EDUZONE: International Peer Reviewed/Refereed Multidisciplinary Journal (EIPRMJ), ISSN: 2319-5045
Volume 13, Issue 1, January-June, 2024, Available online at: www.eduzonejournal.com

'' Ancient Review Study on Drug Kapikacchu (Mucuna Pruriens Linn.) ''

Dr Arun Rangrao Deshmukh[1], Dr Dipak Dadarao Pawar[2], Dr Dipak Sahebrao Dhone[3], Dr Meer Faisal Ali Meer Tilawat Ali Syed[4]

[1]Professor, Dravyagun Vigyan Department, Dr. Rajendra Gode Ayurved College Hospital and Research Centre, Amravati
[2]Lecturer, Dravyagun Vigyan Department, M.U.P. Ayurved College Hospital and Research Centre, Degaon Risod
[3]Lecturer, Dravyagun Vigyan DepartmentMahila Utkarsh pratishthan Ayurved College Hospital and Research Centre, Degaon, Risod
[4]Lecturer, Bal Rog Department M.U.P. Ayurved College Hospital and Research Centre Degaon Risod

ABSTRACT

Research is the unveiling of facts about a particular object or thing substantiated bycurrent available scientific tools. Drug research, which is an integral part of Ayurveda, is one of the important divisions in the field of research, which is ever progressing without frontiers. Now, the total world is seeing at our herbal drug to get relief from uncurable ailments. Modern people are gradually budging towards Ayurvedic herbal drugs because of their endurable effect and relative safety compared to modern synthetic drugs. Now, the developed countries are recognizing the efficacy of the herbal drugs and segregating different active principles from a single drug to get beneficial effects in dreadful diseases. Vrsya karma is defined as a therapy for getting sexual urge and energy like a horse. According to Carkapani, Vajikarana increases the capacity to perform the Coitus, increases the quality and quantity of the Sukra and helps in timely ejaculation of Sukra, which is productive. The drugs which stimulate or augment this effect are called as Aphrodisiacs. All important Ayurvedic texts available today have given due importance to aphrodisiacs, role of these drugs may be to tone up the body by restoring physiology. They may be having nutritive value or may contain volatile oils or may be affecting the neuro-muscular system.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] Kapikachhu (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-diversefied 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, karma

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. Kapikacchu is a tropical legume. The plant is notorious for the extreme itchiness it produces on contact, particularly with the young foliage and the seed pods. It has value in agricultural and horticultural use and has a range of medicinal properties.

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]

History

- Veda : No reference has been mentioned in Vedic literature regarding the drug Kappikacchu .
- Caraka Samhita : Acarya Caraka included this drug in different Balya and Vrsya yogas. Total 29 references are traced in this Samhita regarding the drug.
- Susruta Samhita: Property of Kapikacchu-bija was mentioned first time separately by Acarya
- Susruta (Su.Su.46/36), in total 9 references are found in Samhita.
- Astanga Samgraha & Astanga Hrdaya : Both these Samhitas included the drug under
- Vidaryadi varga (AS.Su.16/2; AH.Su.15/9). They also used this drug in different Vrsya yogas.
- Dhanwantari Nighantu: Includes this drug under Guducyadi varga also explained its Vrsya
- property along with other actions.
- Kaiyadeva Nighantu : This Nighantu described the drug under Ausadhi varga with its synonyms and Vrsyadi properties.
- Sodhala Nighantu : Sodhala mentioned Vrsya property of Kapikacchu
- Bhavaprakasa Nighantu: This Nighantu included it under Guducyadi varga, along with different synonyms this explains Vrsya property of Kapikacchu bija.
- Nighantu Ratnakara : In this both synonyms and properties of Kapikacchu are mentioned.
- Adarsa Nighantu : Vaidya Bapalalji explained the drug with different synonyms and therapeutic actions under Palasadi varga.
- Kaiyadeva Nighantu : This Nighantu described the drug under Ausadhi varga with its synonyms and Vrsyadi properties.
- Sodhala Nighantu : Sodhala mentioned Vrsya property of Kapikacchu
- Raja Nighantu : It also reveals Vrsya property of the drug.
- Saligrama Nighantu : Vrsya property with synonyms is mentioned in this Nighantu.
- Nighantu Ratnakara : In this both synonyms and properties of Kapikacchu are mentioned.
- Adarsa Nighantu : Vaidya Bapalalji explained the drug with different synonyms and therapeutic actions under Palasadi varga.

Texts	GANA/VARGA	REFERENCES
Caraka	Balya Madhura Skanda Purisa Viranjaniya	Ca.Su-4/7 Ca.Vi-8/139 Ca.Su-4/32
Susruta	Vidarigandhadi Mudgadivarga Kakolyadi	Su.Su- 38/4 Su.Su- 46/36 Su.Su- 37/26
Astanga Sangraha Astanga Hrdaya	Vidaryadi Vidaryadi	A.S. Su-16/2 A.H. Su-15/9
Dhanwantri Nighantu	Guducyadi	46/159
Kaiyadev Nighantu	Ausadhi	154/11
Bhavaprakasa Nighantu	Nighantu Guducyadi	57/131
Raja Nighantu	Guducyadi	50/52
Adarsa Nighantu	Palasadi	166/453
Draya guna Viyganam (PVS)	Sukrajanaka	Page -569

Scientific Classification [8]

- Botanical name- Mucuna pruriens
- Kingdom- Plantae
- Division- Magnoliophyta
- Class-Magnoliopsida
- Family-Fabeceace
- Trib-Phaseoleae
- Genus-Mucuna
- Species-Mucuna pruriens

Parts used - Seed

Vernacular names [9]

The regional names of Kapikacchu in India are shown below:-

- Sanskrit-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 [10-11]

- Rasa : Madhura and Tikta rasa
- Guna : Guru, Snigdha.
- Virya : Ushna
- Vipaka : Madhura
- Karma : Vatahara and Pittahara property

RASA PANCAKA	REFERENCES					
	D.N.	M.N.	K.N.	B.N	RN	S. N
RASA						
Madhura	+	+	+	+	+	
Tikta	+			+	+	+
GUNA						
Guru				+		+
Shigdha				+		+
VIRYA						
Sita	+				+	
VIPAKA						
Madhura						+
DOSA						
Karma :	+	+	+	+	+	+
Vatahara				+		
Kaphara	+	+	+	+	+	+
Pittahara						

Synonyms [10-11]
Description of plants through synonyms reveals the morphology, properties, and indication etc. of plant.

The drug has roma (hairs) on its pods and the monkeys also have hairs on their body. Due to this similarity ofroma (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 Atmagupta, Svayangupta, Svagupta, Gupta
- According to Karma (action)-Shoth, Dusparsha, Vrisya, Harsini, Kandura.

BOTANICAL DESCRIPTION [7-11]

- 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 trifoliate, 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 dehiscing 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.

PHYTOCHEMICAL PROPERTIES-

- Seeds of mucuna pruriens are known to produce the ununusual nonprotein amino acid 3-(3, 4- dihydroxyphenyl)-1-alanine (L-Dopa). [12]
- It also contains glutathione, Gallic acid and beta- sitosterol. 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, N- dimethyltryptamine. 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 n- hexadecanoic acid (48.21%), sequalene (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 tetra hydroquinoline 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-dimethyl tryptamine(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,0.00

Distribution [8]
Found wild throughout India from Himalayas to cape camorin in the plain district and upto3000ft.elevation in the hills. It is common in Bengal, Assam, Khasi hills and Deccan as well as in the east and west coast region.

Cultivation:
Kapikacchu Bija is occassionaly cultivated. It is cultivated in the gardens and fields. Both the cultivated varieties have less trichomes and also had mild actions of compared to wild variety. Generally cultivated variety is used as vegetables.

कपिकच्छुर्भृशं
वृष्या मधुरा बृंहणी गुरुः ।
तिक्ता वातहरी बल्या स्निग्धपित्तबलासकृत् ॥
मात्रा- बीजचूर्ण ३-६ gm . *मूलक्काथ- २० ते ३० मिलि. रोम- १२५ ते ५००* mg
भावप्रकाश-
'' कपिकच्छूः भृशं वृष्या मधुरा बृंहणी गुरुः ।
तिक्ता वातहरी बल्या कफ पित्तास नाशिनी ।
तद्बीजं वातशमनं स्मृतं वाजीकरं परम् ॥ '' ***(भावप्रकाश)***

कपिकच्छूभवं मूलं क्काथयेत् विधिना भिषक् ।
योनिः संकीर्णतां याति क्काथेनानेन धारयेत् ॥ ***(भावप्रकाश)***
Dosha Prakriti
आत्मगुप्ता तैलम्-
'' गुरुष्णं स्निग्धमधुरं कषायं चाऽऽत्मगुप्तजम् ।
फलं बल्यं च वृष्यं च बृंहणं वातजित्परम् ॥ '' ***(धन्वन्तरि निघन्टु)***

Hypoglycemic Activity:
The hypoglycemicactivity of seeds aqueous extract was evaluate dosing streptozotocin induced diabetic, normal andglucose load condition rat models. The seed extract of M. Pruriens at doses of 100 and 200mg/kg bodywt,reduced oral glucose load from ~ 127 to75mg% after 2 h of oral administration. In another experiment there was reduction of blood glucose from ~ 250 to 90mg% in streptozotocin diabeticrats 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 hypocholestric activity is due to presence of squalene content. [18]

Antivenom activity:
Fungetal(2010) investigated antivenom activity of seeds where there was reduction in neuromuscular and cardiovascular depressant effects of Naja Sputatrix venom in rats which was pre treated with M.Prurien seed.[20]

The same group of researcher also described similar effects against Callosela smear rhodostoma venom. Where M. Pruriens aqueous extract was given intra-peritoneal for 3 weeks.After 3 weeks, Calloselasma rhodostoma venom was administered intra-venous 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.

Aphrodisiac Activity:
It also showed good improvement in other seminalparameter 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 thisplant contain total phenols which might have antioxidant activity. The similar findings were observed for this plant where free radicalscavenging activity was evaluated via nitric oxides cavenging method. The alcohol extract showed significant antioxidant activity which was comparable with standard ascorbate and total phenol content.[20]

Antimicrobial Activity:
The methanolic extract atwhole plant had antimicrobial properties againstgram +ve and gram -ve organism. This extract is mainly effective against Escherichia coli,Salmonella tcyphi, Bacillus subtilis and Shigelladysenteriae. The antimicrobial potency wasevaluation by zone of inhibition (ZI) where Escherichia coli showed higher ZI (2.8cm) thanBacillus subtilis ZI (2.1cm).[21]

Antiparkinson's Activity:
Its seeds containlevodopa, a direct precursor of the neurotransmitter dopamine; it has shown to be as effective as purelevodopa /carbidopa in the treatment of Parkinson'sdisease.[22]

Embryo toxic effect: -
Water extract of seeds administered intragastric ally to pregnant rats at a dose of 175.0 mg/kg was inactive

Fertility promotion effect :-
Dried entire plant extract taken orally by male human adult at dose of 96.0 mg/day. Total sperm count and sperm motility improved. The product contained mixture orchis mascula, Hygrophila spinosa, Lactuca scariola, Mucuna prurions, Prrmelia parlata, Argyreia speciosa, tribulus terrestis and leptadenia reticulata (Know as speman) Dosing was two tables three times daily for four days.

FSH release inhibition :-
Seed lake orally male human adults at variable dosas level was equivocal

FSH Synthesis stimulation :-
Seed taken by male human adult orally at variable dosage level was equivocal .

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). [25]

Samanya Karma of Kapikacchu
PHARMACOLOGICAL ACTIONS: (Actions mentioned in various Ayurveda Texts) [24-26]

KARMA	C.S.	S.S.	A.S.	B.N.	SO.N.	R.N.	D.N.
Balya (Strengthening)	+			+			
Brmhna (Nourishment)			+	+			
Hridya (Cardiotonic)			+				
Purisavirajaniya (To form normal stool)	+						
Sukrakara (Spermatogenic)					+		
Vajikara (Aphrodisiac)				+		+	
Vrisya (Aphrodisiac)		+		+	+	+	+
Yonisankirnikara				+			

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.

Some Important Preparation –

- Vanari vatika
- Ashwagandha ghrita
- Shatavari modak
- Kameshwar modak
- Mahakameshwar modak
- Rativallabh modak

- Godhumadhya ghrita
- Mopharava [26]

Therapeutic Uses-

- Vatavyadhi (e.g. Parkinsons disease)
- Worms – The hair on fruit of Kapikacchu with jaggery.
- Mucana helps in improving the libido.
- Kapikachhu helps in making our nervous system work to the optimum levels.
- 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 Rasayana 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 kapikacchu nourishes the entire body and calms the nerves 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.[28-30]

REFERENCES

[1]. Balandrin NF, Kinghorn AD, Farnsworth NR. ACS Symposium Series 1993; 534: 2-12
[2]. Farnsworth NR, Akerele O, Bingel AS, Soejarto DD, Guo Z. Bulletin WHO 1985; 63: 965-972.
[3]. Buckles D. Velvet bean: a new plant with a history. Econ Bot 1995; 40: 13-25
[4]. Bhaskar A, Vidya VG, Ramya M. Hypoglycemic effect of Mucuna pruriens seed extract on normal and streptozotocin-diabetic rats. Fitoterapia 2008; 79: 539-543
[5]. Sathiyanarayanan L, Arulmozhi S. Mucuna pruriens Linn. A comprehensive review. Pharmaconosy Review 2007; 1: 157-162.
[6]. 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.
[7]. Dravya Guna Vijyana: - P.V. Sharma, Part 1, 2 Ed. 1998. 569-571
[8]. http://en.wikipedia.org/wiki/Mucuna_pruriens [cited 2008 May 21].
[9]. Bhramhashankara Shastry, Bhavaprakasha with Vidyotini Hindi Commentary Chaukhambha Sanskrit Sansthana, Varansi Ed. 1988. 356-358
[10]. K.C. Chunekar, G.S.Pandey, Bhavaprakash Nighantu with Vidyotini Hindi Commentary, Chaukhambha Sanskrit Sansthana, Varansi, Reprint 2009, Page no.356-58
[11]. Dhanvantray Nighantu: - Edi. By P.V. Sharma, Ed. 1982. 43.
[12]. 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.
[13]. Mishra L, Wagner H. Lipid derivatives from Mucuna pruriens seeds. Indian journal of chemistry 2006; 45(B): 801-804.
[14]. 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.
[15]. Misra L, Wagner H. Alkaloidal constituents of Mucuna pruriens seeds. Phytochemistry 2004; 65: 2565–2567.
[16]. http://www.rain-tree.com/nescafe-22. chemicals.pdf [cited 2001 Mar 8].
[17]. 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.
[18]. 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.
[19]. Dr. Suresh R. Jadhao, “Physiological study of Shukravaha Srotas and clinical study of kapikacchu Churna in

Klaibya with
[20]. special Ref. to oligozoospermia" (Thesis), PG Dept. Of Sharir kriya, NIA Jaipur 2013; 141-145
[21]. 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.
[22]. 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.
[23]. Katzenschlager R, Evans A, Manson A. Mucuna pruriens in Parkinson's disease: a double blindclinical and pharmacological
[24]. study. Journal of Neurology, Neurosurgery and Psychiatry 2004; 75: 1672–1677.
[25]. Vd. Bhagavandas, material medica of indo-tibetan medicine, classics Indian publication, new delhi ed. 1987 107-108
[26]. Arunadatta and Ayurvedarasayana of Hemadri, H.S.Paradakara, Ashtanga Hridaya with the Commentaries Sarvangsundara Chaukhambha Orientalia, 9th Ed.2002. 234
[27]. Kaviraj Atridev Gupta, Astanga Samgraha, with Hindi Commentary Vol. 1 & 2, By Krishnadas Acadamy, Varansi, 2002. 136
[28]. Prof. Siddhinandan Mishra, Bhaishjyaratnavali with Hindi Commentary Siddhiprada, Chaukhambha Surbharti Prakashan, Varanasi 2011,1141-1149
[29]. A.K. Nadkarni, Indian Materia Medica, Popular Prakashan Pvt. Ltd. Bombay 1976. 818-820
[30]. Kapikacchu contributed to improve anti Parkinsonism activity and creates tolerability in animals (Indian drugs V.33-9; p. 465- 472, 1996).
[31]. 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.
[32]. Shukla KK et al. Mucuna pruriens reduces stress and improves the quality of semen in infertile men. eCAM. 2010; 7(1):137-144.