ISSN: 2320 - 4230

Journal of Drug Discovery and Therapeutics 1 (7) 2013, 80-83

REVIEW ARTICLE

REVIEW ON VETIVERIA ZIZANIOIDES: A MEDICINAL HERB.

***Satya Prakash Singh, Satish Kumar Sharma, Tanuja Singh, Lalit Singh**
Sunder Deep Pharmacy College, Ghaziabad, UP, India

Received 28 June 2013; Revised 07 July 2013; Accepted 10 July 2013

ABSTRACT
About 80% of the world's population uses folk medicine in traditional medicine states World Health Organisation. India is one of the richest countries in the world with regard to diversity of medicinal plants.
Herbal medicines are very cheap in comparison with the conventional form of medication. They can be found very easily from a local drug store. One of the greatest benefit associated with herbal medicine is the non existence of side effects. the plants are commercial medications used for the treatment of heart disease, high blood pressure, pain, asthma, and other problems. Vetiveria zizanioides widely used as analgesic, anti-inflammatory and antipyretics and other problem. There are many activity have been done in this plant such as antioxidant, antimicrobial. Antibacterial, anthalminitic, Antifungal.and more activity of this plant are unknown.such activity is analgesic and anti inflammatory. The present review article provides an overview on potent pharmacological properties exhibited by this plant.

KEYWORDS: Herbal, *vetiveria zizanioides*, *Khas khas,* essential oil, potent pharmacological properties.

INTRODUCTION:

Vetiveria zizanioides (Linn.) Nash, a member of the family "Poaceae" commonly known as the *Khas-Khas*, *Khas* or *Khus* grass in India, its synonymously known as "*Chrysopogon zizanioides" it* is a perennial grass with thick fibrous adventitious roots which are aromatic and highly valued. This tufted grass grows throughout the plains of India ascending up to an elevation of 1 200 m. Having wide ecological amplitude, this grass grows in a wide variety of ecological habitats covering all bio-geographic provinces of India. No wonder that this is one grass which has been extensively used by almost all the tribes. *Vetiveria zizanioides* is a densely tufted grass with the culms arising from an aromatic rhizome up to 2m tall; the roots are stout, dense and aromatic; leaves are narrow, erect, keeled with scabrid margins; it is found throughout the plains and lower hills of India, particularly on the riverbanks and in rich marshy soil.

CULTIVATION:

Khas grass grows wild in many states, namely Haryana, Uttar Pradesh, Rajasthan, Gujarat, Bihar, Orissa and Madhya Pradesh and throughout South India. It is systematically cultivated in the North Indian states of Rajasthan, Uttar Pradesh and Punjab and in the South Indian states of Kerala, Tamil Nadu, Karnataka and Andhra Pradesh. The yield from the cultivated crops, however, meets only a very small percentage of the requirements of the country. The bulk of the roots used for cooling purposes and for the extraction of the oil are obtained from the wild.

Figure 1: vetiveria zizanioides

***Corresponding author:** *Satya Prakash Singh* **| Email:** *satyaprakashsingh286@gmail.com*

Dialect/language	Vernacular name
Hindi, Bengali	*Khas, Khas-Khas, Khus-Khus, Khus*
English name	*vetiver*
Gujarati	*Valo*
Marathi	*Vala*
Telugu	*Kuruveeru, Vettiveellu, Vettiveerum*
Tamil	*Vattiver*
Kannad	*Vattiveeru, Laamancha, Kaddu, Karidappasajje Hullu*
Malyalam	*Ramaccham, Vettiveru*
Ayurvedic	*Ushira*

Table 1: Some vernacular names for *Khas* grass in India:

CHEMICAL CONSTITUENTS:

The chemical constituents present in the plant are Vetiverol, Vetivone, Khusimone, Khusimol, Vetivene, Khositone, Terpenes, Benzoic acid,Tripene-4-ol, ß-Humulene, Epizizianal, vetivenyl vetivenate, iso khusimol , ß-vetivone, vetivazulene. In the roots, the main component was valencene (30.36%), while in the shoots and leaves, they were 9-octadecenamide (33.50%), 2,6,10,15,19,23-hexamethyl-2,6,10,14,18,22-tetracosahexaene (27.46%), and 1,2-benzendicarboxylic acid, diisooctyl ester(18.29%). The results showed that there were many terpenoids in the volatils. In shoot volatiles, there existed 3 monoterpenes, 2 sequiterpenes and 1 triterpene. Most of the volatiles in roots were sesquiterpenes.(Ying Yong Sheng Tai Xue Bao 2004 Jan ;15(1) :170 -2.)

MEDICINAL USE OF VETIVERIA ZIZANIOIDES:

Various tribes use the different parts of the grass for many of their ailments such as mouth ulcer, fever, boil, epilepsy, burn, snakebite, scorpion sting, rheumatism, fever, headache, etc.

Apart from the medicinal uses, the culms along with the panicles form a good broom for sweeping. The culms and leaves are also extensively used by the tribes and villagers for thatching their huts, mud walls, etc. Some tribes (in Kerala) use the mats of the roots and leaves as bed for a cooling effect.

MULTIPLE USES OF *KHAS* GRASS IN INDIA:

- Traditional medicine
- Roots as water flavouring agent
- Root mats for door, window screens during summer for cooling effect
- For desert coolers in summer in North India
- As eco-friendly soil binders
- Roots for preparing *Sharbat* (sherbet) or soft drink during summer, especially in North India
- Socio-economic life of the rural population in India
- Dried roots for scenting clothes
- Dried culms as brooms and for thatching
- Pulp of the plant for paper and straw board.

Plant part	Tribe	Ailment
Root decoction	Santhals	As cooling in high fever, inflammation, sexual diseases, etc
Root paste	Lodhas	Headache, fever, Ayurvedic preparation “Brihat Kasturi”, “Bhairava Rasa” for fever, diarrhoea, chronic dysentery
Root ash	Oraons	Acidity
Root juice	Tribe of M.P.	Anthelmintic
Root vapour	Tribe of varanasi	Malarial fever
Leaf paste	South Indian tribes	Rheumatism and sprain
Vetiver oil	Most tribe	Stimulant, diaphoretic and refrigerant
Root and stem juice	South Indian tribes	Boil, burn, epilepsy, scorpion sting, snakebite, and mouth ulcer

Table 2: Some traditional uses of *Vetiveria zizanioides-(14)*

PHARMACOLOGICAL USE OF *VETIVERIA ZIZANIOIDES:*

The roots are aromatic, antifungal action(Dixit A et al 1984) cooling, antiemetic, diaphoretic, haemostatic, expectorant, *diuretic*(Chen F et al Dec 2005) ,stimulant, hysteria ,insomnia, skin diseases,(Thakur R.S. et al 1989)asthma, amentia, amenorrhoea, antispasmodic(aon

1976) ,kidney problems(Chen F et alDec 2005), gall stones, mosquito repellant (Nuchuchua et al)tonic and antioxidant.(V S Ubhradevi et al April 2010),(Luqman S kumar et al Feb 2009).

TAXONOMICAL POSITION OF VETIVERIA ZIZANIOIDE:

Botanical Name(s):	Vetiveria Zizanoides
Family Name:	Poaceae
Kingdom:	Plantae (Plants)
Subkingdom:	Tracheobionta (Vascular Plants)
Superdivision:	Spermatophyta – Seed plants
Division:	Magnoliophyta (Flowering plants)
Class:	Liliopsida (Monocotyledons)
Subclass:	Commelinidae
Order:	Cyperales
Family:	Poaceae (Grass family)
Genus:	Vetiveria Bory (vetivergrass)
Species:	Vetiveria zizanioides (L.) Nash (vetivergrass)
Popular Name(s):	Khas Khas, Cuscus and Vetiver
Parts Used:	Roots and Essential oil
Habitat:	Cultivated in plains and low hills of India.

KNOWN PHARMACOLOGICAL ACTIVITIES:

1. ANTIOXIDANT ACTIVITY:

The essential oil of vetiver root has been shown to posses antioxident activity. Recently antioxidant activity of vetiver oil has been attribute to β-vetinine, β-vetinone and α-vetinone7.

Vetiveria zizanioides useful in the rehabilitation of metalliferous mine wastelands. As the presence of pb and zn greatly enhanced the activity of superoxidase dismutase (SOD), peroxidase (POD), catalase (CAT)4 implying different mechanism to detoxify active oxygen species exist in different part of the plant(10). These result shows that vetiver oil and some of its component can be potential alternative natural antioxidants

2. ANTIBACTERIAL ACTIVITY:

Micro organisms are heterogeneous group of several distinct classes of living beings. Bacteria are prokaryotic microorganisms, which do not contain chlorophyll. They are unicellular and does not show true branching, expect in the so called higher bacteria (*Actinomycetales*)2. To treat chronic and infectious diseases plants used in traditional medicine contain a wide range of ingredient(5). Many plant leaves have antimicrobial principles such as tannins, essential oils, and other aromatic compounds(7).

The test organisms used were *Escherichia coli* NCIM 2118; *Bacillus subtilis* NCIM 2063, *P. aeurogenosa* NCIM 2036 and *Staphylococcus aureus* NCIM 2079. *Vetiveria zizanioides* (vetiver) against *Staphylococcus aureus, Streptococcus pyogenes, Escherichia coli* and *Corynebacterium ovis* were evaluated. Against *S. aureus,* vetiver oil was superior to the other two oils in the pure state and diluted with dimethyl sulphoxide 1:10, 1:100, 1:1000 and 1:10000; inhibition by the pure oil was 60-70% that by penicillin or streptomycin.

3. ANTIFUNGAL ACTIVITY:

The test organisms used were *Asperigulls nigar, Asperigulls clavatus and Candida albicanus.* All the stock cultures were obtained from Microbiology department Karpagam University, Coimbatore, India.

4. ANTITUBERCULAR ACTIVITY:

Extracts and fractions were evaluated for antimycobacterial activity against Mycobacterium tuberculosis H(37)Rv and H(37)Ra strains using radiometric BACTEC 460 TB system. The ethanolic extract of intact as well as spent root were showed potent antituberculosis activity at a minimum concentration of 500µg/mL

CONCLUSION:

This study is undertaken medicinal plants (vetiveria zizanioides) used in the treatment of analgesic and anti-inflammatory activity in different parts of the world. The present study revealed anti-inflammatory and analgesic activity of some medicinal plants.

In conclusion, the medicinally important plant species, listed in the present paper appear to be promissory sources of anti-inflammatory and analgesic agents. The future outlook for the development of new antiinflammatory drugs derived from these medicinal plants is therefore positive and this review can help others to explore herbs to further extent and its use in various other disease and toxicity studies along with clinical trials.

ACKNOWLEDGMENTS:

I extend my sincere thanks to libraries, NISCARE, NML and BHU in collecting the data and I am thankful to my teachers for my guidance.

REFERENCE:

1. *Anon*. 1976. The Wealth of India 10: 451-457. CSIR, New Delhi, India
2. *Ananthanarayanan R and Paniker CKJ* (2000). Text book of microbiology 6th ed. Orient Longman private limited: 7-22.

3. *Dikshit, A. and Husain, A.* 1984. Antifungal action of some essential oils against animal pathogens. Fitoterapia 55: 171-176

4. *Han L, Zhang X and Liu B*(2005) Ying Yong Sheng Tai Xua Bao 16, 2178-2182

5. *Hassan A, Rahman S, Deeba F and Mahmud S*. Antimicrobial activity of some plant extracts having hepatoprotective effects. J medicinal plant research, 2009. 3 (1), 020-023.

6. *Jayaraman S, Manoharan M S and Illanchezian S*. *In vitro* antimicrobial and anti tumor activities of *Stevia rebaudiana.* Tropical J Pharmaceutical Research, 2008. 7(4), 1143-1149

7. *Kim H J, Chen F, Won X, Chung H Y & Zin J* (2005) J agric food chem. 53, 7691-7695.

8. *Luqman S, Srivastava S, Darokar M P, Khanuja S P S*, Pharma Biol 43,2005,732-73

9. *Singh, K.K.; and Maheshwari, J.K*. 1983. Traditional phytotherapy amongst the tribals of Varanasi district U.P. J. Econ.Tax. Bot. 4: 829-838

10. *Pang J, Chan G S, Zhang J,Liang J,&Yong M H* (2003) chemosphere 52,1558-1580.

11. *Thakur, R.S.; Puri, H.S.; and Akhtar, H*. 1989. Major Medicinal Plants of India, pp. 521-7. CIMAP, Lucknow, India

12. *vertiveria zizanioides* online available from URL:*http//*www.herbal online pharmacy.com

13. *Ying Yong Sheng Tai Xue Bao* 2004 Jan ; 15(1) :170 -2

14. *R. R. Rao and M. R. Suseela* National Botanical Research Institute Lucknow, India 1-4.