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KAPIKACCHU (MUCUNA PRUREINS): A VERSATILE MEDICINAL LEGUME

***Dr. Sushmitha G.M., Drakshyani Hiremath and Rashmi Rao H. S.**

Saddarma Sadana, Marula Siddeshwara Nilaya, Behind Dara Bendre School, Basaweshwara Nagar, Kotturu-583134, Bangalore, Karnataka, India.

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***Corresponding Author**
Dr. Sushmitha G.M.
3rd Year PG Scholar,
Department of Dravyaguna,
GAMC, Bangalore,
Karnataka, India.

ABSTRACT

Mucuna prureins is widely known as "velvet bean " belonging to the family Fabaceae is an established herbal drug used in management of menstrual disorders, constipation, fever, oedema and tuberculosis. Its seeds plays potentially substantial role in treatment of Parkinson's disease. It also has many pharmacological activities like antidiabetic, antiparkinsons, antimicrobial, antioxidant etc. and it is also ingredient of 18 out of 35 formulation used in Parkinsons disease. Because of its importance in the field of medicine in present days an effort is made to review medicinal properties of *Mucuna pruriens* in this article.

KEYWORDS: *Mucuna prureins*, *L*-dopa, Parkinsons disease, Laghutrayi, Bruhatrayi.

INTRODUCTION

The indigenous medicinal plant '*Mucuna pruriens*' belonging to the family Fabaceae and is commonly known as velvet bean, kowanch, cowhitch etc. is widely seen in tropical and subtropical region of the world. Seeds of this plant cointain medicinally important non-protien aminoacid **L-dopa** used in treatment of Parkinson's disease. Seeds are also rich in protein (27%) and minerals. *Mucuna* as a herb in traditional medicine is well documented and is commonly used in many reproductive disorders it is constituent of 18 out of 35 formulation for parkinson's disease[1] reported in ayurveda. *Mucuna* significantly alleviates symptoms of regular parkinson's drugs and ease the suffering of individuals. Being legume crop it has potential to fix atmospheric nitrogen, it also has allelopathic activity which suppresses competing weed. *Mucuna* is used in treatment of menstrual disorders, constipation, edema,

rheumatoid arthritis, fever and tuberculosis.[2] In Ayurveda it is well mentioned in both Bruhatrayi and Laghutrayi.

Nirukti of kapikacchu

Kapikacchu is a sanskrit word consisting of terms ‘kapi’ and ‘kacchu’, kapi refers to monkey and kacchu refers to itching, hairs on the fruit of kapikacchu causes itching to the monkey.[3]

Botanical name

Mucuna prureins

Mucuna - Name in Brazallian language .

Prureins - Prureita - produces itching.

Family - Papilionaceae

Kula - Aparajita kula

Classical categorization

Charaka - *Balya varga, Pureesha virajaniya varga.*

Sushruta - *Vidarigandadi varga.*

BPN - *Guduchyadi varga*

Taxonomy

Kingdom - Plantae

Class - Dicotyledonae

Subclass - Polypatalae

Series - Calyciflorae.

Order - Rosales.

Family - Papilkonaceae.

Regional Names

English - Cowhage

Hindi - Kiwanch

Kannada - Nasagunni

Malayalam - Nayikuruma

Marathi - Kuhili

Properties and action

Rasa - *Madhura, Tikta*

Guna - *Guru, Snigdha*

Veerya - *Ushna*

Vipaka - *Madhura*

Botanical description

Mucuna prureins is a annual twinner having slender glabrescent branches, trifoliate compound leaves which are pubescent above densely clothed silvery gray hairs beneath with solitary flowers which turns to pod of 5 to 7 cm length and 1 cm width .Pod cointain brownish black seeds which are kidney shaped.

Phytoconstituents

Seeds cointain alkaloids like *mucadine* and *prurienidine*, it also contains *L - dopa, glutarthione lecithine, gallic acid, lysine, thyrosine and valine. Serotonine* is present in trichomes of pods. Leaves contain L-DOPA, DMT, 5-MeO-DMT and DMT N-oxide.

Pharmacological activities

Antivenom activity

M. pruriens is one of the plants that have been shown to be active against snake venom and, indeed, its seeds are used in traditional medicine to prevent the toxic effects of snake bites. The mechanisms of the protective effects exerted by M. pruris seed aqueous extract (MPE) were investigated in detail in a study involving the effects of echis carinatus venom (EV). MPE contains an immunogenic component, a multiform glycoprotein which stimulates the production of antibodies that cross-react with certain venom proteins.[4]

Antidiabetic activity

The antidiabetic properties of M. proriens seed ethanol/water 1:1 extract are most likely due to d-chiro inositol and its derivatives. The seed extract of M. prureins at doses of 100 and 200 mg/ kg body weight reduced oral glucose load from 127 to 75 mg % after 2h of oral administration. In another experiment, there was reduction of blood glucose from 250 to 90 mg % in streptozatocin diabelic rats after 21 days. The investigation suggested that the antidiabetic activity may be due to its dietary fiber content.[5]

Hypoglycemic activity

The hypoglycemic activity of *Mucuna pruriens* seeds extract was studied in rat model using streptozotocin-induced diabetes. In glucose load condition and normal condition, extract of

Mucuna pruriens seeds were given. at a dose of 100 and 200 mg/kg body weight, respectively that showed a significant reduction in glucose load from 127 mg/dl to 75 mg/dl. In another study blood glucose level decreased from 250 mg/dl to 90mg/dl in streptozotocin-induced diabetic rats after 21 days[13] and same time they observed that cholesterol and creatinine levels also decreased significantly due to presence of squalene content.[6]

Antiparkinson's Activity

The seeds of *Mucuna pruriens* contain significant level of levodopa, which is a direct precursor of the neurotransmitter dopamine. It has shown very good result in the treatment of Parkinson's disease as it contains pure levodopa/carbidopa.[18] Kapikacchu bija is more beneficial in Parkinson's disease as compared to synthetic product when used for a prolong period. n-propanol extract of Mucuna pruriens seeds has highest response in neuroprotective test which involves the growth of DA neurons in culture. When we use n propanol extracts, which contain a negligible amount of L-DOPA has shown significant level of neuroprotective activity suggesting that if we use whole extract of Mucuna pruriens seeds could be superior to pure L DOPA with regard to the treatment of Parkinsonism L-DOPA is the precursor of dopamine, which can cross the blood brain barrier.[7]

Therapeutic adminstration

Kapikacchu is used in different conditions such as *vatavyadhi*, Parkinson's disease, worm infestation, and loss of libido. It also helps naturally in increasing the muscle mass of the body, it increases nerve function of the body and helps in reducing psychological stress and helps in improving sperm count and motility.[8]

Formulations containing Mucuna prureins.

SI.No	Names	Indication
1	*Vanari vatika*	*Dhwajabhanga*
2	*Gokshradi modaka*	*Vaajikaranartha*
3	*Bruhat shatvari modaka*	*Dourbalya*
4	*Arjakadi vati*	*Vrsyartha*

CONCLUSION

M. prureins seeds contain high concentrations of levodopa, a direct precursor of the neuro transmitter dopamine. In health hazards, it helps in better functioning of reproductive system and for aphrodisiac purpose, supports improvement of stamina and potency, helps in increasing testosterone level which helps in increasing the sperm count. It is an excellent

medicine for vata predominant disorder. It has been used in traditional Ayurvedic Medicine for diseases including Parkinson's disease this plant has many activities which need to elaborate for future cure.

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