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A Review on Anxiolytic Activity of Some Herbal Plants

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ABSTRACT

Anxiety is a state of excessive fear and apprehension regarding the occurrence of even normal things in life. It is characterized by motor tension, sympathetic hyperactivity and apprehension and vigilance syndromes. Anxiety may interfere with intelligence, psychomotor function and memory. Herbal plants are treating anxiety disorder, it is therefore important to know whether they generate more good than harm. These herbal plants extraction processes used to different solvents present in phytochemical constituents. They need further evidence base via clinical studies. Anxiety disorders are commonly researched but the efficacy of herbal medicines in these disorders needs to be studied further. The review addresses herbal therapy, safety issues and future areas of application in the field.

Keywords: Herbal plants, Anxiety, Hyperactivity, Apprehension.

INTRODUCTION

Indian sub - continent is a rich source of plant and animal wealth which is due to its varied geographical and agro climatic regions. Besides its varied biodiversity, it has a diverse cultural heritage too. Medicinal plants have played an essential role in the development of human culture, for example in religions and different ceremonies. Medicinal plants are resources of new drugs (Madhavan *et al*., 2011).

Medicinal plants have been used as a major source of cure of human diseases since time immemorial. Today, one fourth of the world population depends on traditional medicines and 80% of the population relies on indigenous medicinal plants and the drugs (Stojanoski N *et al*., 1999). Medicinal plants have a recognized medical use. Herbal medicine is one of the oldest forms of medical treatment in human history, and could be considered one of the forerunners of the modern pharmaceutical trade. Medicinal plants can be found growing in numerous settings all over the world. Plants form the main ingredients of medicines in traditional systems of healing and have been the source of inspiration for several major pharmaceutical drugs (Raja Lakshmi *et al*., 2011). The demand for medicinal plants in health care is about 70-80%. The use of medicinal plants for treatment is growing in view of cost and non-compliance of modern medicine as in case of non-communicable diseases. Growing recognition of medicinal plants is due to several factors like cultural acceptability, accessibility, affordability and ability to meet psychological needs (Kala CP, 2005).

It is a well-known fact that Traditional Systems of medicines always played important role in meeting the global health care needs. They are continuing to do so at present and shall play major role in future also. India is known for its traditional medicinal systems. They are Ay urveda, Siddha, Unani and Yoga, Naturopathy and Homo eopathy. Medical systems are found mentioned even in the ancient Vedas and other scriptures. The Ayurvedic concept appeared and developed between 2500 and 500 BC in India (Subhose *et al*., 2005).

Indeed, well in to the 20th century much of the pharmacopoeia of scientific medicine was derived from the herbal lore of native peoples. Many drugs commonly used today are of herbal origin. Indeed, about 25 percent of the prescriptions drugs are dispensed in the United States contain at least one active ingredient derived from plant material. Some are made from plant extracts; others are synthesized to mimic a natural plant compound. Alternative medicines are being used by about 60 percent of the world's population. These medicines are not only used by the rural masses for their primary health care in developing countries but are also used in developed countries where modern medicines dominate (Ballabh and Chaurasia, 2007).

India is the largest producer of medicinal plants. There are currently about 250,000 registered medical practitioners of the Ayurvedic system, as compared to

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about 700,000 of the modern medicine. In India, around 20,000 medicinal plants have been recorded; however, traditional practitioners use only 7,000–7,500 plants for curing different diseases. The proportion of use of plants in the different Indian systems of medicine is Ayurveda 2000, Siddha 1300, Unani 1000, Homeopathy 800, Tibetan 500, Modern 200, and folk 4500. In India, around 25,000 effective plant-based formulations are used in traditional and folk medicine. More than 1.5 million practitioners are using the traditional medicinal system for health care in India. It is estimated that more than 7800 manufacturing units are involved in the production of natural health products and traditional plant-based formulations in India, which requires more than 2000 tons of medicinal plant raw material annually (Pandey *et al*., 2008). More than 1500 herbals are sold as dietary supplements or ethnic traditional medicines (Patwardhan *et al*., 2005). In Ayurveda, groups of plant known as Rasayanas have been extensively used as rejuvenators for arresting the process of aging, to provide resistance against disease including those induced by emotional perturbation, and to promote general well-being of the individual. It is, thus, obvious that long before the concept of adaptogen was involved in the middle part of this century, a remarkably similar theory has been propounded centuries ago in Ayurveda.

Ayurveda (In Sanskrit "knowledge of life" or "knowledge of longevity") is one of the most ancient traditions of India and it has now spread beyond India to other countries like, Sri Lanka, Malaysia, Mauritius, South Africa, Japan, Russia, Europe, and North America (Elder, 2004; Hankey, 2005; Patwardhan, 2010; Vaidya, 2001). Herbs are commonly used for treatment in Ayurveda. Indian healthcare consists of various systems of medicines and ayurveda still remains dominant compared to modern medicine, particularly for treatment of a variety of chronic disease conditions. Considerable research on pharmacognosy, chemistry, pharmacology and clinical therapeutics has been carried out on ayurvedic medicinal plants (Patwardhan, 2004).

Anxiety is a cardinal symptom of many psychiatric disorders and an almost inevitable component of many medical and surgical conditions. Indeed, it is a universal human emotion, closely allied with appropriate fear and often serving psycho biologically adaptive purposes. A most important clinical generalization is that anxiety is rather infrequently a "disease" in itself. In addition symptoms of anxiety are commonly associated with depression, especially with dysthymic disorder, panic disorder, agrophobia, obsessive, compulsive disorder (Baldessarini RJ *et al*., 2001).

Currently different therapeutic regimens are employed to treat anxiety and depressive disorders; but their clinical uses are limited by their side effects such as psychomotor impairment, potentiation of other central depressant drugs and dependence liability. In the search for new therapeutics for the treatment of neurological disorders-medicinal plant research has also contributed by demonstrating pharmacological effectiveness of different herbs in various animal models (Nimal J *et al*., 2008).

Symptoms of anxiety commonly are associated with depression and especially with dysthymic disorder (chronic depression of moderate severity), panic disorder, agoraphobia and other specific phobias, obsessive-compulsive disorder, eating disorders, and many personality disorders. Sometimes, despite a thoughtful evaluation of a patient, no treatable primary illness is found, or if one is found and treated, it may be desirable to deal directly with the anxiety at the same time. In such situations antianxiety medications are frequently and appropriately used (Boerner RJ and Moller HJ, 1992).

Anxiety disorders as recognized clinically include

- Generalized anxiety disorder (an ongoing state of excessive anxiety lacking any clear reason or focus)
- Panic disorder (sudden attacks of overwhelming fear occur in association with marked somatic symptoms, such as sweating, tachycardia, chest pains, trembling and choking). Such attacks can be induced even in normal individuals by infusion of sodium lactate, and the condition appears to have a genetic component)
- Phobias (strong fears of specific objects or situations, e.g. snakes, open spaces, flying, social interactions)
- Post-traumatic stress disorder (anxiety triggered by recall of past stressful experiences)
- Obsessive compulsive disorder (compulsive ritualistic behavior driven by irrational anxiety, e.g. Fear of contamination). It should be stressed that the treatment of such disorders generally involves psychological approaches as well as drug treatment. Furthermore, other types of drug, particularly antidepressants and sometimes antipsychotic drugs, are often used to treat anxiety disorders (Shradha Bisht *et al*., 2013).

Herbal medication for anxiety

The major limitation to developing new antidepressant and antianxiety drugs is a fundamental lack of a coherent Pathophysiology and etiology for major depression, bipolar disorder, and common anxiety disorders. Current medications (SSRIs and Tricyclic antidepressants) focus on neither blockade of nor epinephrine and serotonin uptake, thereby prolonging their synaptic effects. The relative success of these agents creates a conceptual impasse that limits identification of novel therapeutic targets for these disorders (Healy D, 2001).

These are the solvents used for the extraction of phytochemical constituents present in the parts of the plants as well as whole plants they are

1. Petroleum ether
2. Chloroform
3. Hexane
4. Benzene
5. Ethyl acetate
6. Methanol
7. Ethanol
8. Methanol
9. Water

These are various extractions mainly present phytochemical constituents are Alkaloids, flavonoids, tennis, terpenoids. So these are the models available for the induction of anxiety. They are (Gerchard Vogel H, 2002).

1. Amphetamine induce
2. Pentylene tetrazole induced
3. Picrotoxin induced
4. Strychnine induced
5. Isoniazid induced
6. Yohimbine
7. Foot-shock induced
8. Isolation induced aggression
9. Maternal aggression
10. Social interaction
11. Distress vocalization
12. Schedule induced polydipsia in rats
13. mCPP induced anxiety

A number of medicinal plants and medicines derived from these have been found to show anxiolytic properties by virtue of their medicinal constituents.

Table.1 Number of medicinal plants and medicines derived found to show anxiolytic properties

S. No	Plant name (Family)	Part used	Extraction	Method	Reference
1	*Centella asiatica (Apiaceae)*	Whole plant	Methanol	Elevated plus maze Test Hole-board test Open Field Test	Dr. Rakesh Kumar *et al*., 2013
2	*Nymphaea alba Linn (Nymphaeaceae)*	Whole plant	Ethanol	Elevated plus maze Test Light and dark test Open Field Test Motor coordination test by rota rod Foot shock induced aggressi on test	B.S. Thippeswamy *et al*., 2014
3	*Kigelia Africana (Bignoniaceace)*	Whole plant	Petroleum ether Methanol	Elevated plus maze Test Hole-board test Stair case Dark &light Swim test	Shalini K *et al*., 2014
4	*Mangifera indica (Anacardiaceaae)*	Leaves	Aqueous solvent	Elevated plus maze Test Stair case	Nitin kumar B patel *et al*., 2013
5	*Valeriana jatamansi jones (Valerianaceae)*	Whole Plant	Aqueous ethanol Ethanol	Elevated plus maze Test Dark &light	Jie-Shu You *et al*., 2012
6	*Allium ascalonicum Linn. (Liliaceae)*	aerial part	hydroethanolic	Elevated plus maze Test Hole-board test Stair case Dark &light Open Field Test social interaction test	Abidemi J *et al*., 2012
7	*Ixora coccinea Linn. (Rubiaceae)*	Whole Plant	Ethanol	Elevated plus maze Test Hole-board test	Mohammed *et al*., 2014
8	*Foeniculum vulgare (Apiaceae)*	Fruits	Ethanol	Elevated plus maze Test Hole-board test Open Field Test	R. NAGA KISHORE *et al*., 2012
9	*Achyranthes aspera (Amaranthaceae)*	Leaves	Methanol	Elevated plus maze Test Hole-board test Open Field Test Dark &light	Chandana C *et al*., 2014
10	*Curculigo orchioides (Amaryllidaceae)*	Root	Hexane Dichloromethane Ethyl Acetate Methanolic Water	Elevated plus maze Test Dark &light	Nidhi Soni *et al* ., 2013
11	*Benincasa hispida (Cucurbitaceae)*	Fruits	Ethanol	Elevated plus maze Test Dark &light Loco motor activity	S K Nimbal *et al*., 2011
12	*Crataegus oxycantha (Rosaceae)*	Leaves	Aqueous solvent	Elevated plus maze Test Dark &light Loco motor activity	Arora Ankitkumar *et al*., 2011

13	*Myristica fragrans (Myristicaceae)*	Whole Plant	Ethanol	Open Field Test	Nagaraju B *et al*., 2013
14	*Echium italicum L. (Boraginaceae)*	Aerial Parts	Aqueous solvent Ethanol	Prolongation Effect on Pento barbital-Induced Sleeping Time Motor coordination test by rota rod Open Field Test Elevated plus maze Test	Hossein Hosseinzade h *et al*., 2012
15	*Oxalis corniculata.L (Oxalidaceae)*	Whole plant	Ethanol	Light - Dark exploration test Open Field Test Elevated plus maze Test	SAI SAMPATH. T *et al*., 2011
16	*Lagenaria Siceraria (Cucurbitaceae)*	fresh fruits	Aqueous solvent	Cage Crossing Test Open Field Test Head Dip Test The Light/Dark Box Test Stationary Rod Test Water Maze Test	Muhammad Aslam and Rahila Najam. 2013
17	*Terminalia chebula (combrataceae)*	Fruit pulp	Aqueous solvent	Water Maze Test Behavioural assessment	Chandra sekar R *et al*., 2013
18	*Asphaltum punnjabian um (punjabajinaceae) Shilajatu*	Whole part	Water Gomuthra	Behavioural assessment Elevated plus maze Test Open Field Test	Richa Pathak and Ne eraj Kumar *et al*., 2013
19	*Alafia multiflora (Apocynaceae)*	Stem bark	Aqueous solvent	Forced Swimming Test Elevated plus maze Test Open Field Test The Light/Dark Box Test	Harquin Simplice Foyet *et al*., 2012
20	*Spondias mombin L. (Anacardiaceae)*	Leaves	Ethanol Methanol Water`	behaviour despair test	A. O. Ayoka *et al*., 2005
21	*Citrus paradise var. D uncan (Rutaceae)*	Leaves	petroleum ether chloroform methanol water	Elevated plus maze model	Vikas Gupta *et al*., 2010
22	*Pulsatilla nigricans Stoerck (Ranunculaceae)*	Whole plant	petroleum ether chloroform methanol water	Elevated plus maze model Open field actophotometer	Sandeep Goyal and Suresh Kumar. 2010
23	*Ficus hispida Linn (Moraceae)*	Leaves	Methanol	Elevated plus maze model Zero maze Hole board Rota rod paradigm	D.Sivaraman *et al*., 2012
24	*Elaeocarpus sphaericus (Elaeocapaceae)*	Fruits	Hydroehtanolic	Elevated plus maze model Ketamine induced sleeping time Loco motor activity	Shah gagan *et al*., 2010
25	*Crinum glaucum A.chev (Amargllidaceae)*	Fresh bulous	Aqueous solvent	Elevated plus maze model Hexo barbitone induced sleeping time	Ismail O *et al*.,2013
26	*Cassia occidentalis (Caesalpiniaceae)*	Leves	Ethanol	Elevated plus maze model Loco motor activity	SABA SHAFEEN *et al*., 2012
27	*Coriandrum sativum (Apiaceae)*	Fruits	Hydroalocoholic	Elevated plus maze Test Open Field Test The Light/Dark Box Test Social interaction test	Poonam Mahendra and Shradha Bisht *et al*., 2011
28	*Justicia gendarussa* Bu rm ((Acanthaceae)	Aerial part	Ethanol	Elevated plus maze model The Light/Dark Box Test	N. Subramanian *et al*., 2013

29	*Plectranthus amboinicus (Lamiaceae)*	Leaves	Aqueous solvent Ethanol	Elevated plus maze model The Light/Dark Box Test	Dilip Kumar Tiwari *et al*., 2012
30	*Abutilon indicum (Malvaceae)*	Leaves	Ethanol	Elevated plus maze model	Jayasree Tirumalasetty *et al*., 2013
31	*Moringa oleifera (Moringaceae)*	Leaves	Ethanol	Elevated plus maze model The Light/Dark Box Test	Shankar K. Bhat, Anu Elizabeth Joy, 2014

CONCLUSION

Herbal medications in psychiatry are still under researched. The present review looked at various herbal preparations used in anxiety. The preparations excluding kava have been under used and need further clinical trials including randomized double blind clinical evidence and direct comparisons with anxiolytic drugs to help us understand their efficacy. Most herbal medications may serve as alternatives to traditional anxiolytic in patients who do not tolerate them as they have a favourable safety profile and are free from major side effects. There is also a need for research of herbal medication in the management of various subtypes of anxiety disorders like post traumatic stress disorder and obsessive compulsive disorder. The use of these medications in various age groups and diverse clinical populations is warranted.

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