# To review of Kapikacchu [Mucuna pruriens (L.) DC.] plant and seed

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***Abstract*—Mucuna pruriens Linn. is a popular Indian medicinal plant, which has been used, in traditional Ayurvedic Indian medicine for diseases including parkinsonism. According to Ayurvedic literature Kapikacchu is used as a potent aphrodisiac.Kapikacchu (Mucuna pruriens (L.) DC.) belonging to the family Fabaceae is commonly known as Velvet bean, Cowitch, Cowhage in English and Kawaanch, Kavach in Hindi. It is mainly distributed in Asia, Africa, Pacific Islands and the United State. In market two types of seeds (black and white) are available and are being used simultaneously in the name of Kapikacchu. Normally black seeds are being used for medicinal purpose. The seeds exhibit multi-systemic functions like inflammatory arthritis, diabetes mellitus, neurological disorders like parkinson's disease, fever and inflammations. [1,2] This review study is an attempted to provide detailed information about this herb collected from various Ayurvedic texts and its corelative studies through the lens of pharmacology in terms of its phytoconstituents and pharmacological actions.**

***Index Terms*—Kapikacchu, dopamine, levodopa, Mucuna**

## I. INTRODUCTION

Ayurveda is an age-old science mainly dealing with herbs and herbal formulations. As rightly mentioned by Acharya Charaka, there is no herb on this earth that does not possess medicinal value.It is our responsibility to find out more and more about the guna and karma of these herbs to make optimum utilization of available resources. However, as years passed by, Ayurvedic medicines/formulations became widely popular with a common belief to have no side effects. In previous centuries, plants have served as an inspiration for novel drug compounds. Traditional medicines, using plant extracts continues to ensure that more than 80% of people worldwide have access to health coverage, especially in the developing world (WHO, 2002)

Kapikacchu [Mucuna pruriens (L.) DC.] is very famous herbal plant of the Ayurvedic system of medicine [3, 4] generally used to treat Parkinson's disease [5], impotence, diabetes mellitus and has anti-ulcer activities as mentioned in the various Ayurvedic texts. The seeds of Mucuna pruriens (L.) DC. plants have been used as food, tonic and aphrodisiac by many tribal communities in India since many centuries. [6] Mucuna pruriens (L.) DC. seeds have multi diversified functions like several free radical mediated disease management, rheumatoid arthritis, diabetes, atherosclerosis, nervous disorder, analgesics, anti-pyretic activity and in the management of parkinsonism. seeds have been reported to be a good source of LDopa, (3, 4-dihydroxy phenyl-amine) [12], therefor demand of Mucuna pruriens (L.) DC. has increased many folds in Indian as well as international drug market. [7] Pharmacological studies have validated its various activities like anti-diabetic, aphrodisiac anti-neoplastic, anti-epileptic and antimicrobial activities. [8,9]

Its learning and memory enhancement, analgesic and anti-inflammatory, fertility and antivenom activities have also been reported scientifically. [10,11]

## II. DRUG REVIEW

review of the Kapikacchu [Mucuna pruriens (L.) DC.] has been taken right from Vedic era till date. The historical background, botanical descriptions, therapeutic indications has been mentioned in detail.The well-known medication kapikacchu [Mucuna pruriens (L.)DC.] is used in Ayurvediya literatures. It has been applied to the Vedic, Balya, and Brimhankaraka and Vatashamana. [13] It is described as Vrishya Dravya in Samhita [14] as well as Nighantus.

[19] Mucuna pruriens (L.) DC. is a tropical legume & is commonly known as Velvet bean or cowitch or cowhage or Alkushi. The plant is famous for making people very itchy when they touch it. Being one of the most well-known medicinal plant of India, it is the constituent of approximate 200 indigenous medicinal formulations. It is found abundantly in plains of India [15,16] The demand of Mucuna pruriens (L.) DC. has increased many folds in Indian as well as worldwide pharmaceutical market with the discovery of L-3, 4-dihydroxyphenyl alanine (L-Dopa). L-dopa is the precursor of the neurotransmitter dopamine and a strong anti-parkinsonian.

## III. SCIENTIFIC CLASSIFICATION OF KAPIKACCHU

| | |
|---|---|
| Kingdom | Plantae |
| Division | Angiospermae |
| Class | Dicotyledoneae |
| Order | Fabales |
| Family | Fabaceae |
| Subfamily | Papilionaceae |
| Species | Pruriens |
| Binomial name | Mucuna pruriens |

## IV. AYURVEDIC PROPERTIES

| Property | Description |
|---|---|
| RAS | Madhur, Tikta. |
| GUNA | Gurutva (heavy), Snigdhatva |
| VIRYA | Ushna (hot) |
| VIPAKA | Madhur. |
| PRABHAV | Vrushya (aphrodisiac) |
| KARMA | Vata-pittahar |

## V. COMMON NAMES

Cowitch, Cowhage, Velvet Bean, Cow-itch, Buffalo bean, velvet bean, mucuna, nescafe, podemico, fava-coceira, cabeca-de-frade, cowage, cowhage, cow-itch, bengal bean, mauritius bean, itchy bean,
krame, picapica, chiporro, buffalo bean, Bengal velvet bean, Velvet Bean, Cow-itch, Buffalo bean, velvet bean, Mucun

## VI. VERNACULAR NAMES

Sanskrit : Kapikacchu , Atmagupta
English : Common cowitch, Cowhage, Cowhedge, Cowharge
Marathi : Kavach, Kuhili, Kaunchkun, Khajkuhili.
Hindi : Kaunch, Kevach, Kavach.
Gujarati : Kounch, Kavach, Kuyeli, Kanch, Kivanch
Assami : Bandar Kekowa Bengali : Alkusa, Alkushi
Kannada : Nasugunni, Nayisonaguballi
Tamil : Poonaikkaali, Poonaippidukam, Amudari

## VII. SYNONYMS

Scientific name: - Mucuna pruriens (Linn.) DC.
Synonyms:Carpopogon pruriens, Dolichos pruriens, Mucuna aterrima, M. atropurpurea, M. cochinchinensis, M. cyanosperma, M. deeringiana, M. esquirolii, M. prurita, M. utilis, Stizolobiumaterrimum, S. deeringianum, S. pruriens, S. pruritum, S. niveum, Negretia pruriens.
Synonyms include Atmagupta, Kapikacchu, Svyamgupta, Kacchura, Kakanda, Markati, Languli, Kakandola, Kandula, Chanda, Durabhigrha, Kandura, Vyanda, Ajaharsini, Pravrsenya, Kapiromaphala, Duhsparsa, Sukasimbi, Adhyanda, Ajada, Vrishbhi, Vrishyabeeja, and others. are mentioned in Samhita and Nighantu.

## VIII. BOTANICAL DESCRIPTION

A. Roots*:* Many long, lightly woody, slightly flexible roots in a diameter of 7 mm makeup the surface, which is dark brown to black in colour and slightly rough due to oblong, noticeable lentils and a few rootlets. [17]

B. Leaves*:* Large, stipulate, alternately pinnately, and unifoliate leaves are present. Stipules are deciduous, measuring approximately 0.5 inches in length.The leaflets of the rachises are 3 to 4 inches long and 2 to 3 inches wide. The short, thick, sparingly deleted hairy stalks are ovate-rhomboid, acute or sub-acute, microwave, membranous, glamorous, and densely covered with fine lustures and silvery Gary-pressed hairs beneath. The stripes are minute and osculate. Whereas the lateral leaflets vary in unequal

mindedness and dramatically broader bottom halves, the terminal leaflets are rhomboidal and oval. [17]

C. Flowers*:* The flower heads are organized axially like panicles. They have two, three, or more flowers and are 15 to 32 cm long. The flower's stand axes range between 2.5 to 5 mm, whereas the leaves that accompanied them are roughly 12.5 mm long. The length of the silken bell is
between 7.5- and 9-mm. Shuttles and sepals have the same length. Either purple or white crown. The wings measure 2.5 to 3.8 cm in length. The flag is 1.5 millimeters long.

D. Calyx -sepals 5, gamosepalous; Calyx tube compensate; Lobes unequal.

E. Corolla- petals5, free, papilionaceous; Keel petals incurred activation descending imbricate.

F. Androceium- stamens 10, Diadelphous (9+1); Anthers dimorphic.

G. Gynoceium- superior, ovary 1- celled, ovules many on marginal plantation

H. Pods: The pods measure half an inch in width and two to three or four inches in length. These are turgid, explosively disintegrating pods that resemble a blunt, ' S,' with a little covering on both ends. The pod is densely coated in numerous short, stiff, weak, and pointy hairs that are not easily separated.
The hairs are originally pale yellowish brown in colour, but they eventually turn steel gray. There are four, six, or occasionally more seeds with septa, or partitions, separating the seeds within the pods. [17]
*Seeds:* Seed ovoid, slightly laterally compressed, with a persistent oblong, funicular hilum, black and dark brown with spots; usually 1.2-1.8cm long, 0.8- 1.2cm wide, hard, smooth to touch, not easily breakable; odour not distinct; taste, Sweetish-bitter. [18]

I. Macroscopic Characters of Seed
Seed is ovoid, somewhat laterally compressed, with a persistent oblong, funicular hilum, dark brown with spots; generally, 1.2-1.8 cm long, 0.8-1.2 cm wide, firm, smooth to touch, not easily breakable; odor, not distinct; taste, sweetish-bitter.
Microscopic Characters of Seed: -
The mature seed has a thin seed coat and two firm cotyledons, while the outer test is made up of single-layered palisade-like cells. inner test composed of 2 or 3 layers, outer layer of tangentially elongated, ovoid, thin-walled cells, inner 1 or 2 layers of dumb-bell or beaker-shaped, thick-walled cells; tegmen composed of a large zone of oval to elliptical, somewhat compressed, thin-walled, parenchymatous cells; some cells contain starch grains; cotyledons made of polygonal, angular, thin-walled, compactly packed, parenchymatous cells, including aleurone and starch grains; Starch grains are small, simple, rounded to oval, measuring 6-41 µ in dia., but no larger than 45 µ. There are a few vascular bundles with vessels showing reticulate thickening or pitting. Powder - Pale cream-colored; displays pieces of test with palisade-like cells thin walled parenchyma, Reticulate and pitted vessels, aleurone and starch grains small, simple, rounded to oval measuring 6-41 µ in dia., but not exceeding 45 µ.
Parts used: root, leaf, seed, pod hair.

## IX. DISTRIBUTION

It is one of India's most widely used medicinal plants. Cultivated in states such as Uttar Pradesh, Madhya Pradesh, and the Andaman and Nicobar Islands. It grows throughout the subcontinent in the form of bushes, hedges, and dry deciduous low forests over India's plains. It grows naturally grown right from lower Himalayan range to entire tropical plains of India [19] and also cover the tropical regions, specially Africa, West Indies, tropical America, the Pacific Islands and the United State.

Image 1: Kapikacchu plant

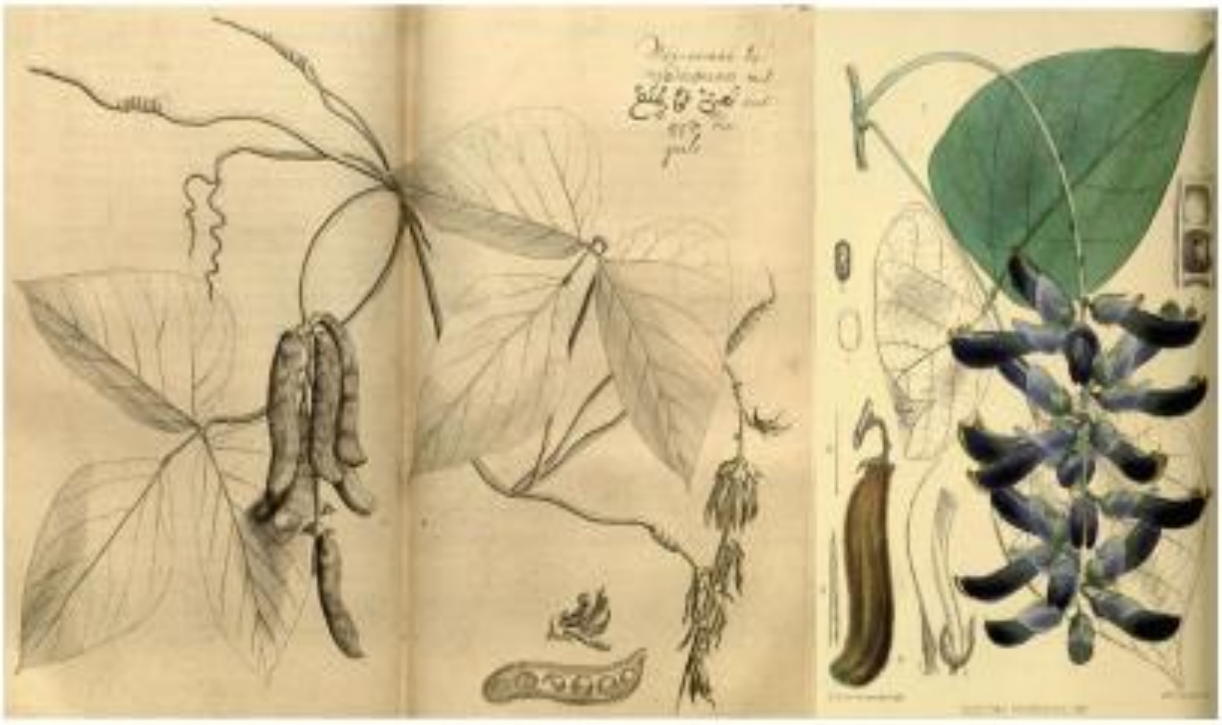



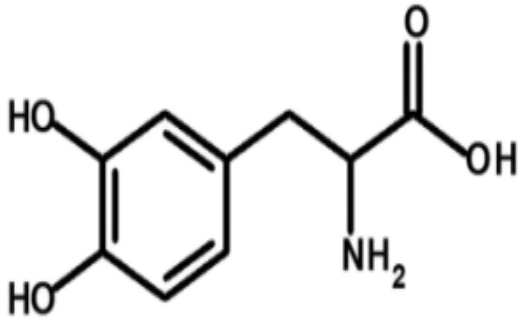
Image 2: Kapikacchu Pod and Seed


## X. PHYTOCONSTITUENTS

Mucuna pruriens (L.) DC. seeds contain high concentrations of L-3, 4-dihydroxy phenyl alanine (L-DOPA), an unusual non-protein amino acid. It is a direct precursor to the neuro transmitter dopamine, an important chemical involved in movement and sexuality. The mature seeds of the plant contain between 3.1 to 6.1% L-DOPA, with trace levels of dimethyl tryptamine (DMT), 5-hydroxy tryptamine (serotonin), 5-MeO-DMT, nicotine, bufotenine, and betacarboline. The leaves contain about 0.5% L-DOPA, 0.006% dimethyl tryptamine and 0.0025% 5-MeO-DMT. [20]

GC-MS analysis revealed that the extract contained phytochemicals such as ascorbic acid (3.80%), n-hexadecanoic acid (48.21%), squalene (7.87%), oleic acid (7.62%), and octadecanoic acid (6.21%). [21] Additionally, three methoxy-1,1-dimethyl-7,8-dihydroxy-1,2,3.4-tetrahydroquinoline and three methoxy-1,1-dimethyl 6,7-dihydroxy-1,2,3.4-tetrahydroquinoline alkaloids are present in the seed. [22]

Levodopa Chemical Structure: -




The group of chemicals known as catecholamines includes norepinephrine (noradrenaline) and epinephrine (adrenaline). Moreover, the brain and central nervous system secrete neurotrophic factors through the action of L-DOPA.

L-dopa, often referred to as levodopa and L-3, 4-dihydroxyphenylalanine, is an amino acid that is produced and utilized by certain animals and plants in addition to humans as part of their regular biological processes. L-tyrosine is the amino acid used in the production of L-Dopa, which is produced by humans

and some other animals. The precursor of the neurotransmitter dopamine is called L-dopa.

## XI. PHARMACOLOGICAL ACTION [23,24,25]

Every component of the mucuna plant contains therapeutic compounds (Sathiyanarayanan and Arulmozhi, 2007). Studies on M. pruriens extracts in vitro and in vivo have demonstrated the presence of compounds with a wide range of pharmacological effects, including antioxidant, anti-inflammatory, anti-diabetic, and neuroprotective characteristics. L-dopa, a precursor to the neurotransmitter dopamine, is most likely the cause of these effects (Misra and Wagner, 2007). The main one is known to be L-dopa, which accounts for about 5% of the phenolic chemical content of mucuna seeds (Vadivel and Pugalenthi, 2008). As a first-line treatment for Parkinson's disease, levopa is utilized, hence mucuna is currently the focus of a lot of study. Some studies claim that when administered to patients with Parkinson's disease, L-dopa isolated from M. Pruriens is superior to manufactured L-dopa in a number of ways because the latter may have unfavorable effects.

1. Anti-Parkinson's activity: -

In India, traditionally the seeds of Mucuna pruriens (L.) DC. have been used as a nervous system tonic, and as an aphrodisiac for male virility. Powdered seeds possess anti-parkinsonism properties, may be due to the presence of L-Dopa. It is commonly understood that dopamine is a neurotransmitter. Amount of dopamine content in brain tissue is reduces when the conversion of tyrosine to L-Dopa is blocked.

LDopa, the precursor of dopamine is able to cross the blood-brain barrier and undergo conversion to dopamine, restoring neurotransmission. Katzenschlager et al. (2004) revealed that 30 g Mucuna pruriens (L.) DC. seed powder preparation has considerably fast action for treating Parkinson's patients than with conventional standard drugs, namely, Levodopa or Carbidopa and suggested that natural source of L-Dopa may have advantages over conventional drugs in long term management of Parkinson's.

2. Antioxidant Activities: -

Alcoholic extracts of the seeds were shown to have potential antioxidant activity against in vivo models of lipid peroxidation induced by stress and alloxan (Tripathi et al, 2001).The methanol extract of Mucuna pruriens (L.)DC.MEMP seeds were compared to various standards like BHT, L-ascorbic acid, curcumin, quercetin, and α-tocopherol, they demonstrated significant antioxidant activity by reducing power activities, inhibiting DPPH and hydroxyl radical, and scavenging nitric oxide and superoxide anion.

3. Hypoglycemic Activity: -

A study concluded in India on the hypoglycemic effect of Mucuna pruriens (L.) DC. seed extract, which effectively lowers blood sugar, making it a possible diabetic treatment. (Eric Dontigey). The hypoglycemic effects of the seeds of Mucuna pruriens (L.) DC. have been demonstrated in normal rats.

The hypoglycemic effect of the Mucuna pruriens (L.) DC. 200 mg/kg seed aqueous extract was similar to what was observed in the rats given tolbutamide.

Both organic and inorganic components are included in the hypoglycemic plant extract. It's also vital to remember that the medical plant's mostly mineral-based inorganic portion might occasionally play a contributing role in enhancing medicinal properties (including hypoglycemic activity) of the plant. A number of essential minerals, viz., Na, K, Ca, Zn, Mg, P, Fe, Cu, Mn, and Cr, are found to be present in Mucuna pruriens (L.) DC. The process of insulin secretion, its activity, or the glucose tolerance factor as reported in many lab animals and humans may be linked to these mineral elements. The aqueous seed extract has favorable effects on blood glucose. Further pharmacological and biochemical investigations are underway to identify the active principle(s) and to elucidate the mechanism of the antidiabetic effect of Mucuna pruriens (L.) DC. seeds.

4. Hypolipidemic Activity: -

A significant decrease ($p<0.001$) in the cholesterol, triglycerides levels were observed. The chloroform fraction considerably reduced the rise of lipid profiles, cholesterol, and triglycerides in comparison to the conventional control. Glibenclamide.

5. Antidibetic Activity: -

The ethanolic extract of leaves of Mucuna pruriens (L.) DC. It has anti-diabetic properties and can be used in diabetes circumstances with or without cardiovascular problems.

6. Antitumor Activity: -

The antiepileptic and anti-neoplastic activity of methanol extract of Mucuna pruriens (L.) DC. root.

7. Aphrodisiac activity: -

Mucuna pruriens (L.) DC. has been recognized as an aphrodisiac agent. The plant and its efficacy in treating sexual disorders have been documented in Ayurveda. It has been reported that the number of spermatozoa increased when the rats were treated with bark extract of Mucuna pruriens (L.) DC. Further, it has been reported that the sexual and androgenic activities in adult male rats were maintained while enhancing muscle mass. Sexual behavior tests showed that the ethanolic seed extract of Mucuna pruriens (L.) DC. possesses significant sexual function-enhancing activity. Mating behavior test revealed that the test drug at a dose of 200 mg/kg significantly increased the MF, IF, and EL in all the experimental days.

When compared to the control. Testing the drug's impact on penile reflex frequencies, such as E, QF, and LF, allowed for the evaluation of its potency. An efficient network of neuronal, endocrine, and circulatory tissues is needed for penile erection. Therefore, a medication that modifies sexual behavior and erection would also modify neurotransmitter levels or cellular levels.

An established herbal remedy known as Mucuna pruriens (L.) DC. is used in the Ayurvedic medical system to treat neurological diseases, male infertility, and as an aphrodisiac.

8. Antimicrobial activity: -

Mucuna pruriens (L.) DC. is also used to extract plant metabolites with antibacterial characteristics that protect against plant pathogenic bacteria and fungus. The methanolic extract showed high antibacterial activity against Xanthomonas campestris, Erwinia carotovora, Pseudomonas acruginosa, Pseudomonas syringae, and Pseudomonas marginalis, and high anti-fungal activity against Fusarium oxysporum, Pencillium expansum, Curvularia lunata, Tiarosporella phaseolina, Ustilago pomaydis, and Rhizoctonia solani.

9. Anti-Inflammatory activity: -

The aerial parts of the plants have significant anti-inflammatory activity in both cotton pellet implantation and carrageenin-induced paw edema methods in rats. Weight of the cotton pellet and paw edema volume were reduced in test animals than control animals ($p<0.001$). It was observed that the extracts of Mucuna pruriens (L.) DC. were effective at 200 and 400 mg/kg doses in both the methods.

10. Anti-venom activity: -

Research on Mucuna pruriens (L.) DC. Effects against Naja species has shown that it has profound potential to be used in the prophylactic treatment of snakebites. Aqueous extracts of Mucuna pruriens seeds were examined for their ability to inhibit several pharmacological effects such as lethality, fibrinolytic activity, phospholipase activity, hemorrhagic activity, and edematous activity of cobra venom. About 0.16 and 0.19 mg of Mucuna pruriens (L.) DC. Aqueous extracts of Mucuna pruriens (L.) DC were found to be able to totally neutralize the fatal activity of the 2LD50 of cobra and krait venom, respectively. Seeds possess compounds that reduce the activity of cobra venoms.

*Dosage of kapikaccchu*- When treatment any disease, an appropriate dosage of any medication is essential. Any medication's dosage should be determined by the doctor considering the patient's age, strength, duration of illness, and condition of vitiated dose has.

Seed powder: 3-6 gm, Pod hairs- 125mg. Root decoction- 50 – 100ml

Pharmacological activity of Mucuna pruriens (L.) DC. and its compounds: -

| Pharmacological Activities | Plant Component | Extract | Material/Compound | References |
|---|---|---|---|---|
| Anti-venom | Plant seeds | Water | Proteins (gpMuc) | Guerranti,2002; Guerranti,2004; Guerranti,2008 |
| Anti-microbial | Plant leaves | Methanol | Tannins, Alkaloids, L-Dopa | Sofowora,1982; Mandal,2005; Ogundare & Olorunfemi,2007 |

| | | | | |
|---|---|---|---|---|
| Neuroprotective | Plant seeds, whole plant | Ethanol/water (1:1) | L-Dopa, Amino acids, Alkaloids | Kulhalli,1999; Misra & Wagner, 2007; Misra, 2007 |
| | | n-propanol | Isoquinolines, alkaloids | |
| Anti-dibetic | Plant seeds | Ethanol/water (1:1) | Cyclitols, oligosaccharides | Horbovitz, 1998; Larner, 1998; Ortmeyer, 1995 |

XII. MODERN ACTIONS & USES: - [26,27]

All parts of Mucuna pruriens (L.) DC. possess valuable medicinal properties. It is used in many disorders like neurological, urinary tract, and menstruation disorders; constipation; tuberculosis; ulcers; edema; fever; helminthiases; and Parkinson's disease. The roots are bitter, sweet, stimulant and purgative, thermogenic, aphrodisiac, anthelmintic, febrifuge, and diuretic.

They are used in nephropathy, dysmenorrhea, amenorrhea, elephantiasis, fever, dropsy, ulcers, constipation, helminthiasis, and delirium.

The leaves help with helminthiasis, ulcers, inflammation, and overall weakness. They are both aphrodisiac and anthelmintic.

The pods are used as anthelmintics. The hairs of Mucuna pruriens (L.) DC. pods are used as a vermifuge to expel ascarids. Flavonoids have laxative, anthelmintic, astringent, alexipharmic, and tonic features. These have proved useful in sterility, gonorrhoea, and general debility. Seeds are useful in Parkinson's disease and help in making our nervous system work to the optimum levels. It helps in improving the libido and significantly relieves psychological stress and seminal plasma lipid peroxide levels and also improves sperm count and sperm motility. Besides medicinal properties, in many parts of the world, Mucuna pruriens (L.) DC.

XIII. SIDE EFFECTS OF MUCUNA PRURIENS (L.) DC

1.Increased serum levels of L-Dopa from consumption of Mucuna bean lead to high concentration of dopamine in peripheral tissues.

2. It induces anti-physiological effects such as nausea, vomiting, anorexia, paranoid delusions, hallucinations, delirium, and unmasking dementia.

3. The most common side effects found in the body are a sensation of abdominal bloating and nausea.

4. Other side effects observed during cowhage preparations include headache, pounding heartbeat, and symptoms of psychosis, including confusion, agitation, hallucinations, and delusions.

5. Less common side effects include vomiting, abnormal body movements, and insomnia.

XIV. SPECIAL PRECAUTIONS & WARNINGS

1. Pregnancy and breast-feeding*:* There is not enough reliable information about the safety of taking Kapikacchu during pregnancy or breast-feeding.

2. Diabetes*:* There is some evidence that Kapikacchu can lower blood sugar levels and might cause blood sugar to drop too low. So, in diabetic patients, while using Kapikacchu, blood sugar monitoring is necessary.

3. Low blood sugar (hypoglycemia)*:* There is some evidence that Kapikacchu can lower blood sugar levels and might make low blood sugar worse.

4. Liver disease: Kapikacchu contains levodopa (L-Dopa). L-dopa appears to increase some molecules in the blood that signify liver injury. This may mean that the Kapikacchu is making liver disease worse.

5. Melanoma*:* The body can produce melanin, a pigment found in skin, by using levodopa (L-Dopa) in Kapikacchu. There's concern that this excess melanin could exacerbate melanoma. Use of Kapikacchu if you have a history of melanoma or suspicious changes in the skin.

6. Stomach or intestinal ulcers (peptic ulcer disease): There have been reports that levodopa (L-Dopa) can cause gastrointestinal (GI) bleeding in people with ulcers. Since Kapikacchu contains L-Dopa, there is some concern that it might cause gastrointestinal (GI) bleeding in patient

## XV. CONCLUSION

The study of herbal medicine encompasses the subject of pharmacology, which is the study of "Drugs," including their origin, physical and chemical characteristics, modes of action, absorption, distribution, biotransformation, excretion, and therapeutic applications. In many different domains, the pharmacological examination of herbal medicine is still in its relatively early stages. According to the findings of this review, the pharmacologically active plant known as Mucuna pruriens is being researched for a variety of different applications. With the exception of L-DOPA and a few alkaloids, there are still only a small number of mechanisms and bioactive principles that underlie the activity.

One of the most powerful Rasayanas in all of Ayurveda is called Kapikacchu. A nutritive tonic known as kapicchu is used extensively in Ayurvedic medicine both as an aphrodisiac and to promote healthy functioning of the reproductive system.

The use of Kapikacchu has been shown to increase a man's virility, stamina, and overall control. It raises testosterone levels, which in turn increases the number of sperms in the body. It helps women maintain a healthy libido as well as their fertility. The vitality of Kapikacchu nourishes the whole body and soothes the nerves, making it an effective vata rejuvenator. In addition to this, it is a natural source of the precursor to the neurotransmitter dopamine known as levodopa (L-dopa).

As a result of the fact that it can act in multiple directions, it is possible to demonstrate that a magical pharmaceutical product does in fact exist.

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