

Anxiolytic Effects of Medicinal Plants: A Systematic Review

Amjad Hussain*

Department of Eastern Medicine, Faculty of Pharmacy and Health Sciences, University of Balochistan Quetta, Pakistan. Corresponding Author Email. amjadkhattak333@gmail.com

Muhammad Akram

Department of Eastern Medicine, Government College University, Faisalabad, Pakistan.

Muhammad Zakaria

Department of Eastern Medicine, Faculty of Pharmacy and Health Sciences, University of Balochistan Quetta, Pakistan.

Yousma Tariq

Department of Eastern Medicine, Faculty of Pharmacy and Health Sciences, University of Balochistan Quetta, Pakistan.

Sahrish Rafique

Department of Public Health, University of Veterinary & Animal Sciences, Lahore

Saif Ahmad

Department of Eastern Medicine, Faculty of Pharmacy and Health Sciences, University of Balochistan Quetta, Pakistan.

Aadil Ameer Ali

Institute of Physiotherapy & Rehabilitation sciences, Shaheed Mohtarma Benazir Bhutto Medical University, Larkana, Pakistan

Sikandar Ishaq

Department of Biotechnology, Faculty of Biological Sciences, University of Science and Technology Bannu, Khyber Pukhtoon Khwa, Pakistan.

Muhammad Qasim

Department of Botony, Khushal Khan Khattak University, District Karak, Pakistan.

ABSTRACT

History explores that ancient civilization such as Greek, China and Egypt uses medicinal plants for treating various diseases. In the healthcare system, medicinal plants play a vital role due to their therapeutic agents (phytochemicals). Anxiety specially chronic anxiety is the severe feeling of fear, worrying or nervousness that effect the health or quality of life. Anxiolytic drugs have many side effects that why; people are treating their anxiety with the herbal medicines. The current article is composed of various medicinal plants that have anti-anxiety activity.

Key words: Medicinal Plants, Anxiety, Phytomedicine, Anxiolytic Herbs

Introduction

World Health Organization (WHO) stated that about 70-80% of population of world depend on medicinal plants that are used for various medical disorders (Khattak *et al.*, 2020). The attraction towards the used of herbal medicines are due to the safe therapeutic agents such as alkaloid, glycosides, tannin, flavonoids and terpenoids. According to an estimation that France, Australia and Unites states uses about 49,48 and 42% of herbal medicines for their primary health disorders (Hussain *et al.*, 2023). Medicinal plants contain significant therapeutic agents that are identified with the help of various chromatographic (TLC &HPLC) and spectroscopic (FTIR, UV-spectroscopy) techniques. These techniques explain and identify the various aspects of these phytochemicals (Hussain *et al.*, 2023).

Prevalence of anxiety is about 7.2%, whereas the incidence of the anxiety is about 9.7 per thousand people per year. The prevalence and incidence rate of anxiety in young adults and women in the age of 20-29 years of age (Martín-Merino *et al.*, 2010).

Methodology

Google scholar was searched for anxiolytic herbs, anxiolytic medicinal plants, anxiolytic herbal medicines, anti-anxiety medicinal plants, anti-anxiety herbs and anti-anxiety herbal medicines since 2000 to 2013. 45 research papers were searched. 17 research papers were excluded from the study because of insufficient information and other languages rather than English. 28 research papers were including in the current study.

Table.1: Medicinal Plants with Anxiolytic Effects

Plant species	Family	Plant parts used/Type of Extract	Anxiolytic compounds	References.
<i>Sphaeranthus indicus</i>	<i>Asteraceae</i>	HCL extract(flower)	Coumarin, triterpenes and essential oils.	Galani <i>et al.</i> , 2010
<i>Panax quinquefolium</i>	<i>Araliaceae</i>	70%Ethanol extraction(roots)	Saponins	Wei <i>et al.</i> , 2007

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<i>Cinnamomum cassia</i>	<i>Fabaceae</i>	HCl extract(stem bark)	-----	Yu <i>et al.</i> , 2007
<i>Protium heptaphyllum</i>	<i>Burseraceae</i>	Extract resin	Triterpenes α & β amyrins.	Aragao <i>et al.</i> , 2006
<i>Scutellaria baicalensis</i>	<i>Lamiaceae</i>	CH ₂ Cl ₂ extract(Root powder)	Wogonin (flavonoid)	Hui <i>et al.</i> , 2002
<i>Salvia divinorum</i>	<i>Lamiaceae</i>	Isolated compound(Tocris Bioscience, UK)	Salvinorin A	Braida <i>et al.</i> , 2009
<i>Magnolia obovata</i>	<i>Magnoliaceae</i>	Acetone& Chloroform extraction(leaves).	Obovatol (Lignan)	Seo <i>et al.</i> , 2007
<i>Gastrodia elata</i>	<i>Orchidaceae</i>	Aqueous extract of rizhome	phenolic compounds: 4- hidroxybenzil alcohol and 4- hydroxyl benzaldehyde	Jung <i>et al.</i> , 2006
<i>Passiflora quadrangularis</i>	<i>Passifloraceae</i>	Hydroalcoholic extract of leaves	triterpenes and steroids	De Castro <i>et al.</i> , 2007
<i>Ziziphus jujube</i>	<i>Rhamnaceae</i>	Ethanolic extract of seeds	Not mentioned	Peng <i>et al.</i> , 2000
<i>Petiveria Alliacea</i>	<i>Phytolaccaceae</i>	Ethanol extract(whole plant)	Flavonoids	Blainski <i>et al.</i> , 2010
<i>Casimiroa edulis</i>	<i>Rutaceae</i>	Hydroalcoholic extract of leaves	Not mentioned	Mora <i>et al.</i> , 2005
<i>Uncaria rhynchophylla</i>	<i>Rubiaceae</i>	Aqueous extract of hooks	indolic alkaloids	Jung <i>et al.</i> , 2006
<i>Tilia americana var</i>	<i>Tiliaceae</i>	Methanolic extract of flowers	Flavonoids: tiliroside, rutine,	Herrera <i>et al.</i> , 2008

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<i>mexicana</i>		and bracteas		quercetin, qercitrin, and kaempferol	
<i>Camellia</i>	<i>Theaceae</i>	Aqueous extract		phenolic compounds	Tabassum <i>et al.</i> , 2010
<i>sinensis</i>		of leaves			
<i>Turnera</i>	<i>Turneraceae</i>	Methanolic		Apigenin flavonoid	Kumar <i>et al.</i> , 2008
<i>aphrodisiaca</i>		extract of aerial parts			
<i>Aloysia</i>	<i>Verbenaceae</i>	HCL extract			Helli3n <i>et al.</i> , 2006
<i>polystachya</i>		(aerial parts of the plant)		-----	
<i>Erythrina</i>	<i>Papilionaceae</i>	HCL Flower	(+)-a-		Rosa <i>et al.</i> , 2012
<i>mulungu</i>		extract	hydroxyerysotrine, erythravine and (+)- 11a- hydroxyerythravine alkaloids		
<i>Eschscholzia</i>	<i>Papaveraceae</i>	Hydroalcoholic			Hanus <i>et al.</i> , 2004
<i>californica</i>		extract of aerial parts		-----	
<i>Galphimia</i>	<i>Malphigiaceae</i>	Aerial parts	Galphimine-B		Herrera <i>et al.</i> , 2012
<i>glauca</i>		extraction by percolation method, n-hexane followed by methanol was used for extraction process.			
<i>Ginkgo biloba</i>	<i>Ginkgoaceae</i>	EGb 761®	Flavone&terpenes lactones		Woelk <i>et al.</i> , 2007
<i>Hippeastrum</i>	<i>Amaryllidaceae</i>	CH ₃ CH ₂ OH	Montanin		Da Silva <i>et al.</i> ,

<i>vittatum</i>		extract bulbs		2006
<i>Apocynum</i>	<i>Apocynaceae</i>	CH ₃ CH ₂ OH	kaempferol	Grundmann <i>et al.</i> , 2009
<i>venetum</i>		leaves extract		
<i>Valeriana</i>	<i>Valerianaceae</i>	HCL extract(root s)	Valerenic acid	Sarris <i>et al.</i> , 2013
<i>officinalis</i>				
<i>Withania</i>	<i>Solanaceae</i>	Commercialized ethanolic extrac	Not mentioned	Sarris <i>et al.</i> , 2013
<i>somnifera</i>				
<i>Piper</i>	<i>Piperaceae</i>	Industrial acetonic rhizome extract	Lactones	Sarris <i>et al.</i> , 2009
<i>methysticum</i>				
<i>Melissa</i>	<i>Lamiaceae</i>	hydroalcoholic extract of aerial parts	Rosmarinic acid, oleanolic acid and ursolic acid	Cases <i>et al.</i> , 2011
<i>officinalis</i>				
<i>Lavandula</i>	<i>Lamiaceae</i>	Essential oil extracted by steam distillation of flowers	Essential oil (linalool & linalyl acetate).	Xu <i>et al.</i> , 2008
<i>angustifolia</i>				

Discussion

Herbal medicines have attracted growing attention as potential alternatives to conventional anxiolytic drugs. Piper methysticum has shown significant anxiolytic effects in randomized controlled trials. Clinical data suggest that Piper methysticum extracts can significantly reduce sign and symptoms of anxiety (Sarris *et al.*, 2013). Apigenin, a phytochemical of chamomile act on benzodiazepine receptors that producing calming effects. A clinical trial study reported that chamomile extract significantly reduced hamilton anxiety rating scale in patients with generalized anxiety disorder (Amsterdam *et al.*, 2009).

Akhondzadeh *et al* revealed in a study that *Passiflora incarnata* has promising effect in anxiety disorder. They explain in their study that passionflower extract has significantly reduced the sign and symptoms of anxiety when compared with oxazepam. Moreover, the onset of action was slower and caused fewer side effects

which support that *Passiflora incarnata* is safer herbal medicine in anxiolytic disorders (Akhondzadeh *et al.*, 2001).

EGb 761 (*Ginkgo biloba* extract) is evaluated for both preclinical and clinical trials. Administration of ginkgo supplementation in the patient of generalized anxiety disorders significant reduced anxiety scores compared to placebo. Moreover, the antioxidant and neuroprotective properties of *Ginkgo biloba* extract may contribute to its anxiolytic action (Woelk *et al.*, 2007).

Chandrasekhar *et al* explained in their study that *Withania somnifera* reduce stress and anxiety through hypothalamic pituitary adrenal axis modulation. Clinical trials report that standardized ashwagandha extracts significantly reduce stress-related anxiety (Chandrasekhar *et al.*, 2012). *Melissa officinalis* has revealed that *Melissa officinalis* has promising effect on anxiety and mood in human trials. These effects may be due to its GABAergic activity (Cases *et al.*, 2011).

Conclusion

Medicinal plants and their active phytoconstituents are commonly used to treat several ailments in animal and human beings. The previous studies support the current study that medicinal plants have potential anxiolytic effects.

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