

Popular Article

# Velvet bean (*Mucuna pruriens*) seeds: Dual benefits as a nutritional source and their medicinal values

Ajeet Kumar Pal<sup>1</sup>, Devi Shidayaichenbi<sup>2</sup> Anirban Mukherjee<sup>3</sup>✉ Kumari Shubha<sup>4</sup>

<sup>1</sup>Senior Research Fellow <sup>2</sup>Project Associate-II <sup>3,4</sup> Scientist ICAR-RCER Patna

Author for correspondence: ✉ anirban.extn@gmail.com

## Abstract

*Mucuna pruriens*, often known as Velvet bean or *Kaunch* as local name, originated in eastern India and China and is used as a vegetable crop. It has been demonstrated that its seeds may have significant medicinal value. Kapikacchu belongs to the Fabaceae family and is commonly used as an aphrodisiac as well as for Parkinson's disease. It possesses a variety of pharmacological effects, including hypoglycemic action, antioxidant activity, aphrodisiac activity, antibacterial qualities, and antiparkinson activity. Parkinson's disease is treated with the seeds of *Mucuna pruriens*, which contain the highest concentration of Levo-dopa. According to Ayurvedic literature, Kapikacchu is an effective aphrodisiac, vermifuge, and geriatric tonic. It is also used to treat menstruation irregularities, constipation, edema, fever, and tuberculosis.

**Keywords:** Aphrodisiac, Kapikacchu, Levo-dopa, *Mucuna pruriens*, Anti-Parkinsonism



## Cite this article:

Pal, A.K., Shidayaichenbi, D., Mukherjee, A. and Shubha, K. (2025). Velvet bean (*Mucuna pruriens*) seeds: Dual benefits as a nutritional source and their medicinal values. *Food and Scientific Reports*, 6(1): 1-5.

Submitted: 15 December 2024

Accepted: 13 January 2025

This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>)

## Introduction

The genus *Mucuna*, a member of the Fabaceae family and the subfamily Papilionaceae, encompasses around 150 species of annual and perennial legumes. Among the lesser-known wild legumes, *Mucuna pruriens*, commonly called velvet bean, is widely distributed across tropical and subtropical regions. Velvet bean is widely recognized as one of the most prominent green crops in tropical regions. Its versatility and potential as both a food and feed source have been demonstrated through various global experiences. Recognized as a promising source of dietary proteins, it contains a high protein content ranging from 23% to 35% (Janardhanan et al., 2003; Pugalenthi et al., 2005). Moreover, its protein digestibility is comparable to that of other widely consumed pulses like soybean, rice bean, and lima bean (Gurumoorthi et al., 2003), making it a valuable food resource. It is originated from southern China and eastern India. It is annual and perennial types of legumes with 150 species (Lampariello et al., 2012). Among them, the species, *Mucuna pruriens* is the most predominant around the globe. It is cultivated as green vegetable in the foothills of the eastern Himalayan and found mostly where the elevation is up to 1000 meters.





It is commonly known as “cowhage or cowitch” for those having a long stinging hairs on its pods and “magic velvet beans” for silky hairs. In Indian, it is known by several local names such as *Tatgajuli*, *Kavach*, *Kewanch*, *Kapikacchu*, *Kaunch*, *Duradagondi*, *Konch*, *Nasugunne*, *Naikuruna*, *Khajkuhilee*, *Kanwach*, *Baikhujnee*, *Kaucha*, *Banar Kakua*, *Poonakkali*, *Doolagondi*, and *Kawach*. Velvet bean seed has dual benefits for its rich source of nutritional components especially protein (Pugalthi et al., 2005) and an important source for Ayurvedic medicine for its aphrodisiac properties, and boosting immunity.



**Leaf of *Mucuna***



**Flower of *Mucuna***



**Pods of *Mucuna***



**Edible pods of *Mucuna***



### Biological Classification:

Kingdom	:	Plantae
Division	:	Magnoliophyta
Class	:	Magnoliopsida
Order	:	Fabales
Family	:	Fabaceae
Subfamily	:	Faboideae
Tribe	:	Phaseoleae
Genus	:	<i>Mucuna</i>
Species	:	<i>pruriens</i>

### 2.1 Agrotechnological aspects of velvet bean cultivation

The Velvet bean cultivation is favorable in tropical and sub-tropical regions and very sensitive to frost (TIME IS, 2009). It can withstand within the temperature range of minimum 15°C to maximum 38°C. It is favorable in all type of soils, however, sandy loam soil with pH 5.5 to 7.5 is the most favorable.

It is suitable in a fine tilth soil after 2 – 3 times of Ploughing and seed sowing during June-July. The climbing nature of velvet bean crop grows with support plants like *Sesbania grandiflora*, *Jatropha curcas*, *Bambusa arundinaceum*, *Moringa oleifera*, *Gloriosa superba*, and *Rauwolfia serpentina* based on the climatic conditions.

The spacing of direct seed sowing is 60 cm within rows with support plants and 60 × 45 cm without support plants. Seeds are usually sprout after 8-10 days of sowing and duration of crop is 170 – 180 days. The recommended dose of fertilizers (RDF) is 100 kg N, 80 kg P, and 75 kg K per hectare along with 15 t of farm yard manure (FYM).

Irrigation is required in the interval of 4 days and 7 days in the later growth stages. Weeding is recommended while top dressing of fertilizers. Metacid @0.2% and dithane M-45 @20g should be sprayed for controlling leaf eating caterpillar and leaf spot respectively.

The pods of the crop can be harvested for 3 – 4 times in a season with hand gloves to prevent from bristly hairy nature of the pods. Generally, it yields about 20 – 25 t per hectare with an average net income of Rs. 80000 – 120000 per hectare.

### Nutritional composition of velvet bean seed:

Velvet bean seed contains various bioactive compounds like reducing sugars, glycosides, saponins, tannins, and alkaloids. Additionally, they are rich in essential nutrients like Vitamin C, Vitamin E, and a range of B-complex vitamins including B1 (Thiamine), B2 (riboflavin), B3 (niacin), B5 (pantothenic acid), B6 (pyridoxine), B9 (folate), and B12 (cobalamin), as well as minerals and antioxidants. The nutritional profile of velvet bean seed in terms of percentage is given in Table 1 and Table 2.

**Table 1: Nutritional components of macronutrients in velvet bean seed**

Macronutrients	%
Total Fat	7%
Polyunsaturated Fat	5%
Monounsaturated Fat	2%
Total Carbohydrates	25%
Dietary Fiber	14%
Sugars	2%
Protein	10%

### Medicinal aspects of velvet bean seeds:

Velvet bean seeds are widely utilized in ayurvedic medicine due to their diverse pharmacological benefits (Table 3), which include antioxidant, antimicrobial, antidiabetic, aphrodisiac, and antiparkinsonian properties. Known for their aphrodisiac effects, they are also beneficial in managing Parkinson's disease. Additionally, velvet bean seed are effective in treating conditions such as menstrual disorder, oedema, fever, tuberculosis, and constipation (Dora and Kumar, 2017). Some of the potential advantages of velvet bean seeds on human health is listed below:



Table 2: Nutritional components of micronutrients and vitamins in velvet bean seed

Micronutrients	%
Calcium	26%
Iron	11%
Potassium	27%
Vitamins	
Thiamine	5%
Riboflavin	7.6%
Niacin	3.7%
Folic Acid	3%
Vitamin C	7%
Vitamin E	4.6%

Source: [https://www.netmeds.com/health-library/post/kaunch-beej-health-benefits-nutrition-uses-in-ayurveda-recipes-side-effects?srsId=AfmBOorqMR0mmNKtr3lcnQ0DW9ewkrbkuwV2\\_EqRAyP4pPPDT1O65vuS](https://www.netmeds.com/health-library/post/kaunch-beej-health-benefits-nutrition-uses-in-ayurveda-recipes-side-effects?srsId=AfmBOorqMR0mmNKtr3lcnQ0DW9ewkrbkuwV2_EqRAyP4pPPDT1O65vuS)

It controls the sugar level in blood due to its content of phytates, polyphenols, and tannins that lowers the digestive process.

- It treats heart problem and IBS (Irritable Bowel Syndrome) for its fibres and niacin contents.
- It is rich in Fe and Ca that helps in strengthen the bone density and treat anaemia. It also balances the hormone level and stimulates the milk production during pregnancy and lactating period.
- It acts as a natural aphrodisiac improving the stamina in men, and sexual health.
- It helps in flushing out the toxins from foods due to its dietary fibrous properties and reducing the blood pressure.
- It regulates the digestive processes due to its contents of Vitamin C and E and combats bloating, indigestion, heartburn, flatulence and acidity problems.
- It possesses antioxidants that prevents the gallbladder and liver from the damage of free radicals.

Table No.3 Pharmacological activity of *Mucuna pruriens* and its compounds

Pharmacological activities	Material/ compound	Plant component	References
Anti-diabetic	Cyclitols, oligosaccharides	whole plant	Larner, 1998
anti-venom	proteins (gpMuc)	plant seeds	Guerranti, 2008
anti-oxidant	phenols, tannins	whole plant	Kottai Muthu, 2010
anti-microbial	tannins, alkaloids, L-dopa	plant leaves	Olorunfemi, 2007

Besides the above beneficials, it is bound to consume only by healthy people. People who have kidney problems must avoid velvet bean seed and its by-product as it is a rich source of Ca nutrient rendering to increasing the oxalic acid level into a urinary calculi i.e. kidney stone formations.

#### Conclusion:

Kapikacchu is one of the most potent medicinal plants in Ayurveda. It has multiple benefits. In terms of health risks, it improves the functioning of the reproductive system and serves as an aphrodisiac, supports the improvement of stamina and potency, and aids in the increase of testosterone levels, which increases sperm count. It is a good treatment for vata-dominant disorders; it is a natural source of levodopa (L-DOPA), an essential precursor to the neurotransmitter dopamine, which is employed in Parkinsonism (Shukla et al 2010). As a result, it should be used in a wide range of diseases, and extensive study in human models is required to establish this plant in various illness conditions.

#### References:

Awang, D., Buckles, D., Arnason, J.T., 1997. The phytochemistry, toxicology and processing potential of the covercrop velvetbean (cow(h)age, cowitch) (*Mucuna Adans. spp.*, Fabaceae). Paper presented at the International Workshop on Green Manure –Cover Crop Systems for Smallholders in Tropical and Subtropical Regions, 6-12 Apr., Chapeco, Santa Catarina, Brazil. Rural Extension and Agricultural Research Institute of Santa Catarina, Santa Catarina, Brazil.



- Dora, B. B., & Kumar, S. (2018). Kapikacchu (*Mucuna pruriens*): A promising indigenous herbal drug and its effect on different disease conditions. *Research & Reviews: A Journal of Toxicology*, 7(3), 1-5.
- Duke, J.A., 1981. Handbook of legumes of world economic importance. Plenum press, New York, NY, USA.
- Guerranti, R., Ogueli, I.G., Bertocci, E., Muzzi, C., Aguiyi, J.C., Cianti, R., Armini, A., Bini, L., Leoncini, R., Marinello, E., Pagani, R., 2008. Proteomic analysis of the pathophysiological process involved in the antsnake venom effect of *Mucuna pruriens* extract. *Proteomics* 8, 402-412.
- Gurumoorthi, P., Pugalenti, M., Janardhanan, K., 2003. Nutritional potential of five accessions of a south Indian tribal pulse *Mucuna pruriens* var. utilis; II. Investigation on total free phenolics, tannins, trypsin and chymotrypsin inhibitors, phytohaemagglutinins, and in vitro protein digestibility. *Trop. Subtrop. Agroecosys.*, 1, 153-158.
- Janardhanan, K., Gurumoorthi, P., Pugalenti, M., 2003. Nutritional potential of five accessions of a South Indian tribal pulse, *Mucuna pruriens* var. utilis. Part I. The effect of processing methods on the contents of L-Dopa, phytic acid, and oligosaccharides. *Journal of Tropical and Subtropical Agro-ecosystems*, 1, 141-152.
- Kumar, D.S., Muthu Kottai, A., Smith, A.A., Manavalan, R., 2010. In vitro antioxidant activity of various extracts of whole plant of *Mucuna pruriens* (Linn). *Int. J. Pharm. Tech. Res.*, 2, 2063-2070.
- Lampariello, L. R., Cortelazzo, A., Guerranti, R., Sticozzi, C., & Valacchi, G. (2012). The magic velvet bean of *Mucuna pruriens*. *Journal of traditional and complementary medicine*, 2(4), 331-339.
- Larner, J., Allan, G., Kessler, C., Reamer, P., Gunn, R., Huang, L.C., 1998. Phosphoinositol glycan derived mediators and insulin resistance. Prospects for diagnosis and therapy. *J. Basic Clin. Physiol. Pharmacol.*, 9, 127-137.
- Ogundare, A.O., Olorunfemi, O.B., 2007. Antimicrobial efficacy of the leale of *Dioclea reflexa*, *Mucana pruriens*, *Ficus asperifolia* and *Tragia spathulata*. *Res. J. of Microbiol.*, 2, 392-396.
- Pugalenti, M., Vadivel, V., & Siddhuraju, P. (2005). Alternative food/feed perspectives of an underutilized legume *Mucuna pruriens* var. utilis—a review. *Plant foods for human nutrition*, 60, 201-218.
- Shukla KK, Mahdi AA, Ahmad MK. (2010). *Mucuna pruriens* reduces stress and improves the quality of semen in infertile men. *eCAM*. 7(1): 137-44.
- TIME IS, 2009. Kaunch agrotechnology. <https://www.techno-preneur.net/technology/project-profiles/food/kaunch.html>

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of FSR and/or the editor(s). FSR and/or the editor(s) disclaim responsibility for any grievance to people or property resulting from any ideas, methods, instructions or products referred to in the content.

## About the author



**Ajeet Kumar Pal**

Working as Senior Research Fellow at ICAR-RCER Patna. Currently working on Effect of Climate Change on Animal of Indo-Gangetic Plane Region of Eastern Part of India



**Devi Shidayaichenbi**

Working as Project Associate-II ICAR-RCER Patna. Currently working under DST-SEED Project.



**Anirban Mukherjee**

Working as Scientist at ICAR-RCER Patna. Currently working in the area of Social Research, Impact assessment of agricultural technologies, Farmers Producers Organization



**Kumari Shubha**

Working as Scientist at ICAR-RCER Patna. Currently working in the area of legume vegetable breeding and nutritional benefits of rural communities through vegetable based nutri-garden