Review Article

International Journal of Indigenous Herbs and Drugs
Content Available at www.saap.org.in ISSN: 2456-7345

Psychosis and antipsychotic plants an: overview

Nadim Siddique*, Shahid Hussain, Sudheer Yadav, Amresh Gupta
GOEL Institute of Pharmacy & Sciences, Lucknow, UP, 226028

Article Info :

Article History
Received on: 02-11-2021
Revised on : 15-11-2021
Accepted on : 09-02-2022

Abstract

Psychosis (schizophrenic, schizoaffective, and affective ailments) is a group of serious disorders that affect the mind. Common symptoms of psychosis are hallucinations, delusions, flat affect, obliviousness, alogia, avolition, and anhedonia. Presently available retailed medicines like chlorpromazine, haloperidol, clozapine, risperidone, and olanzapine have some serious adverse effects alike as dizziness, diabetes, weight gain, tardive dyskinesia, neuroleptic malignant syndrome, sexual dysfunction, agitation, and sedation. There's no satisfactory remedy available for forestalment and care of psychosis. Thus, the demand for herbal drug is boosting. This paper collects the information about the possible plants and nutritional supplements to refine symptoms of psychosis with no side effect. The present review discusses about anti-psychotic plants, its natural source, common name, and other natural conditioning, which are helpful for experimenters to development new anti-psychotic herbal preparation.

Keywords: Psychosis, Neuroleptic, Hallucinations, Chlorpromazine, Herbal plants.

***Corresponding Author**
Nadim Siddique
Email- nadimpharma786@gmail.com

DOI: https://doi.org/10.46956/ijihd.v7i1.286

Production and Hosted By
Saap.org.in

Introduction

Mental diseases have grown largely prevalent due to ambitious life, urbanization, and stressful surroundings. Psychosis is a one of the most enervating, complex, and expensive illness. The sense of "psyche" is mind or soul, and term "-osis" corresponds to an abnormal estate in Greek. Hence, psychosis is frequently described as involving a "loss of connection with reality." These conditions alter a person's capability to suppose easily, form sensible judgments, react emotionally, communicate effectively, judge reality, and behave correctly. It's represented by three general types of symptoms Positive symptoms, negative symptoms, and cognitive symptoms. Positive symptoms relate to a loss of connection with reality and consist of hallucinations, delusions, crazy behavior, and positive regular mental sicknesses. Negative symptoms relate to a depression in or lack of usual behaviors and carry flat affect, alogia, avolition, and anhedonia. Cognitive symptoms expose as paucities in attention, learning, memory, attention, and administrative functions (conceptual thinking, problem breaking) [1].

Risk factors of psychosis [2]

A family history of psychosis or psychotic disorders, an inherited disorder exacerbated by stress and hormonal changes, neurodegenerative disorder (such as Alzheimer, Parkinson's), viral infection, Chemical imbalances in the brain such as dopamine, glutamate, gamma-aminobutyric acid, acetylcholine, serotonin, and nor- epinephrine, Depletion of certain fatty acids in cell membranes, Drug abuse or traumatic detriment, Dietary exorphins from milk, Inheritable disposition interacting with an load of nutritional proteins, miswiring of the brain during growth, Perinatal hypoxia, Social stressors in metropolitan environments, Anti-depressants and serotonin reuptake blockers, similar as euphoria, lysergic acid diethylamide, and Prozac induce hallucinations and false memory, Habitual alcoholics endure loss of gray matter, cognitive dysfunction, disorganization of thought, and memory mislaying, PCP or phencyclidine also understood as " angel dust" causes both the positive as well as negative

SOUTH ASIAN ACADEMIC PUBLICATIONS

symptoms of psychosis. Purified cocaine and purified methamphetamine cause the positive symptoms of schizophrenia, and dysphoria upon pullout, Special K, also known as ketamine, causes schizophrenia – suchlike psychosis in the healthy individualities.

Pharmacological treatment of psychosis

The anti-psychotic medications are also nominated as neuroleptic medicines, or neuroleptics, which is derived from Greek in which neuro refers to the nerves and lept means "to take hold of". Therefore, the term neuroleptic means "taking hold of one's nerves." Antipsychotic drugs are the foundation of acute and care and feeding treatment of schizophrenia and are effective in the treatment of hallucinations, delusions, and mental ailments. Antipsychotic drugs are generally grouped into two classes First generation (typical) and second generation (atypical). First generation (typical) antipsychotic agent Chlorpromazine, the first antipsychotic medicine, was a phenothiazine evolved as a surgical anesthetic. Soon after the preface of chlorpromazine, another agent reserpine, a derivative of the rauwolfia plant, was introduced as ananti-psychotic. Typical antipsychotic agents are chlorpromazine, triflupromazine, thioridazine, trifluoperazine, fluphenazine, haloperidol, trifluperidol, penfluridol, flupenthixol, pimozide, and loxapine. Second generation (atypical) anti-psychotic medications are clozapine, risperidone, olanzapine, aripiprazole, quetiapine, ziprasidone, and sulpiride [3]. The typical antipsychotics are categorized according to their chemical structure while the atypical antipsychotics are categorized according to their pharmacological effects. The biggish contrast between the two classes of antipsychotics is that the first generation medications block dopamine and the second generation medications block dopamine and also affect serotonin levels. Although atypical antipsychotics are normally accounted to be more efficient and to have reduced side- effects compared to typical antipsychotics. Testimonial suggests that some of the second generation medications have gentle movement related side- effects than the first generation medications. The second generation antipsychotics are generally the first selection for the treatment of schizophrenia. Clozapine is exceptional in that it frequently works even when other drugs have failed; even so, because it requires monitoring of white blood cell counts, it isn't the first option for treatment. Considering the adverse effects of synthetic anti-psychotic medications includes dizziness, diabetes, weight gain, tardive dyskinesia, neuroleptic malignant syndrome, sexual dysfunction, delirium, and sedation,. Continuous search for safe herbal medicaments is need of the hour [4]. Herbal medications are in great demand in the developed as well as developing countries for primary healthcare because of their wide medicinal conditioning, advanced safety margins, and lower costs (Table 1). Nutritional supplements along with herbal drugs may refine symptoms of psychosis.

Table 1: List of plants having antipsychotic activity

Serial number	Botanical source	Common name	Other biological activities	References
1	*Acorus gramineus* Family: Araceae	Japanese sweet flag	Insecticidal and anti-fungal	[7,8]
2	*Albizia inpinata* Family: Leguminosae	Maloxo	Hypotensive and vasorelaxant	[9,10]
3	*Aegle marmelos* Family: Rutaceae	Bael	Analgesic, anti-inflammatory, anti-pyretic, anti-cancer, anti-oxidant, anti-ulcer, anti-diabetic, anti-thyroid, anti-viral, anti-bacterial, and anti-fungal	[11,12]
4	*Allium cepa* Family: Liliaceae	Onion	Anti-hypercholestrolemic, hypoglycemic, anti-platelets, anti-oxidant, anti-cancer, and anti-microbial	[13]
5	*Alstonia scholaris* Family: Apocynaceae	Devil tree	Anti-depressant, anti-anxiety, anti-oxidant, analgesic,anti-inflammatory, anti-microbial, anti-diarrheal, hepatoprotective, anti-cancer, anti-diabetic, and anti-arthritic	[14,15]
6	*Amblygonocarpus andongensis* Family: Mimosaceae	Scotsman's rattle	Anti-nociceptive, anti-inflammatory, and anti-microbial	[16]
7	*Areca catechu* Family: Arecaceae	Betel nut	Anti-microbial, anthelmintic, and anti-oxidant	[17]
8	*Bauhinia tomentosa* L Family: Fabaceae	Yellow bell	Anti-oxidant, anti-fungal, anti-hyperglycemic, and anti-inflammation	[18]

9	*Bryosonima crassifolia* Family: Fabaceae	Nanche	Wound healing, anti-inflammatory, anti-oxidant, hypoglycemic, and anti-microbial	[19,20]
10	*Cannabis sativa* Family: Cannabaceae	Marijuana	Anti-epileptic, anti-pyretic, anti-parasitic, and anti-emetic	[21]
11	*Catunargaom Spinosa* Family-Rubiaceae	Mountain pomegranate	Anti-bacterial, anti-fungal, and anti-viral	[22]
12	*Chrysanthellum indicum* Linn.Family: Compositae	Rariyar kasa (Kontagora), Dunkufe (Zaria)	Anti-tumor, anti-amoebic, diuretic, hypoglycemic, andanti-oxidant	[23]
13	*Crocus sativus* Family: Iridaceae	Saffron	Memory enhancer, anti-depression, anti-inflammatory, anti-tumor, and radical-scavenging	[24-26]
14	*Coccinia grandis* Family: Cucurbitaceae	Scarlet and Parval	Anti-diabetic, analgesic, anti-pyretic,anti-inflammatory, hepatoprotective, anti-tuberculosis, anti-malarial, anti-bacterial, anti-oxidant, anti-cancer, and anti-ulcer	[11,27]
15	*Datura metel* Family: Solanaceae	Thorn apple	Analgesic, anti-spasmodic, antitussive, and bronchodilator	[28]
16	*Delonix regia* Family: Fabaceae	Gulmohar	Wound healing, hepatoprotective, anti-inflammatory, anti-bacterial, and anti-malarial	[29,30]
17	*Euphorbia neriifolia* Family: Euphorbiaceae	Thor	Anti-anxiet, anticonvulsant, anti-oxidant, anti-inflammatory analgesic, anti-diabetic, aphrodisiacs, and hepatoprotective	[31,32]
18	*Ficus hirta* Family: Moraceae	Devil fig	Anti-oxidant, anti-inflammatory analgesic, and anti-bacterial	[11]
19	*Ficus platyphylla* Family: Moraceae	Flake rubber tree	Analgesic, anti-inflammatory, and anticonvulsant	[33,34]
20	*Firmiana simplex* Family: Sterculiaceae	Chinese parasol tree	Anti-oxidant and hepatoprotective	[35,36]
21	*Ginkgo biloba* Family: Ginkgoaceae	Maidenhair tree	Anti-oxidant and treat cerebral hemorrhage	[23]
22	*Gliricidia sepium* Family: Leguminosae	Gliricidia	Anti-bacterial, anti-fungal, and anti-oxidant	[37,38]
23	*Hypericum perforatum* Family: Hypericaceae	St john's wort	Treat minor burns, wounds, skin inflammation andtreat nerve pain	[23]
24	*Ipomoea reniformis* Family: Convolvulaceae	Undirkana or mushakparni	Anti-diabetic, anti-inflammatory, anti-epileptic, anti-oxidant, anxiolytic, neuroprotective and anti-microbial	[39]
25	*Litsea polyantha* Family: Lauraceae	Barkukuchita	Anti-inflammatory, anti-diarrheal, anti-oxidant, anti-depressant, anti-bacterial, anti-fungal, anti-HIV,and anti-thrombotic	[11]
26	*Lonchocarpus cyanescens* Family: Fabaceae	Indigo vine	Anti-oxidant, anti-anxiety, and anti-inflammatory	[40]

27	*Morus alba* Family: Moraceae	White mulberry	Anti-microbial, anti-oxidant, anti-HIV, neuroprotective, and anti-stress	[41]
28	*Morinda citrifolia* Family: Rubiaceae	Noni	Analgesic, anti-inflammatory, anti-oxidant, anti-tumor, hepatoprotective, anti-fungal, anxiolytic,and anti-epileptic	[42]
29	*Nardostachys jatamansi Family: Valerianaceae*	Jatamansi	Anti-depressant, anticonvulsant, anti-parkinson's, and nootropic and neuroprotective	[43]
30	*Ocotea duckei Family: Lauraceae*	Sweet weed	Anti-mycobacterial, anti-leishmanial, and anti-depressant	[44]
31	*Ocimum sanctum Family: Lamiaceae*	Tulsi	Analgesic, anti-inflammatory, anti-ulcer, anti-anxiety, anti-asthmatic, anti-fertility, anti-cancer, anticonvulsant, anti-diabetic, anti-hyperlipidemic, and anti-oxidant	[45]
32	*Panax ginseng Family: Araliaceae*	American ginseng	Anti-sterility, anti-proliferative, adaptogenic, memory enhancing, anti-inflammatory, and anti-diabetic	[46]
33	*Passiflora incarnata Familly: Passifloraceae*	Passion flower	Antitussive, anti-inflammatory, anti-asthmatic, anti-anxiety, anticonvulsant, analgesic, and aphrodisiac	[47]
34	*Piper retrofractum Family: Piperaceae*	Long cavya	Mosquito larvicidal, anti-microbial, aphrodisiac, anti-hypertensive, and anti-fungal	[11,48]
35	*Randia dumetorum Family: Rubiaceae*	Emetic nut	Analgesic, anti-inflammatory, anti-allergic, and anti-bacterial	[49]
36	*Rauwolfia tetraphylla Family: Apocynaceae*	Devil pepper	Anti-bacterial, anti-diabetic, anti-viral, and aphrodisiac	[50]
37	*Rhodiola rosea Family: Crassulaceae*	Golden root	Anti-depression and anti-anxiety	[11]
38	*Saccharum spontaneum Family: Poaceae*	Sugar cane	Anti-bacterial, anti-fungal, cytotoxic, and anti-oxidant	[51]
39	*Securinega virosa Family: Euphorbiaceae*	Bushweed	Anti-diabetic, anti-oxidant, anti-rheumatism, anti-diarrheal, and anti-epileptic	[52,53]
40	*Solanum nigrum Family: Solanaceae*	Black nightshade	Anticonvulsant, anti-cancer, anti-microbial, anti-ulcerogenic, and anti-inflammatory	[54]
41	*Terminalia bellerica Family: Combretaceae*	Bahera	Analgesic, anti-inflammatory, anti-cancer, anti-depressant, anti-diabetic, anti-ulcer, anti-fertility, anti-hypertensive, anti-microbial, and anti-oxidant	[55]
42	*Tetracarpidium conophorum Family: Euphorbiaceae*	Nigerian walnut	Anti-oxidant, anti-microbial, anthelmintic, and anti-dote to snakebite	[56,57]
43	*Thevetia peruviana Family: Apocynaceae*	Lucky nut	Anti-microbial, antispermatogenic, anti-Inflammatory, and anti-diarrheal	[11,58]
44	*Tinospora cordifolia Family:*	Guduchi	Anti-microbial, anti-spasmodic, anti-	[59,60]

	Menispermaceae		inflammatory, anti-arthritic, anti-allergic, anti-diabetic, anti-stress, and anti-oxidant	
45	*Valeriana officinalis* Family: *Valerianaceae*	All-Heal	Anxiolytic, anti-depressant, and anti-arrhythmic	[61]
46	*Vitex negundo* Family: *Verbenaceae*	Monk' pepper	Anti-inflammatory, analgesic, anticonvulsant, anti-oxidant, anti-gonorrhoeic, anti-arthritic	[62]
47	*Withania somnifera* Family: *Solanaceae*	Ashwagandha	Anti-oxidants, anti-parkinson's, and anti-inflammatory	[63]
48	*Zizyphus jujuba* Family: *Rhamnaceae*	Sour date	Anti-anxiety, anti-oxidant, and wound healing	[64]

Ayurvedic treatment for mental disorders

Virechana

Virechana is a panchakarma therapy, in which, bitter purgative herbs like senna or rhubarb are given to induce vomiting. The herbs cleanse different organs like the gallbladder, small intestine and liver of the accumulated pitta. Virechana is used to treat many health conditions such as boils (https://www.myupchar.com/en/home-remedies/baltod-ke-lakshan-karanbachav-upchar-aur-gharelu-upay-in-hindi), constipation, and dysentery (kidney stones and gallstones. It is primarily indicated in people diagnosed with pittaja unmada (unmada arising from the vitiation of pitta dosha). Shirovirechana is performed after carrying out snehana (oleation) and swedana (sudation or sweat therapy) in people diagnosed with schizophrenia and psychosis.

Shirodhara

Shirodhara is the pouring of a kwatha (decoction) or medicated oil on a person's head from a bowl suspended over the head. It helps treat diseases that affect the head, nose, ears and throat. It is also beneficial in treating an enlarged prostate, asthma, diabetes, high cholesterol levels, epilepsy and ulcers. The shirodhara procedure is performed using medicated oils in people with anxiety, depression, insomnia and other mental disorders.

Rasayana

Rasayana therapy cleanses and provides nourishment to all the seven tissues of the body starting from the rasa dhatu to the shukra dhatu and improves circulation in body channels. The rejuvenating herbs used in this therapy promote integrity among the tissues and improve longevity. Herbs act as medhya rasayana or brain tonics, e.g., brahmi, shankhapushpi (aloe weed) and ashwagandha are effective in improving brain functions and memory. Rasayana herbs harmonise body functions and enhance immunity. Achara rasayana therapy aims at improving and maintaining health by promoting a daily routine, yoga, and habits such as speaking the truth and maintaining hygiene. Achara rasayana also promotes foods like dry fruits, milk,and that contain serotonin, tryptophans and other components that work on the neurotransmitters of the brain.

Satvavajaya chikitsa

Satvavajaya therapy is useful for treating mental conditions caused due to emotional disturbances. This therapy helps people process their feelings, thought processes and negative ideas. It enhances atma jnana (self-awareness), kula jnana (awareness about family responsibilities), shakti jnana (awareness of self-capacity), bala jnana (awareness of one's strength) and kala jnana (awareness of seasonal regimens and seasons). According to Ayurveda, this therapy helps treat mental conditions by improving the balance between health and awareness in one's life.

Conclusion

Herbal plants have been used for the treatment of disorders each over the world since the beginning of life. There has been raising interest in the remedial use of herbal plants because of their safety, provident, and effective use. In this review, some shops have been mentioned, which are preliminarily explored by the various researchers for their antipsychotic activity. Inclusively, behavioral studies of shops have created a unique occasion for the development of novel pharmacotherapies for psychosis. The herbal extracts and components with provable psychotherapeutic effects in animal models may deserve further evaluation in clinical studies. Some nutritional supplements such as antioxidant vitamins, EPA omega-3 fish oils also help to enhance symptoms of psychosis. Thus, better effects can be achieved by herbal remedy along with nutritional supplements.

Acknowledgments

The authors are thankful to the journalists/editors of all those articles, papers, and books from where the works for this article has been studied and discussed.

References

1. Parle M, Sharma K. Schizophrenia: A review. Int Res J Pharm2013; 4:52-5.
2. Parle M, Sharma K. Biomarker and causative factor of schizophrenia.Int Res J Pharm 2013; 4:78-85.
3. Kamble RA, Oswal RJ, Antre RV, Adkar PP, Bayas JP, Bagul Y. Anti- psychotic activity of *Catunargaom Spinosa* (Thumb.). Res J Pharm Biol Chem Sci 2011;

2:664-8.
4. Lieberman JA, Stroup TS, McEvoy JP, Swartz MS, Rosenheck RA, Perkins DO, *et al*. Effectiveness of antipsychotic drugs in patients with chronic schizophrenia. N Engl J Med 2005; 353(12):1209-23.
5. Rukmini MS, D'Souza B, D'Souza V. Superoxide dismutase and catalase activities and their correlation with malondialdehyde in schizophrenic patients. Indian J Clin Biochem 2004; 19(2):114-8.
6. Chatterjee M, Ganguly S, Srivastava M, Palit G. Effect of 'chronic' versus 'acute' ketamine administration and its 'withdrawal' effect on behavioural alterations in mice: Implications for experimental psychosis. Behav Brain Res 2011; 216(1):247-54.
7. Cho J, Kong JY, Jeong DY, Lee KD, Lee DU, Kang BS. NMDA recepter-mediated neuroprotection by essential oils from the rhizomes of *Acorus gramineus*. Life Sci 2001; 68(13):1567-73.
8. Park C, Kim S, Ahn YJ. Insecticidal activity of asarones identified in *Acorus gramineus* rhizome against three coleopteran stored-product insects. J Stored Prod Postharvest Res 2003; 39:333-42.
9. Assis TS, Almeida RN, Barbosa-Filho JM, Medeiros IA. CNS pharmacological effects of the total alkaloidal fraction from Albizia inopinata leaves. Fitoterapia 2001; 72(2):124-30.
10. Pires SL, de Assis TS, de Almeida RN, Filho JM, Julien C, de Medeiros IA. Endothelium-derived nitric oxide is involved in the hypotensive and vasorelaxant responses induced by the aqueous fraction of the ethanolic extract of the leaves of *Albizia inopinata* (Harms) G. P. Lewis in rats. Phytomedicine 2000;7(2):91-8.
11. Ahmed MN, Kabidul Azam MN. Traditional knowledge and formulations of medicinal plants used by the traditional medical practitioners of Bangladesh to treat schizophrenia like psychosis. Schizophr Res Treatment 2014; 2014:679810.
12. Sharma GN, Dubey SK, Sharma P, Sati N. Medicinal values of bael (*Aegle marmelos*) (L.) Corr.: A review. Int J Curr Pharm Rev Res 2011; 1:12-22.
13. Kadian R, Parle M. Evaluation of anti-psychotic effect of *Allium Cepa.* World J Pharm Pharm Sci 2014; 3:1146-59.
14. Dey A. *Alstonia scholaris* Linn. R. Br (Apocynaceae): Phytochemistryand pharmacology: A concise review. J Appl Pharm Sci 2011; 01:51-7.
15. Pratap B, Chakraborthy GS, Mogha N. Complete aspects of *Alstonia scholaris*. Int J Pharm Sci Rev Res 2013; 5:17-26.
16. Nwinyi FC, Ajoku GA, Aniagu SO, Kubmarawa D, Enwerem N, Dzarma S, *et al*. Pharmacological justification for the ethnomedicinal use of *Amblygonocarpus andongensis* stem bark in pain relief. Afr J Biotechnol 2006; 5:1566-71.
17. Alphons AB, Rphael RK. Potential anti-microbial, anthelmintic and anti-oxidant properties of *Areca catechu* L. Root. Int J Pharm Pharm Sci 2014; 6:486-9.
18. Joseph A, Chakrabory M, Kamath JV. *Bauinia tomentosa*: A phytopharmacological review. Int Res J Pharm 2011; 2:128-31.
19. Béjar E, Malone MH. Pharmacological and chemical screening of *Byrsonima crassifolia*, a medicinal tree from Mexico. Part I. J Ethnopharmacol 1993; 39(2):141-58.
20. Muñiz-Ramirez A, Perez-Gutierrez RM, Garcia-Baez E, Mota- Flores JM. Anti-microbial activities of diterpene labdane from seeds of *Byrsonima crassifolia.* Bol Latinoam Caribe Plant Med Aromat 2014; 13(1):31-7.
21. Lozano I. The therapeutic use of *Cannabis sativa* (L.) in Arabic medicine. J Cannabis Ther 2001; 1:66-70.
22. Dumbre T, Pawan J, Oswal RJ, Antre RV, Panjwani DT. Anti-microbial study of dried leaves of *Catunargaom spinosa* (thumb). Int J Pharm ResDev 2010; 2:101-5.
23. Yaro AH, Anuka JA, Salawu OA, Magaji MG. Behavioural effects of methanol extract of *Chrysanthellum indicum* in mice and rats. Niger J Pharm Sci 2007; 6:127-33.
24. Kumari R, Kaundal M, Ahmad Z, Ashwalayan VD. Herbal and dietary supplements in treatment of schizophrenia: An approach to improve therapeutics. Int J Pharm Sci Rev Res 2011; 10:217-24.
25. Hosseinzadeh H, Karimi GH, Niapoor M. Anti-depressant effects of *Crocus sativus* stigma extracts and its constituents, crocin and safranal,in mice. Acta Hortic 2004; 650:435-45.
26. Abdullaev FJ. Biological effects of saffron. Biofactors 1993; 4:83-6.
27. Pekamwar SS, Kalyankar TM, Kokate SS. Pharmacological activities of *Coccinia Grandis*: Review. J Appl Pharm Sci 2013; 3:114-9.
28. Adeola BS, Metel DL. Analgesic or hallucinogen? "Sharo" pespective. Middle East J Sci Res 2014; 21:993-7.
29. El-Sayed AM, Ezzat SM, Salama MM, Sleem AA. Hepatoprotective and cytotoxic activities of *Delonix regia* flower extracts. Pharmacogn J2011; 3:49-56.
30. Shewale VD, Deshmukh TA, Patil LS, Patil VR. Anti-Inflammatory Activity of Delonix regia (Boj. Ex. Hook). Adv Pharmacol Sci 2012; 2012:789713.
31. Bigoniya P, Rana AC. Psychopharmacological profile of hydro- alcoholic extract of *Euphorbia neriifolia* leaves in mice and rats. Indian J Exp Biol 2005; 43(10):859-62.
32. Ahmed SA, Nazim S, Siraj S, Siddik PM, Wahid CA. *Euphorbia neriifolia* Linn: A phytopharmacological review. Int Res J Pharm 2011; 2:41-8.
33. Ben AC, Joseph AA, George L, Abdullahi HY, Simon SA, Samson A, *et al.* Psychopharmacological properties of the saponin fraction of *Ficus* platyphylla stem bark Ben. Int J Biol Chem Sci 2008; 2:239-48.
34. Wakeel OK, Aziba PI, Ashorobi RB, Umukoro S,

Aderibigbe AO, Awe EO. Neuropharmacological activities of *Ficus platyphylla* stem bark in mice. Afr J Biomed Res 2004; 7:75-7.
35. Son YK, Lee MH, Han YN. A new antipsychotic effective neolignan from *Firmiana* simplex. Arch Pharm Res 2005; 28(1):34-8.
36. Kim JW, Yang H, Cho N, Kim B, Kim YC, Sung SH. Hepatoprotective constituents of *Firmiana* simplex stem bark against ethanol insult to primary rat hepatocytes. Pharmacogn Mag 2015; 11(41):55-60.
37. Morales Cifuentes C, Gómez-Serranillos MP, Iglesias I, Villar del Fresno AM, Morales C, Paredes ME, *et al.* Neuropharmacological profile of ethnomedicinal plants of Guatemala. J Ethnopharmacol 2001; 76(3):223-8.
38. Nazli R, Sohail T, Nawab B, Yaqeen Z. Anti-microbial property of *Gliricidia sepium* plant extract. Pak J Agric Res 2011; 24:1-4.
39. Chitra KK, Babitha S, Durg S, Thippeswamy BS, Veerapur VP, Badami S. Anti-epileptic and anti-psychotic effects of *Ipomoea reniformis* (Convolvulaceae) in experimental animals. J Nat Remedies 2014; 14(2):153-63.
40. Arowona IT, Sonibare MA, Umukoro S. Antipsychotic property of solvent-partitioned fractions of Lonchocarpus cyanescens leaf extract in mice. J Basic Clin Physiol Pharmacol 2014; 25(2):235-40.
41. Zafar MS, Muhammad F, Javed I, Akhtar M, Khaliq T, Aslam B, *et al*. White mulberry (*Morus alba*): A brief phytochemical and pharmacological evaluations account. Int J Agric Biol 2013; 15:612-20.
42. Pandy V, Narasingam M, Mohamed Z. Antipsychotic-like activity of noni (*Morinda citrifolia* Linn.) in mice. BMC Complement Altern Med2012; 12:186.
43. Jash R, Choudary KA, Prasanth DS. Evaluation of anti-psychotic activity of ethanolic extract of *Nardostachys jatamansi* on wistar albino rat. Int J Pharm Sci Res 2013; 4:2730-6.
44. Morais LC, Barbosa-Filho JM, Almeida RN. Central depressant effects of reticuline extracted from *Ocotea duckei* in rats and mice. J Ethnopharmacol 1998; 62(1):57-61.
45. Kadian R, Parle M. Anti-psychotic potentials of *Ocimum sanctum* Leaves. Int J Pharm Sci Drug Res 2015; 7:46-51.
46. Lakshmi T, Roy A, Geetha RV. *Panax ginseng* a universal panacea in the herbal medicine with diverse. Asian J Pharm Clin Res 2011; 4:14-8.
47. Ingalea SP, Kastureb SB. Psychopharmacological profile of *Passiflora Incarnata* Linn in mice. Int J Phytopharmacol 2012; 3:263-8.
48. Nunning R, Moch SB. The aphrodisiac effect and toxicity of combination *Piper retrofractum L, Centella asiatica,* and *Curcuma domestica* infusion. Health Sci J Indones 2012; 3:19-22.
49. Patel RG, Pathak NL, Rathod JD, Patel LD, Bhatt NM. Phytopharmacological properties of *Randia dumetorum* as a potential medicinal tree: An overview. J Appl Pharm Sci 2011; 1:24-6.
50. Maurya A, Gupta S, Srivastava SK. Large-scale separation of antipsychotic alkaloids from *Rauwolfia tetraphylla* L. by pH- zone-refining fast centrifugal partition chromatography. J Sep Sci 2013; 36(2):407-13.
51. Ripa FA, Haque M, Haque IU. *In vitro* anti-microbial, cytotoxic and anti-oxidant activity of flower extract of *Saccharum spontaneum* Linn. Eur J Sci Res 2009; 30:478-83.
52. Magaji MG, Mohammed M, Magaji RA, Musa AM, Abdu-Aguye I, Hussaini IM. Evaluation of the antipsychotic potential of aqueous fraction of *Securinega virosa* root bark extract in mice. Metab Brain Dis 2014; 29(1):161-5.
53. Danlami U, David BM, Joyce OO, Olutayo O, Thomas SA. The anti- oxidant potentials and phytochemical properties of the hexane, ethyl acetate and ethanolic extracts of *Securinega virosa* (Euphorbiaceae) Leaves. J Appl Pharm Sci 2013; 3(5):131-3.
54. Perez RM, Perez JA, Garcia LM, Sossa H. Neuropharmacological activity of *Solanum nigrum* fruit. J Ethnopharmacol 1998; 62(1):43-8.
55. Kadian R, Parle M, Yadav M. Therapeutic potential and phytopharmacology of *Terminala bellerica.* World J Pharm Pharm Sci
56. Aladeokin AC, Umukoro S. Psychopharmacological properties of an aqueous extract of *Tetracarpidium conophorum* Hutch. and Dalziel in mice. J Nat Med 2011; 65(3-4):411-6.
57. Ajaiyeoba EO, Fadare DA. Anti-microbial potential of extracts and fractions of the African walnut – *Tetracarpidium conophorum.* Afr J Biotechnol 2006; 5:2322-5.
58. Singh K, Agrawal KK, Mishra V, Uddin SM, Shukla A. A review on: *Thevetia peruviana.* Int Res J Pharm 2012; 3:74-7.
59. Jain BN, Jain VK, Shete A. Antipsychotic activity of aqueous ethanolic extract of *Tinospora cordifolia* in amphetamine challenged mice model. J Adv Pharm Technol Res 2010; 1:30-3.
60. Singh SS, Pandey SC, Srivastava S, Gupta VS, Patro B, Ghosh AC. Chemistry and medicinal properties of *Tinospora cordifolia* (guduchi). Indian J Pharmacol 2003; 35:83-91.
61. Murti K, Kaushik M, Sangwan Y, Kaushik A. Pharmacological properties of *Valeriana officinalis*-A review. Pharmacologyonline 2011; 3:641-6.
62. Tandon VR. Medicinal uses and biological activities of *Vitex negundo.* Indian J Nat Prod Resour 2005; 4:162-5.
63. Kumar VS, Kumar A. Therapeutic uses of *Withania somnifera* (ashwagandha) with a note on with

anolides and its pharmacological actions. Asian J Pharm Clin Res 2011; 4:1-4.

64. Mahajan RT, Chopda MZ. Phyto-pharmacology of *Ziziphus jujube* mill – A plant review. Pharmacogn Rev 2009;3:32