | References |
|---|---|---|---|---|---|---|---|
| 54. | *Securinega virosa* Roxb (ex Willd) Baill. | Euphorbiaceae | Tsuwaawun karee (H), Iranje (Y), Njisi nta (I). | Dysentery, ulcer,menstrual problems, gernia, pain, infertility. | Root bark (methanol) | MEST, PTZ, PIC, STR, 4AP. | 48 |
| 55. | *Solanum nigrum* Linn | Solanaceae | Black shade (E) | Inflammation, liver problems, antiproliferative | Leaf (Aqueous) | MEST, PTZ, PIC | 33 |
| 56. | *Spathodea campanulata* P. Beauv | Bignoniaceae | African Tulip (E), Imiewu (I), Oruru (Y) | Analgesic, anti-inflammatory and anti-plasmodial, fungal infections, impetigo, herpes, scabies, other skin infections | Leaf (Ethanol) | MEST, PTZ | 57 |
| 57. | *Stereospermum Kunthianum* Cham. | Bignoniaceae | Pink jacaranda (E) | Indigestion, hiccups, diarrhea, vomiting, fever, asthma, diabetes | Stem Bark (Aqueous) | MEST, PTZ | 124 |
| 58. | *Synsepalum dulcificum* Schumach.&Thonn.) Daniell | Sapotaceae | Miracle fruit (E) | Taste modifying | Seed (Aqueous) | MEST, PTZ, STR | 125 |
| 59. | *Tapinanthus globiferus* (A Rich.) van Tiegh | Loranthaceae | mistletoe (E), Kauchin (H), afomo (Y), Osisi or Okwuma osa (I) | Rheumatism, syphilis, fever, hypertension, cancer, diabetes, diuretic agent, body pain, ulcers. | Whole plant (Aqueous) | MEST, PTZ | 126 |
| 60. | *Telfairia occidentalis* Hook.fil. | Cucurbitaceae | Fluted gourd (E), | Fish and human poisons, blood tonic, anemia, malaria gastrointestinal disorders, | Leaf (Aqueous) | MEST, STR, PTZ | 127 |
| 61. | *Trichilia roka* Forskal | Meliaceae | Cape or Natal mahogany (E), Goron Talaka (H), | Antihelmintic, aphrodisiac, antiplasmodial, pains, inflammation | Stem bark (Ethanol) | MEST, PTZ, STR, PIC | 128 |

| S/N | Plants Name | (Family) | Local Names | Other Ethnobotanical Uses | Part used (Solvent) | Methods of Screening | References |
|---|---|---|---|---|---|---|---|
| 62. | *Xeromphis nilotica* Stapf. Keay | Rubiaceae | Barbaji (E) | Fever, asthma, Stomach pain, dropsy, abdominal pain and to induce labour | Root bark (aqueous) | PTZ | 129 |

KEY: E-English, H- Hausa, F- Fulfulde, Y- Yoruba, I- Igbo, K- Kanuri, MEST- Maximal electroshock test, PTZ- Pentylenetetrazol, PIC- Picrotoxin, PIL- Pilocarpine, STR- Strychnine, NMDA- N-Methyl-D-aspartate (NMDA), INH- Isoniazid, AMI- Aminophylline, BRU- brucine; ELT KIND- Electrically induced kindling, PTZ KIND- PTZ induced kindling