

REVIEW ARTICLE ON VARAHIKANDA

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ABSTRACT

Traditional medicine forms an integral part of health care system in many countries. According to WHO statistics, about 25% of the medicines are derived from plants. 80% people still depend upon traditional system of medicine. The practice of traditional medicines is based on hundreds of years of belief and observation, which originated much before the development of the modern medicine. The knowledge of traditional medicine throws light on the discovery of new and potent medicine. Systematic documentation is lacking for many medicinal plants in India. *Varahikanda* (*Dioscorea bulbifera* L.) possesses profound therapeutical potency, belongs to the family *Dioscoreaceae* which includes 9 genera and 220 species which are distributed in tropical and warm temperate regions. It is attributed with *Vrushya* (Aphrodisiac), *Balya* (Strength promoting), *Rasayana* (Rejuvenative) karmas. This review highlights on all the classical references of *Varahikanda*.

Keywords: *Dioscorea bulbifera*, *Dioscoreaceae*, *Vrushya*, *Balya*, *Rasayana*

INTRODUCTION

Plants are one of the main sources of medicine since time immemorial. Ayurveda the science of life emphasizes on use of plants and strongly envisages that each and every dravya in the universe possesses medicinal property. Utilization of nature's wealth for prevention and cure of diseases plays a big role in human civilization, with a dependency of large number of human population on herbs, particularly in developing countries. The amazing journey of Ayurveda from its divine origin to the present day has left us wondering about the enormous potential this science possesses. Its successful existence itself proves the value and the unique basic principles remain eternal.

Interest in Ayurveda, has increased substantially in both developed and developing countries over the past two decades. Plants have been used as medicine extensively. Its diverse healing modalities for millennia for anything from external to internal infections, mental and emotional imbalances have increased the demand of plant based products.

With onset of scientific research in herbals, it is becoming clearer that the medicinal herbs have a potential in today's synthetic era, as number of medicines are becoming resistant. 60% of synthetic medicines owe their origin to plants. Ancient knowledge coupled with scientific principles can come to the forefront and provide us with powerful remedies to eradicate the diseases. One such less explored drug is *Varahikanda* (*Dioscorea bulbifera* Linn.)

which possesses profound therapeutical potency attributed with *Vrushya* (Aphrodisiac), *Balya* (strength promoting), *Rasayana* (Rejuvenative) karmas. *Diosgenin* obtained from *Dioscorea* species is one of the major sources for the commercial production of corticosteroids and steroidal contraceptives. This plant is found in Western ghats, North-Eastern region and Indo –Burma region. It is cultivated in all the states in India and the major yam producing states are Kerala, West Bengal, Bihar, Orissa, Tamilnadu, Assam, Rajasthan, Gujarat and Maharashtra.

CLASSICAL REVIEW OF VARAHIKANDA

The word “*varaa*” means *sasya* (plant) and “*aahanti*” is that which destroys whatever comes in its way. Varaha is an animal which destroys the plants in its way.

kanda means tuber.

Varahakanda is the tuber which is liked by the pigs.

SAMHITA KALA: 1, 2, 3

Acharya *Charaka* in the context of *Unmada* (psychological disorder) Chikitsa, mentions *Shukari* as one of the ingredients of Mahapaishacha Ghrita and *Chakrapani* commenting on this says *Shukari* is Varahikanda. Acharya *Sushruta* has included *Varahakanda* in kanda varga and explains the qualities of *Varahakanda*. *Dalhana* commenting on this says *Varahakanda* is famous by the name *Bakaluka*. It is also

called as *Vaarahi* and *Gristika*. Acharya *Sushruta* in *Nivratasantapiya rasayana adhyaya*, includes *Varahi* among the ash-tadasha somasamaveerya aushadha and described it as a tuber having the capacity to regenerate and looks like a black snake. Acharya *Vagbhata* has mentioned *Pindaaluka* in *Annaswarupavijnaniya adhyaya* where *Arunadatta* in his commentary mentions *Pindaalu* as *Varahikanda*. *Vakraalu*, *Shabarakanda*, *Mulakamulabha*, *Twakchadha* are the synonyms.

NIGHANTU KALA^{4, 5, 6, 7}

Nighantus like *Dhanvatari*, *Shodala*, *Hridayadeepika*, *Madanapala*, *Rajanighantu* and *Kaiyadeva* have mentioned *Varahikanda*. Author of *Siddhamantra* placed *Varahi* in *kaphavatagna pittala varga*. *Kaiyadeva* describes the tuber of *Varahikanda* as that which is similar to the testes of the pig in shape and possesses leaves like *taambula patra*. *Bhavaprakasha* Nighantu has mentioned *Varahikanda* as *prathinidhidravya* of *Ruddhi* and *Vruddhi*. The shape of the kanda resembles the head of the pig. It is also called by the name *Charmakaraluka* and *Gristika*. *Varahikandadi varga* has been mentioned in *Nighantu Adarsha*.

GANNA/VARGA^{1-3, 4-13, 16-20}

Table 1: Showing the classification of Varahikanda according to various authors.

Samhitas	Gana /Varga
Sushruta samhita	Kanda varga
Nighantu	Varga
Dhanwantari Nighantu	Karaveeradi
Shabdachandrika	Vrakshadhi
Shodala Nighantu	Karaveeradi , Aamradi
Madhava dravyaguna	Shakha

Siddhamantra	Kaphavataghna -Pittala
Hrudayadeepika Nighantu	Dvipaadi
Madanapala Nighantu	Abhayadi
Raja Nighantu	Moolakadi
Kaiyadeva Nighantu	Oushadhi
Bhavaprakasha Nighantu	Guduchyadi
Saraswati Nighantu	Ulapa
Rajavallabha Nighantu	Madhyanika paricheda
Saligrama nighantu	Shakha
Nighantu adarsha	Vaarahikandadi
Priya Nighantu	Pippalyadi
Dravyaguna Samgraha	Shakha varga

PARYAYA PADAANI:

- **Gristi:** It cures various diseases. It possesses madhura, sheeta properties.
- **Potri:** The shape of the tuber resembles the face of the pig.
- **Shukarakanda:** The tuber is liked and eaten by the pig.
- **Shukari:** Hairy tuber resembles that of hairy pig.

- **Badara:** That which gives strength.
- **Vruddhida:** That which helps in development of the tissues.
- **Sukandaka:** Tubers are beautiful
- **Vishvaksenakanta:** It is liked by Lord Vishnu

VERNACULAR NAMES ^{14, 15}

Table 2: Showing Vernacular names of Varahikanda.

Assam	Katalu
Bengali	Chupri alu
Bombay	Chaina, Chopri alu, Khaumphal, Myoukphal, Safed kauphal
English	Common yam, Humped yam, Water yam, Winged yam
Hindi	Chupri alu, Khamalu
Kannada	Tung-genasu
Konkani	Kongadde
Malayalam	Kachil-kilangu, Kaavathu
Sanskrit	Vaarahikanda, Pindalu
Tamil	Kayavalli, Perumvalli kizangu
Telugu	Gunapendalamu, Pendalamu
Uriya	Jhonka alu

RASAPANCHAKA ^{5, 6, 8, 9, 11, 12, 16, 18, 19, 20}

Table 3: Showing Rasa panchaka of Varahikanda according to different authors

Rasa(Taste)								
	B.N	D.N.	K.N.	R.N	P.N	Mp.N	So.N	Sa.N
Tikta(bitter)	+	+	+	+	+	+	-	+
Katu(pungent)	-	+	+	+	-	+	+	+
Madhura(sweet)	+	-	+	-	+	+	-	-
Veerya(Potency)								
	D.N				M.D			
Sheeta(cold)	+				-			
Ushna(hot)	-				+			
Vipaka(Taste at the end of digestion)								
	B.N	D.N.	K.N.	R.N	Mp.N	M.D	D.S	So.N
Katu(pungent)	+	+	+	-	-	+	+	+

DOSHAKARMA 4, 5, 6, 8, 9, 11, 13, 16, 18.

Table 4: Showing Doshakarma of Varahikanda according to different authors

	B.N	D.N	K.N	R.N	R.V	Mp.N	S.M	M.D	Sa.N
Vatahara	+	-	+	-	-	+	+	-	-
Pittakara	+	-	+	-	+	-	+	+	+
Pittahara	-	-	-	+	-	-	-	-	-
Kaphahara	+	+	+	+	+	+	+	+	

VARIETIES OF VARAHIKANDA⁵

According to Kaiyadeva nighantu types of varahikanda are

1. Shabarakanda
2. Kharakanda
3. Snukchadopama
4. Kiri
5. Mulakamulabha
6. Shoukara
7. Vadavaanala

SUBSTITUTES AND ADULTERATION⁷

Vrinda madhava mentions *Charmakaraluka* as substitute for *Varahikanda*.

CONTROVERSY^{24, 25}

The controversy of *Varahi* might have started with the word *Aaluka*. The word

Aaluka has been mentioned in *Charaka Samhita* as well as *Sushruta Samhita*. Acharya *Charaka* has told *Aluka* as *ahitatama* among the kanda and Acharya *Sushruta* has mentioned *aluka* in kanda *varga* and has given 6 varieties of *Aluka*. Both the commentators of *Charaka* and *Sushruta Samhitas* have given limited information regarding the morphological descriptions about these varieties.

Acharya P.V. Sharma has correlated the varieties mentioned in *Sushruta* and *Rajanighantu* with different species of *Dioscorea*.

Table 5: Showing Different types of Aluka according to Sushruta^{24,25}

TYPES-SUSHRUTA	DESCRIPTION	BOTANICAL SOURCE
Madhvaluka	Romasha, Madhura	<i>Dioscorea esculenta</i>
Pindaluka	Familiar by the name <i>aluka</i>	-

Kastaluka	Different shaped tubers Locally called as Katalu	<i>Dioscorea alata</i>
Hastyaluka	Similar to Kastaluka but the tubers are bigger in size	<i>Dioscorea hispida.</i>
Shankaluka	Tubers are white in colour.	<i>Dioscorea glabra.</i>
Raktaluka	Tubers are red in colour.	<i>Dioscorea bulbifera.</i>

Table 6: Showing Different types of Aluka according to Rajanighantu^{24,25}

TYPES-RAJANIGHANTU	DESCRIPTION	ACC.TO ACHARYA P.V. SHARMA	BOTANICAL SOURCE
Mukhalu	Mahakanda	Hastyaluka of <i>Sushruta</i>	<i>Dioscorea hispida.</i>
Shubhralu	Shuklakanda	Shankhaluka of <i>Sushruta</i>	<i>Dioscorea glabra.</i>
Kaasalu	-		<i>Dioscorea puber</i>
Neelalu	Neelavarna		<i>Dioscorea prazeri</i>
Paniyalu	Jaleeya pradesha	-	-
Phondalu	Jaleeya pradesha	-	-

But Varahi is clearly described by the commentator of *Chakradatta* in the context of Narasimha Choorna. The description is as follows,

The creeper of *Varahi* has leaves similar to betel-leaves (*taambula patra sadrashah*). Many bulbils are present on its stem. It has flowers like *Sarja* and *Arjuna*. Shape of the tubers resemble the head of *Varaha* and the tubers are covered with hairs. Tubers have bitter and pungent tastes. They are aromatic like Lotus. The vines are found in the forests and mountains. As per Dr. Bapalal Vaidya there should not be any controversy in identifying *Dioscorea* species. *Dioscorea bulbifera*, *Dioscorea pentaphylla* either of the two should be fixed as *Varahikanda*.

Dr. V.G Desai has given *Tacca aspera* Roxb as *Varahikanda*.

IDENTITY OF DIFFERENT SPECIES OF DIOSCOREA¹⁵

The confusion regarding the identity and nomenclature of the Indian species particularly the cultivated species of *Dioscorea* has been largely resolved by the work of *Prain and Burkill*. These authors have classified the genus into 2 broad divisions.

1. Stem twining to the right
 - *Dioscorea alata*
 - *Dioscorea glabra*
 - *Dioscorea oppositifolia*
2. Stem twining to the left
 - *Dioscorea esculenta*
 - *Dioscorea bulbifera*
 - *Dioscorea pentaphylla*
 - *Dioscorea hispida*



Fig 1: DIOSCOREA BULBIFERA



Fig2: DIOSCOREA ALATA



Fig 3: DIOSCOREA GLABRA



Fig 4: DIOSCOREA HISPIDA



Fig 5: DIOSCOREA ESCULENTA

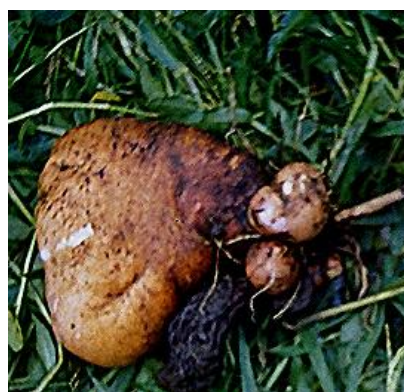


Fig 6: DIOSCOREA PENTAPHYLLA

KARMAS ^{5, 6, 8, 9, 11, 12, 18, 19}

Table 7: Showing Karmas of Varahikanda according to different authors

Karmas (Action)	B.N	D.N	K.N	R.N	P.N	Mp.N	So.N	Sa.N
Ayushya	-	-	-	-	-	-	-	+
Ayu vivardhana	+	-	+	-	-	-	-	-
Agni vivardhini	+	-	+	-	-	-	-	+
Balya	+	+	+	+	-	+	+	+

Balavardhini	+	-	-	-	+	-	-	-
Deepani	-	-	-	-	+	-	-	-
Hrudhya	-	+	-	-	-	-	-	-
Jeevaniya	-	-	-	-	+	-	-	-
Rasayana	+	+	+	+	+	-	+	-
Shukrala	+	-	+	-	-	+	-	+
Svarya	+	-	+	-	-	-	-	-
Varnya	-	-	+	-	-	-	-	-
Vrushya	-	-	-	+	+	-	+	-

RASAPANCHAKA, KARMA, ROGHAGHNATA ⁹

Table 8: Showing Rasapanchaka, Karma, Roghaghata of Different Varieties of Aluka

Types of Aluka	Rasapanchaka	Karma	Rogaghata
Mukhaalu	Madhura Sheeta	Pittanashaka Vatakara Ruchivardhaka	Daha Shosha Trishna
Pindaalu	Madhura Sheeta Guru	Santarpana Vrushya	Mutrakrichra Daha Shosha Prameha
Kasaalu	Swadu	Deepana	Vatashleshma Amaya Arochaka
Phondalu	Katu Ushna	Shleshmaghna Vataghna Deepana	-
Paniyalu	-	Tridoshahara Santarpanam param	-
Neelalu	Madhura Sheeta	Pittahara	Shrama Daha

CHEMICAL CONSTITUENTS AND FOLKLORE USES ^{14, 15, 26, 27}

Table 9: Showing Chemical constituents and Folklore uses of Different Sources of Varahikanda,

Botanical source	Chemical constituents	Folklore Uses
<i>Dioscorea bulbifera</i>	Furanoid norditerpenes Diosbulbins A,G Volatile acids Cal.Oxalate Phenolics	<ul style="list-style-type: none"> The dried and powdered tubers are used as application to sores and given internally with little cumin and sugar in milk as a remedy for syphilis, piles and dysentery. Powder made into bolus with butter is given to check diarrhea. Roasted tubers made into balls

		<p>with ghee and sugar candy are a reputed remedy for piles.</p> <ul style="list-style-type: none"> • Bulbils cure typhoid in children. • Root powder is used as a component of local medicine for tuberculosis.
<i>Dioscorea alata</i>	<p>Tubers contain Phenolics cyanidin- 3 glucoside, 3 anthocyanins, Cyanidin-3-gentiobioside ferulate Peonidin 3- gentiobioside Alkaloid- dioscorine, Saponin- diosgenin</p>	<ul style="list-style-type: none"> • Tubers are antihelmenthic. • Paste of tubers is applied on wounds, leprosy, gonorrhea, piles.
<i>Dioscorea esculenta</i>	<p>Albuminoids Free from Dioscorine</p>	<ul style="list-style-type: none"> • Mature tubers are boiled and eaten to increase body weight.
<i>Dioscorea hispida</i>	<p>Alkaloids Steroidal Sapogenins</p>	<ul style="list-style-type: none"> • Paste of the tuber is applied on affected parts to treat peeling of skin.
<i>Dioscorea pentaphylla</i>	<p>Steroidal sapogenins</p>	<ul style="list-style-type: none"> • Used in stomach ache, constipation, indigestion, abdominal pain, dysentery, cough, cold, skin wounds, boils. • Decoction of tuber is given to animals for early recovery of fractured bones.

AMAYIKA PRAYOGA ^{2,22}

- Varahi choorna mixed with taila is applied externally in naadi vrana (S.Chi)
- Varahikanda choorna along with madhu is consumed internally every day for one month followed with ksheera and shaali bhojana, acts as *rasayana*.(S.U)
- Varahikanda siddha ghrita with- Draksha, Masha, Ashwagandha, Kadaliphala and Vamsalochana is indi-

cated in stree roga and Asthi roga. (S.Y.)

- Varahyadi Ghrita along with sugar and honey given internally relieves yoni roga. (S.Y)
- Varahyadi ghrita used for bastikarma in yoni rogas (S.Y)

IMPORTANT YOGAS^{1, 2, 21, 22}

Table 10: Showing Yogas of Varahikanda

Yoga	Adhikara/ Prakarana	References	Indications
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Mahapaishacha Ghrita	Unmada	C.S	Buddhi smritikaram, Unmada
Varahi choornam	Rasayana	S.S	Rasayana
Kushadhya Ghritam	Ashmari	C.D	Pittaja ashmari
Narasimha Choorna	Vrushya	C.D	Vali, Palita, Khalitya, Meha, Pandu, Udara, Arshas, Grudrasi, Bhagandara, Mutrakrichra, Kusta, Shvasa, Kasa,
Panchanimba Choorna	Kusta	C.D	Shataru, Visphota, Paama, Kilasa Bhagandara, Naadivrana, Shlipada, Prameha, Pradara, Damstra visha, Udara
Varahyadi Choornam	Choorna	S.Y	Kamala
Varahyadi Ghrita	Ghrita	S.Y	Stree roga , Asthi roga
Varahyadi Ghrita (2)	Ghrita	S.Y	Yoni roga
Vastyamayantaka ghrita	Ghrita	S.Y	Mutrakrichra, Ashmari, Vastiroga, Prameha

PART USED²³

Kanda (Tuber)

POSOLGY²³

Churna (Powder) 3- 6 gm

TRADE AND COMMERCE¹⁵

- Industrial uses of *Dioscorea* species includes starch, poultry, livestock feed and production of yam flour.
- It contains steroidal sapogenins, diosgenin which is the precursor for the synthesis of the steroidal hormones used in contraceptive drugs.

DISCUSSION

- References regarding *Varahikanda* are found in Brihatrayee and authors of various Nighantus have described it in different Vargas.
- *Balya*, *Vrushya*, *Shukrala* karmas which are attributed to *Ruddhi* and *Vruddhi* are also ascribed to *Varahikanda* thus signifying the efficacy of *Varahikanda* as a substitute for *Ruddhi* and *Vrudhhi*.
- *Varahikanda* has been indicated in *Kusta* (skin diseases), *Krimi* (worms), *Prameha* (diabetes) rogas and is known for its *Balya*, *Shukrala* and *Rasayana*

properties. Hence finds its utility in important formulations like *Narasimha choorna*, *Vastiamayantaka ghrita*, *Panchanimba choorna Mahapaischacha ghrita* etc.

- Morphologically the *Dioscorea* species are differentiated on the basis of the stem twining towards right or left. They are also differentiated depending on the morphology of leaf, structure and colour of the bulbils. Even in the classical references the varieties of *Aluka* are differentiated on the basis of the colour and shape of the tubers. Thus the correlation of *Dioscorea* species to different *Aluka* bheda is substantiated.
- The controversy regarding *Varahi* and different *Alukas* mentioned in *Sushruta Samhita* has been resolved. *Aluka* bhedas can be correlated with the the *Dioscorea* species.
- *Dioscorea bulbifera* is the accepted source for *Varahikanda*.
- All the *Aluka* bhedas have madhura rasa and sheeta guna except *Phondalu* which is katu and ushna in nature. Due to its madhura rasa and sheeta veerya it

is used in disorders like *daha*, *trishna mutrakrichra* etc. The karmas like *vrushya*(aphrodisiac),*santarpana* (nourishing), *deepana* (appetizer) attributed to *Aluka* resembles to that of *Varahikanda*. *Phondalu* which has *katu* rasa and *ushna* *veerya* has *vatashelshmahara* (pacifies *vata* and *kapha*) and *deepana* properties. *Varahikanda* is indicated by most of the authors in *Prameha* and it is one of the indications where *Pindaluka* can be used thus suggesting the substitution of *Aluka* *bhedas* for *Varahikanda*.

- *Diosgenin* is a pharmacological active component obtained from root and rhizomes of all *Dioscorea* species and is present in varying concentrations.
- *Dioscorea* species, the source of *Varahikanda* is of economic importance as tuberous crops and known for its high carbohydrate reserve. The tuber not only stores food but has many of the plant secondary metabolites. It is one of the medicinally potent plants used in varied pharmacological activities like antihypertensive, androgenic, estrogenic, bone protective, immune stimulatory, free radical scavenging etc. The medicinal value of the plant lies in the bioactive phytochemical constituents responsible for the pharmacological activities.
- Based on morphology, chemical constituents and actions the other species of *Dioscorea* like *D. alata*, *D. esculenta*, *D.hispida*, *D. pentaphylla*, can be substituted to *Dioscorea bulbifera* which is the accepted source for *Varahikanda*.

CONCLUSION

- *Varahikanda* is a promising plant which has a wide range of chemical constituents.

- Further study to explore the traditionally claimed unexplored activities has to be carried out.
- Steps for identification and isolation of active constituents should be developed to confirm exact mechanism of action.
- Researches to involve the other species of *Dioscorea* as food and medicine should be carried out.

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