

# A General Review of Mucuna Pruriens W.S.R To Its Effect on Parkinson's Disease

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## Abstract

*Mucuna Pruriens is a very famous drug prescribed in classical ayurvedic science in various disorder of Nervous System including Kampavata .In Clinical Practice ,Physician used Levadopa as a Dopamine replacement agent in controlling bradykinetic symptoms apparent in Parkinson disease so used successfully in treatment of Parkinson disease.Kapikacchu(Mucuna Pruriens) is having Balya, Brimhanaha, Vrishya, and Vatahara properties and is a natural source of L-dopa. So, keeping in views of the degenerative nature of the Kampavata. Kapikacchu was selected for this study because seeds of Mucuna Pruriens are potentially of substantial medicinal importance. Mucuna Pruriens, widely known as Kapikacchu in classical Ayurvedic science, holds a prominent place in the treatment of various nervous system disorders, including Kampavata, which correlates with Parkinson's disease symptoms. In clinical practice, physicians often utilize Levodopa as a dopamine replacement therapy to manage the bradykinetic symptoms characteristic of Parkinson's disease, with successful outcomes. Kapikacchu, derived from Mucuna Pruriens, is recognized for its therapeutic properties such as Balya (strength promoting), Brimhanaha (nourishing), Vrishya (aphrodisiac), and Vatahara (pacifying Vata dosha), making it an ideal natural source of L-dopa, the precursor to dopamine. Considering the degenerative nature of Kampavata, Mucuna Pruriens was selected for this study due to the significant medicinal importance of its seeds. The seeds of Mucuna Pruriens have garnered attention in the medical community for their potential in treating various neurological conditions, owing to their rich content of L-dopa, which can effectively replenish dopamine levels in the brain. This study aims to explore the therapeutic efficacy of Mucuna Pruriens in managing Parkinson's disease symptoms and its potential as an alternative or adjunct therapy to conventional Levodopa treatment. By delving into the pharmacological properties and mechanisms of action of Mucuna Pruriens, this research seeks to provide insights into its clinical effectiveness, safety profile, and overall impact on the quality of life of Parkinson's disease patients. Through rigorous investigation and analysis, this study endeavors to shed light on the promising role of Kapikacchu in the management of Parkinson's disease and pave the way for further exploration and integration of traditional Ayurvedic medicine into modern therapeutic approaches for neurological disorders.*

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## INTRODUCTION

Basic Principle used in successful Treatment of Parkinson's disease is replacement of dopamine neurotransmitter and other drugs such as anticholinergic drug. Previously Dopamine agonists, COMT inhibitors are the drug of choice but as disease progresses these drugs slowly escalated. Along with this, these drugs are said to have some undesirable side effects also. In Parkinson disease, stereostatic surgical methods are

also advised but not practised in general because of having great risk and there are more chance of failure. Parkinson's disease continues to pose a significant challenge in the scientific community's pursuit of successful treatment. So, alternative therapy such as rejuvenative therapy prescribed in ayurveda became choice of selection as it is devoid of any side effect.

Kapikacchu is having Dhatu vriddhikara a Vatashamaka and Sukra viddhikara properties. So as per classical literature it acts against the degenerative process of kampavaat & selected as drug of choice in the condition of Dhatukshaya. Along with this it is said to have property of bringing back normal function of Indriyas, which are also impaired in pathogenesis of Kampavata. Overall Kapikacchu (*Mucuna pruriens*) is proven as having potent phytoneuron L-dopa, which is known for its antiparkinsonian property. As per classical view of treatment, Kampavata (Parkinson's disease) needs the rejuvenation in therapy for its successful treatment. Regeneration is said to be the function of Sukra Dhatu, and this is deranged in Kampavata (Parkinson's disease) too, and this can be achieved by suppliments of Vrsya, Balaya and Brmahana drugs.

## AIMS AND OBJECTIVE

### To Study Kapikacchu (*Mucuna Pruriens*) In Detail.

*Conceptual Study:* Kapikacchu is having Dhatu vriddhikara a Vatashamaka and Sukra viddhikara properties. And we require this property to be supply in treatment of kampavata. Along with this it also acts against the process of degeneration, which is one among main pathological factor in Parkinson. So advisable in the condition of Dhatukshaya. it also enhances and normalize the function of Indriyas, which are also deranged in Kampavata. In addition, Kapikacchu (*Mucuna pruriens*) having L-dopa, which is proven of having antiparkinsonian activity. Regeneration is the one among the main function of Sukra Dhatu, and this is also deranged in Kampavata (Parkinson's disease), This can be achieved by Vrsya, Balaya and Brmahana drugs. Because Balya and Vrsya drugs are known to be having rejuvenating property and promote the longevity [1]. Keeping these views in to consideration Kapikacchu was selected for this study.

### Kapikacchu History:

We find refrence of Kapikacchu in various classical text if Ayurvedic science as follows

#### Vedic Period:

- *Veda:* No reference has been mentioned in Vedic literature regarding the drug Kapikacchu
- *Samhita Period:* -
- *Caraka Samhita:* Acarya Caraka included this drug in different Balya and Vrsya yogas total 29 references are treated in this Samhita regarding this drug.
- *Susruta Samhita:* Property of Kapikacchu bija was mentioned first time separately by Acarya Susruta, in total 9 reference are found in Samhita.
- *Astanga Sangraha & Astanga Hrdaya:* Both these Samhita has included the drug under Vidaryadi Varga. They also used this drug in different Vrsya yogas.

#### Nighantu Period:

- *Dhanvantri Nighantu:* This Nighantu described the drug under Ausadhi Varga with its synonyms and Vrsyadi property along with other action.
- *Kaiyadev Nighantu:* This Nighantu described the drug under Ausadhi Varga with its synonyms and Vrsyadi properties.
- *Sodhala Nighantu:* Sodhala has mentioned Vrsya property of Kapikacchu.
- *Bhavaprakasa Nighantu:* This Nighantu included it under Guducyadi Varga, along with different synonyms, Vrsya property of Kapikacchu bija has been accepted by this Nighantu.
- *Raja Nighatnu:* It also mention Vrsya property of the drug.
- *Saligrama Nighantu:* Vrsya property with synonyms is mentioned in this Nighantu.
- *Nighantu Ratakara:* In these synonyms and properties of Kapikacchu are mentioned.

- *Adarsa Nighantu*: Vaidya Bapalaji explained the drug with different synonyms and therapeutic action under Palasadi Varga [2–3].

### Classification of the drug Kapikacchu depicts in the Table 1.

The classification of the drug Kapikacchu is tabulated below in Table No 01.

**Table 1.** Classification of kapikacchu.

Texts	GANNA/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 Hridaya	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

### Rasa Panchaka

To explain the rationality of the drug action it's Rasapanchaka must be known. The Rasapanchaka of kapikacchu are mentioned in Table No 02 [4–5–6].

**Table 02.** Rasa panchaka of kapikacchu

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						

Kapikacchu, also known as *Mucuna pruriens*, is indeed a key ingredient in classical Ayurvedic formulations aimed at treating *Kampavata*, which is a condition related to Parkinson's disease characterized by tremors and motor dysfunction (Table 3).

**Table 3.** Classical ayurvedic formulation containing kapikacchu (*mucuna pruriens*) for *kampavata*.

Drug And References	Mode of Use	Indications
1. Mashatmguptadi Kasha	Nasya	Pakshaghat Sakampanam
2. Mashashalvan Yoga	Svedan	Srva- Anilartijit
3. Atmaguptadi Yoga	Oral	Kampayakt Paksha – Vadham.
4. Mash Taila	Abhyang	Bahu Kampavata
5. Maha Masha Taila	Abhyang	Hast-shir-aatra kampa.

6. Mash Taila	Abhyang	Hast shir kampa
7. Brihat Mashadi Taila	Basti Nasya,	Hast Shir Kampa
8. Mash Taila	Basti, Paan	Hast-shir Kampa sabhujkampshirah
9. Mashadi Taila	Basti, Nasya Paan, Abhyang	Parkampam
10. Mashadi Taila	Basti, Nasya, Paan, Abhyang	Hast-Shir-Kampa Panipadhirogreena
11. Mashadi Taila	Basti, Paan, Abhyang	Bhramanme Mandchan-Krame
12. Rasna Taila Bhel	Basti, Nasya, Paan, Abhyang	Gatrakampe
13. Mashadhya Taila	Basti, Nasya, Parishek	Sabhujshirah -Parkampam

#### Analysis of seed of Mucuna pruriens gave following value (Wealth of India)

<b>Calcium</b>	<b>0.16%</b>
Ether	2.96%
Fiber	6.75%
Iron	0.02%
Mineral Matter	3.95%
Protein	25.03%
Moisture	9.1%
Sulphar and magnesium	present.

#### While the seed kernels yield 5.9% of deep brown viscous fatty oil with the following characteristic.

<b>Specific gravity</b>	<b>0.907</b>
Acid Value	22.37
Sap Value	150.1
Iodine Value	95.4
Acet. Value	110.0
R. M. Value	0.60
Polenske Value	-0.4
And unsapon matter-	10.5%

The fatty acid composition of the oil: It follows Saturated (stearic and palmitic) 22.4% unsaturated (oleic and linoleic) 76.7% the unsaponifiable matter contains Bsitosterol Defatted Kernels contain 10% lecithin [7].

*Chemical Constituents:* From the seeds (Sd) Leaf(Lf), Stem (St), Fruit(fr) and Shoot(Sh) ,various chemical constituents can be obtained. These are

- 1 Methyl 3 Carboxy -6,7-dihydroxy-1,2,3,4- Tetrahydroisoquinoton,
- 5- Hydroxytryptamine, ,
- 5- methoxy N-N-dimethyltryptamine,
- 5-Oxyindole-3- at Kylamine,
- 5-Methoxyharman,
- Dopa Sd, 0.24 – 4.80%
- Alanine, Sd 0.54 – 1.17%
- Ash, Sd 3.0-4.4%
- Aspartic acid, Sd 1.99 – 4.20%
- Choline, lt, Sd, Sh, St, rt
- Cis –12, 13-epoxyoctade- trans- 9-cis-acid, Sd

- Cis –12, 13-epoxyoctade- trans- 9-enoic-acid, Sd
- Cis-12-1-octadec – trans- 9-enoic, Sd01.0% Cysteine, Sd 1,400-2695% Gallic acid, Sd
- Glutamicacid 1.91-4.05
- Kilocalories, Sd 0.34 –0.41%
- Linolieic acid, Sd 751-30680
- Linolenic acid, Sd 265-5800
- Lysine, Sd 0.97-2.10
- Mucuna pruriens alkaloid P Sd27
- Macuna puriens alkaloid Q, Sd
- Palmitoleic acid, Sd, 0.75-1.59
- Phenylalanine, Sd 0.75-1.59
- Phosphorus Sd 0.32 – 0.47%
- Proline , Sd 0.92 – 1.96%
- Protein, Sd 15.5 – 33.1%
- Stearic acid, Sd 390-12
- Thiamin, Sd 1.4 – 5.7

### **Role of Mucuna Pruriens in Parkinson's Disease**

In recent years some of the researchers tried to evaluate the role of some Ayurvedic drugs in the management of Parkinson's disease both at clinical and experimental levels. Kapikacchu is having Dhatu vriddhikara a Vatashamaka and Sukra viddhikara properties. It opposes degeneration processes and could be advantageous in cases of Dhatukshaya. It also improves the function of impaired Indriyas observed in Kampavata. Additionally, Kapikacchu (*Mucuna pruriens*) contains L-dopa, known for its anti-Parkinsonian properties. Basically Kampavata (Parkinson's disease) needs the rejuvenation in therapy. Regeneration is the function of Sukra Dhatu, which found deranged in Kampavata (Parkinson's disease) too which can be promoted by Vrsya, Balaya and Brmahana drugs. Because Balya and Vrsya drugs restore the body elements and promote the longevity.

In experimental studies some of the Ayurvedic drugs like Kapikacchu ie *Mucuna Pruriens* Nirgundi, Varuni were showed to have the significant anti-Parkinsonism effect. In addition following research works were carried out in Jamnagar institute on this problem – studied the role of Mashabaladi Kvatha, Varuni Talia and Atmaguptadi Rasa in Paralysis agitans This combined therapy was found useful and recently in studied the role of Basti and Rasayana in management of Kampavata significant result were reported in rigidity, Bradykinesia, gait disorder and speech disorders [8]. However this therapy did not provide significant relief in tremors, studied the role of Nakula Taila in the management of Kampavata (Parkinson's disease) and significant relief in Stambha.

In contemporary medical practice, the objective of treating this condition is to relieve symptoms that disrupt the patient's daily activities and to prevent or minimize its complications, considering that Parkinson's disease is a progressive condition that can severely impair the patient's functionality [9].

Dopamine replacement therapy is the primary treatment for Parkinson's disease. Additional medications such as anticholinergic drugs, dopamine agonists, and COMT inhibitors may also be prescribed, but their dosage tends to increase gradually as the disease advances. Moreover, these drugs can cause unwanted side effects. New stereotactic surgical techniques are occasionally utilized; however, they entail significant risks and carry a chance of failure. Therefore, Parkinson's disease continues to pose a challenge to the scientific community. Consequently, there is a demand for an efficient, rejuvenative therapy that is free from any adverse effects.

### **DISCUSSION & RESULT**

Kapikacchu is having Vrsya, Brimhana, Balya, Vatahara properties. These properties of drug are helpful in the management of Kampavata, Rasakshaya, Sukrakshaya, and Ojokshaya are the condition

which play the important role in the pathogenesis of this disease. In such conditions use of Balya, Brimhana, Vrsya drugs seem to be of beneficial, so Kapikacchu was related these drugs not only check the degenerating process but also replenish the Dhatus, they cause to thrive the Rasadi Dhatus. Kapikacchu is having the qualities of Sukravardhan. But in Kampavata patient there is various type of sexual impairment evident. This role of Vrsya properties of the drug is not in need to be much discussed [10].

## CONCLUSION

Parkinson's disease persists as a significant challenge due to its debilitating effects and the lack of a definitive cure. Despite numerous research efforts in modern medicine, significant progress has been made. Several treatments, such as Carbidopa, Levodopa, and various neurosurgical procedures like thalamotomy and sub thalamotomy, as well as brain stimulation techniques like thalamic and subthalamic stimulation, are currently employed to alleviate symptoms. However, oral medication often leads to numerous undesirable side effects, while surgery carries risks, sometimes even life-threatening ones. Consequently, there is currently no therapy definitively capable of halting the progression of Parkinson's disease.

There is sufficient evidence provided by this study that Kapikacchu can be administered through both the routes i.e., oral route and by Bastiie anal route, and it has definite role in the management of Kampavata (Parkinson's Disease) from classical point of view via its rehuvenating property, shukra dhatu enhancer property etc and from modern point of view via having L Dopa.

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