

AN AYURVEDIC DRUG REVIEW -KAPIKACCHU (*MUCUNA PRURIENS*)Dr. Himani Purohit*¹ and Dr. Omprakash Sharma²¹PG Scholar Deptt of Dravyaguna, Sriganganagar College of Ayurvedic Science & Hospital, Tantia University, Sriganganagar – 335001, India.²Professor Deptt of Dravyaguna, Sriganganagar College of Ayurvedic Science & Hospital, Tantia University, Sriganganagar – 335001, India.

*Corresponding Author: Dr. Himani Purohit

PG Scholar Deptt of Dravyaguna, Sriganganagar College of Ayurvedic Science & Hospital, Tantia University, Sriganganagar – 335001, India.

Article Received on 19/01/2019

Article Revised on 09/02/2019

Article Accepted on 02/03/2019

ABSTRACT

Humans are using natural products from thousands of years. Plant- based drugs have formed the basis of traditional medicine systems that have been used for centuries in many countries such as China and India.^[1] Today herbal drugs continue to play an essential role in health care. It has been estimated by the World Health Organization that 80% of the population of the world rely mainly on traditional medicines for their primary health care.^[2] *Kapikacchu* (*Mucuna pruriens* Linn.) is the most popular drug in Ayurvedic system of medicine. *M. Pruriens* are generally used to treat impotence. The aphrodisiac properties of the plant of the legume family improve the quality and quantity of the sperm.^[3] and useful in diabetes mellitus^[4] and cancer^[5] whereas the seeds have multi-diversified functions like several free radical mediated diseases management, rheumatoid arthritis, diabetes, atherosclerosis, nervous disorders, analgesic, antipyretic activity and in the management of Parkinsonism^[6]. The most important of these bioactive compounds of plants are alkaloids, flavonoids, tannins and phenolic compounds^[6]. Here the present review study is an attempt to provide reported detail information of this herb from various *samhitas* and its study in modern area like its phytoconstituents and pharmacological activities.

KEYWORDS: *Kapikacchu*, *Mucuna pruriens*, Aphrodisiac, Alkaloids, Phytoconstituents.

INTRODUCTION

Kapikacchu or *Mucuna* is famous for its powerful aphrodisiac as it is well known to increase the sperm count and to increase testosterone levels in the body as well. *Kapikacchu* is an agent that helps the body in building up the mass as well as endurance and also helps the body to increase the muscular strength. It is very commonly known as athletes friends as many sports person uses these supplements to enhance their body performance. This herb helps in reducing the fats in the body and side by side helps in increasing the muscle mass in the body. This herb is also promoting the mood for sexual indulgence thereby increases the libido power and is also beneficial for people who are undergoing depression. This drug mentioned in the Ayurvedic classic of different book.

Nirukti of *Kapikacchu*

Kapi: - It causes purities for monkeys if monkeys sit on the trees where this creeper is twining around the stem, the pods may produce itching (*Kacchu*) on hip of monkeys.^[7]

Scientific Classification^[8]Botanical name -*Mucuna pruriens*Kingdom -Plantae
Division -Magnoliophyta
Class -Magnoliopsida
Order -fabales
Family -Fabaceae
Trib -Phaseoleae
Genus -*Mucuna*
Species -*Mucuna pruriens* (L.)

Parts used – Seed

Vernacular names^[9]The regional names of *Kapikacchu* in India are shown belowSanskrit - *Atmagupta*, *Kapikacchu*, *Kapiloma*,*Kapi*, *Markati*, *Vanari*

Hindi - Kevanch, Kaunch

Gujarati - Kavach

Marathi - Khaja-Kuhali

Tamil - Amudari

Telgu - Pilli-addu

Kannada - Nasugunni

Malayalam - Nayakkuruna

Ayurvedic Properties

Ras : Madhur, Tikta

Guna: Guru, Snighdha
 Veerya: Ushna
 Vipaak: Madhur
 Karma: Vatahar and Pittahar

Synonyms - Description of plants through synonyms reveals the morphology, properties, and indication etc. of plant.

Table 1: The drug *hasroma* (hairs) on its pods and the monkeys also have hairs on their body. Due to this similarity of *roma* (hairs), above synonyms are given to *Kapikacchu*:

Pradhana Nama (Main Name) *Kapikacchu*, *Atmagupta*
Upama (Representative) *Kapikacchu*, *Kapiloma*, *kapi*,
Markati, *Vanari*
Svarupa (Morphology) *Roma-valli*, *Adhyand*
Rrusyaprokta,
 Due to self protecting nature *Atmagupt*, *Svayangupta*,
Svagupta, *Gupta*
 According to *Karma* (action) *Shoth*, *Dusparsha*, *Vrisya*,
Harsini, *Kandura*

Botanical Description

Mucuna pruriens is a semi woody annual or more often perennial twinner producing from its prenniating root system, with slender terate branches that when young are usually clothed with short whitish hair but becomes glabrescent or only slightly hairy when mature.

Leaves: - Fairly large pinnately trifoliolate, alternate about 1/5th inches long. Leaflets- 3 to 4 inches long. Leaves covered with fine lustrous or silvery grey hair beneath.

Flowers: - Short stalked large, dark or lurid purple turning dark when dry with bracts and bracteoles pedicles-short, usually shorter than the calyx.

Fruit

A turgid explosively dehiscent pod; two to three or four inches long and about half an inch broad slightly facetely curved of both ends. Fruit containing 4 to 6 or more seeds with septa or partitions between the seeds.

Seeds: - Ovoid or transversely oblong slightly laterally compressed with polish dark, brown or black or occasionally mottled testa. Thickness of seed about – 0.5 mm Hilum is prominent white to pale yellow, somewhat oblong and little less than half of the length of the seed.

Distribution^[8]

Found wild throughout India from Himalayas to cape camorin in the plain district and upto 3000ft. elevation in the hills. It is common in Bengal, Assam, Khasi hills and Deccan as well as in the east and west coast region.

Phytochemical Properties

Seeds of *mucuna pruriens* are known to produce the unusual nonprotein amino acid 3-(3, 4-dihydroxyphenyl)-1-1-alanine (L-Dopa).^[12] It also

contains glutathione, Gallic acid and betasitosterol. It has unidentified bases like mucunine, mucuna and dine, prurienine, prurieninine. Other bases isolated from the pods, seeds, leaves and roots include indole-3-alkylamines-N, Ndimethyltryptamine. Leaves also gave 6 methoxyharman. Serotonin is present only in pods. The seeds also contain oils including palmitic stearic, oleic and linoleic acids.^[13] GC-MS analysis showed the presence of photochemicals like nhexadecanoic acid (48.21%), squalene (7.87%), Oleic acid (7.62%), ascorbic acid (3.80%) and Octadecanoic acid (6.21%) were present in the extract.^[14] The seed also two tetrahydroquinoline alkaloids namely (-) 3-methoxy-1, 1-dimethyl-6, 7- dihydroxy-1,2,3. 4- tetrahydroquinoline and (-) 3- methoxy-1, 1-dimethyl-7,8-dihydroxy-1,2,3,4-tetrahydroquinoline.^[15] It also contains serotonin (5 hydroxy tryptamine, 5-HT), 5-hydroxy tryptophan (5-HTP), nicotine, N, N-dimethyltryptamine(DMT), bufotenine, and 5- imethoxy- N,N-dimethyl tryptamine (5-MeO-DMT) 5- imethoxy-N,N- dimethyl tryptamine-n-oxide (5- MeO-DMT-n-oxide). The mature seeds of the plant contain about 3.1-6.1% L-DOPA, with trace amounts of serotonin, nicotine, Bufotonine, 5- MeO-DMT-n-oxide, and beta-carboline. The leaves contain about 0.5% L- DOPA, 0.006% DMT, 0.0025% 5-MeO-DMT and 0.003% DMT n-oxide.

Pharmacological Actions

Antivenom activity: Fung et al (2010) investigated antivenom activity of seeds where there was reduction in neuromuscular and cardiovascular depressant effects of *Naja Sputatrix* venom in rats which was pretreated with *M. Pruriens* seed.^[20] The same group of researchers also described similar effects against *Calloselasma rhodostoma* venom. Where *M. Pruriens* aqueous extract was given intra-peritoneal for 3 weeks. After 3 weeks, *Calloselasma rhodostoma* venom was administered intravenous and studied various pharmacology parameters like blood pressure, heart rate, respiratory rate and muscle twitch tension in rats. All pharmacological responses were found to be decreased in treated groups with respect to control group.^[17] Seed part showed strong antivenom activity which might be due to presence of higher amount of phytochemicals.

Hypoglycemic Activity: The hypoglycaemic activity of seeds aqueous extract was evaluated using streptozotocin induced diabetic, normal and glucose load condition rat models. The seed extract of *M. Pruriens* at doses of 100 and 200mg/kg body wt. reduced oral glucose load from ~ 127 to 75mg% after 2 h of oral administration. In another experiment there was reduction of blood glucose from ~ 250 to 90mg% in streptozotocin diabetic rats after 21 days.

The previous investigation suggested that the antidiabetic activity may be due to its dietary fiber content.^[17] It is reported that cholesterol, urea and creatinine is responsible for increase the blood glucose level. They observed that both cholesterol and creatinine levels were

decreased in streptozotocin diabetic rats in similar experiment. They explained that this hypocholesteric activity is due to presence of squalene content.^[18]

Aphrodisiac Activity: In this study *Kapikacchu Churna* effectively raised the sperm count. The results on sperm count found highly significant. It also showed good improvement in other seminal parameter like Volume of semen, Ph of semen motility of sperms etc. It showed mild significant result in Non progressive sperm (NP) and Not significant in Slow linear progress of sperm (SLP). It also significantly increased the sexual desire, penile rigidity, erection and duration of ejaculation with orgasm.^[19]

Antioxidant Activity: The various parts of this plant contain total phenols which might have antioxidant activity.

The similar findings were observed for this plant where free radical scavenging activity was evaluated via nitric oxide scavenging method. The alcohol extract showed significant antioxidant activity which was comparable with standard ascorbate and total phenol content.^[20]

Antimicrobial Activity: The methanolic extract at whole plant had antimicrobial properties against gram +ve and gram -ve organism. This extract is mainly effective against *Escherichia coli*, *Salmonella typhi*, *Bacillus subtilis* and *Shigella Salmonella typhi*, *Bacillus subtilis* and *Shigella dysenteriae*. The antimicrobial potency was evaluation by zone of inhibition (ZI) where *Escherichia coli* showed higher ZI (2.8cm) than *Bacillus subtilis* ZI (2.1cm).^[21]

Antiparkinson's Activity: Its seeds contain levodopa, a direct precursor of the neurotransmitter dopamine; it has shown to be as effective as pure levodopa /carbidopa in the treatment of Parkinson's diseases.

Types of Kapikacchu

Two types of *Kapikacchu Bija* are described as wild and cultivated.

-Wild variety has better utility in clinical practice than cultivated

-According to seed colour, two types are explained by some authors as *Sveta Bija* (white seed) and *Krisnabija* (Black seed).

Table 2: Samanya karma Of Kapikacchu (Actions mentioned in various Ayurveda Texts).^[24-26]

Karma	C.S.	S.S.	A.S.	B.N.	SO.N.	R.N.	D.N.
<i>Balya</i> (Strengthening)	+			+			
<i>Brmhna</i> (Nourishment)			+	+			
<i>Hridya</i> (Cardiotonic)			+				
<i>Purisavirajaniya</i> (To form normal stool)	+						
<i>Sukrakara</i> (Spermatogenic)					+		
<i>Vajikara</i> (Aphrodisiac)				+		+	
<i>Vrisya</i> (Aphrodisiac)		+		+	+	+	+
<i>Yonisankirmikara</i>				+			

Some Important Preparation

- *Vanari vatika*
- *Ashwagandha ghrita*
- *Shatavari modak*
- *Kameshwar modak*
- *Mahakameshwar modak*
- *Rativallabh modak*
- *Godhumadhya ghrita*
- *Mopharava*^[26]

Adulteration

Adulteration was not common but other varieties of *Mucuna pruriens* are used at different parts of India among them *Mucuna utilis* is commonly using as a substitute.

Therapeutic Uses

- *Vatavyadhi* (e.g. Parkinsons disease)
- Worms – The hair on fruit of *Kapikacchu* with jiggery
- *Mucana* helps in improving the libido.

- *Kapikacchu* helps in making our nervous system work to the optimum level.
- It is very helpful in increasing the muscle mass of the body naturally.
- Very beneficial in increasing the sperm count when using with milk and sugar.
- Increases the stamina in the body.
- It significantly ameliorates psychological stress and seminal plasma lipid peroxide levels along with improved sperm count and motility.^[27]

CONCLUSION

Kapikacchu is one of the most powerful *Rasayanas* in *Ayurveda*. *Kapikacchu* is a nutritive tonic commonly used in *Ayurveda* as an aphrodisiac and to support proper function of the reproductive system. It increases sexual energy and strengthens and tones the reproductive organs. In men, *kapikacchu* supports potency, stamina and control. It increases the sperm population by improving the testosterone level. In women it promotes a healthy libido and fertility. The vitality bestowed by

kapikacchunourishes the entire body and calms thenerves making it an excellent rejuvenator for vata. It is also natural source of levodopa (L-dopa) which is an essential precursor to the neurotransmitter dopamine. So, it can be proved that a magical drug due to its multidirectional work.

REFERENCES

- Balandrin NF, Kinghorn AD, Farnsworth NR. ACS Symposium Series, 1993; 534: 2-12.
- Farnsworth NR, Akerele O, Bingel AS, Soejarto DD, Guo Z. Bulletin WHO, 1985; 63: 965-972.
- Buckles D. Velvet bean: a new plant with a history. Econ Bot, 1995; 40: 13-25.
- Bhaskar A, Vidya VG, Ramya M. Hypoglycemic effect of *Mucuna pruriens* seed extract on normal and streptozotocin -diabetic rats. Fitoterapia, 2008; 79: 539-543.
- Sathiyarayanan L, Arulmozhi S. *Mucuna pruriens* Linn. A comprehensive review. Pharmacology Review, 2007; 1: 157-162.
- Bhaskar A, Nithya V, Vidhya VG. Phytochemical evaluation by GC-MS and antihyperglycemic activity of *Mucuna pruriens* on Streptozotocin induced diabetes in rats. Journal of Chemical and Pharmaceutical Research, 2011; 3(5): 689- 696.
- Dravya Guna Vijyana: - P.V. Sharma, Part 1, 2 Ed., 1998. 569-571.
- http://en.wikipedia.org/wiki/Mucuna_pruriens [cited, 2008 May 21].
- Bhrmhashankara Shastry, Bhavaprakasha with Vidyotini Hindi Commentary Chaukhambha Sanskrit Sansthana, Varansi Ed., 1988; 356-358.
- K.C. Chunekar, G.S.Pandey, Bhavaprakash Nighantu with Vidyotini Hindi Commentary, Chaukhambha Sanskrit Sansthana, Varansi, Reprint, 2009; 356-58.
- Dhanvantray Nighantu: - Edi. By P.V. Sharma, Ed., 1982; 43.
- Lorenzetti E, MacIsaac S, Arnason JT, Awang DVC, Buckles D. The phytochemistry, toxicology and food potential of velvet bean (*Mucuna Adans* spp., Fabaceae) Cover crops of West Africa: contributing to sustainable agriculture. IDRC, Ottawa, Canada & IITA, Ibadan, Nigeria, 1998; 57.
- Mishra L, Wagner H. Lipid derivatives from *Mucuna pruriens* seeds. Indian journal of chemistry, 2006; 45(B): 801-804.
- Bhaskar A, Nithya V, Vidhya VG. Phytochemical evaluation by GC-MS and antihyperglycemic activity of *Mucuna pruriens* on Streptozotocin induced diabetes in rats. Journal of Chemical and Pharmaceutical Research, 2011; 3(5): 689- 696.
- Misra L, Wagner H. Alkaloidal constituents of *Mucuna pruriens* seeds. Phytochemistry, 2004; 65: 2565-2567.
- http://www.rain-tree.com/nescafe-22_chemicals.pdf [cited 2001 Mar 8].
- Fung SY, Tan NH, Sim SM, Marinello E, Guerranti, Aguiyi JC. *Mucuna pruriens* Linn. Seed extract pretreatment protects against cardiorespiratory and neuromuscular depressant effects of *Naja sputatrix* (Javan spitting cobra) venom in rats. Indian Journal of Experimental Biology, 2011; 49: 254-259.
- Liu Y, Xu X, Bi D, Wang X, Zhang X, Dai H. Influence of squalene feeding on plasma leptin, testosterone & blood pressure in rats. Indian Journal of Medical Research, 2009; 129: 150- 153.
- Dr. Suresh R. Jadhao, "Physiological study of *Shukravaha Srotas* and clinical study of *kapikacchu Churna* in *Klaibya* with special Ref. to oligozoospermia" (Thesis), PG Dept. Of Sharir kriya, NIA Jaipur, 2013; 141-145
- Kumar DS, Muthu AK. Free radical scavenging activity of various extracts of whole plant of *Mucuna pruriens* (Linn): An in-vitro evaluation. Journal of Pharmacy Research, 2010; 3(4): 718- 721.
- Kumar A, Rajput G, Dhatwalia VK, Srivastav G. Phytocontent Screening of *Mucuna* Seeds and Exploit in Opposition to Pathogenic Microbes. Journal of Biological & Environmental Sciences 2009, 3(9): 71-76.
- Katzenschlager R, Evans A, Manson A. *Mucuna pruriens* in Parkinson's disease: a double blind clinical and pharmacological study. Journal of Neurology, Neurosurgery and Psychiatry, 2004; 75: 1672-1677.
- Vd. Bhagavandas, material medica of indo-tibetan medicine, classics Indian publication, new delhi ed., 1987; 107-108
- Arunadatta and Ayurvedarasayana of Hemadri, H.S.Paradakara, Ashtanga Hridaya with the Commentaries Sarvangsundara Chaukhambha Orientalia, 9th Ed, 2002; 234.
- Kaviraj Atridev Gupta, Astanga Samgraha, with Hindi Commentary Vol. 1 & 2, By Krishnadas Academy, Varansi, 2002; 136.
- Prof. Siddhinandan Mishra, Bhaishjyarnavali with Hindi Commentary Siddhiprada, Chaukhambha Surbharti Prakashan, Varanasi, 2011; 1141-1149.
- A.K. Nadkarni, Indian Materia Medica, Popular Prakashan Pvt. Ltd. Bombay, 1976; 818-820.
- Kapikacchu* contributed to improve anti Parkinsonism activity and creates tolerability in animals Indian drugs, 1996; 33-9: 465-472.
- Katzenschlager R, Evans A, Manson A. *Mucuna pruriens* in Parkinson's disease: a double blind clinical and pharmacological study. Journal of Neurology, Neurosurgery and Psychiatry, 2004; 75: 1672-1677.
- Shukla KK et al. *Mucuna pruriens* reduces stress and improves the quality of semen in infertile men. eCAM, 2010; 7(1): 137-144.