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# Critical Review on *Brimhana* Effect of *Vidarikanda*

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## ABSTRACT

**Introduction:** *Vidarikanda* is tuber which grows throughout the year and is widely used as medicine and nutritional supplement. It performs many *Karmas* and *Brimhana* is one most important amongst them. All procedures and treatment which nourish, build and strengthen body is called *Brimhana*. **Materials and Methods:** Almost all the Acharyas described the *Brimhana* Karma of *Vidarikanda*. Its properties like Guna, Rasa, and Veerya make it able to perform *Brimhana* karma. There is uniformity in opinion about *Brimhana* karma of *Vidarikanda* in ayurvedic texts. **Discussion:** According to modern science its capacity to nourish, build and strengthen body is due to nutritious components present in it like Carbohydrates, Mono Saccharides, Poly Saccharides, Hexose Sugars, Steroids, Alkaloids, Anthraquinone glycosides, Saponin, Flavonoids. Some other chemicals present in *Vidarikanda* gives it therapeutic importance. **Conclusion:** Hence according to Ayurveda as well as modern science *Vidarikanda* shows *Brimhana* effect.

**Key Words** *Vidarikanda*, *Brimhana*, *Guna*

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## INTRODUCTION

*Vidarikanda* {*Pueraria tuberosa* DC} also known as *Vidari*, *Koshtri*, *Sita*, *Kshirashukla*, *Ikshugandha*, *Swadukanda*<sup>1</sup> belongs to Fabaceae family. It is called Indian kudzu and it is found throughout the year and all over India. It is tuber and has nutritional and medicinal properties. *Vidarikanda* described by Acharya Charaka, Sushruta, Vagbhatt, Bhavaprakash and various *Nighantus*. According to Acharya Sushruta it comes under *Vidarigandhadi gana*, *Valli panchamoola* and *Pitta sanshaman varga*<sup>1</sup> as described in *Dravyasangrahaniya adhyaya* of

*Sutrasthan*. According to *Ayurveda Guna's* of *Vidarikanda* are *Madhur*, *Snigdha*, *Sheet*, *Guru* and *Karma's* are *Brimhana*, *Stanya*, *Shukral*, *Mutral*, *Jivaniya*, *Balavarnakara*, *Pitta-Rakta-Vatahara*<sup>2</sup>. Almost all Acharyas described the *Brimhana karma* and there is uniformity in opinion about *Brimhana karma* of *Vidarikanda* in ayurvedic texts. According to modern science *Vidarikanda* has antioxidant, anticonvulsant, anti-inflammatory, anti-stress, cardioprotective, hypolipidemic, hepatoprotective, immunomodulatory, nephroprotective, nootropic, neuroprotective, and wound healing<sup>3</sup> properties.

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In this article we are going to discuss about *Brimhana* effect of *Vidarikanda*.

## MATERIALS AND METHODS

*Samhitas* and commentaries of ayurvedic text books has been reviewed thoroughly. Various clinical studies on *Vidarikanda* published in

Ayurveda journals and available on various websites also has been referred to review the topic.

### *Properties of Vidarikanda:*

Properties of *Vidarikanda* like *Rasa*, *Guna*, *Veerya* on the basis of which it shows *Brimhana* effect are described in table no.1.

**Table 1** Classification and properties of *Vidarikanda* as per Various *Samhita*

S. No.	Samhita	Gana	Rasa	Guna	Veerya
1	Charak Samhita <sup>4</sup>	Shakavarga	Madhura	-	Sheet
2	Sushrut Samhita <sup>5</sup>	Kandavarga	Madhura	-	Sheet
3	Ashtanghriday Samhita <sup>6</sup>	Shakavarga	Madhura	Guru	Sheet
4	Bhav Prakash Nighantu <sup>7</sup>	Guduchyadi varga	Madhura	Guru, Snigdha	Sheeta
5	Raj Nighantu <sup>8</sup>	Mulakadi Varga	Madhura	Guru, Snigdha	Sheeta
6	Dhanvantari Nighantu <sup>9</sup>	Guduchyadi varga	Madhura	Guru, Snigdha	Sheeta
7	Madan pal Nighantu <sup>10</sup>	Abhayadi Varga	Madhura	Guru, Snigdha	-
8	Kaiyadeva Nighantuh <sup>11</sup>	Aushadhi gana	Madhura	Guru, Snigdha	Sheeta
9	Shaligram Nighantu <sup>12</sup>	Shaka Varga	Madhura	Guru, Snigdha	Sheeta
10	Nighantu Adarsh <sup>13</sup>	Palashadi varga	Madhura	Guru, Snigdha	Sheeta
11	Priya Nighantu <sup>14</sup>	Pipalyadi varga	Madhura	Snigdha	Sheeta
12	Gunaratnamala <sup>15</sup>	Guduchyadi varga	Madhura	Guru, Snigdha	Sheeta

Every *Acharya* described *Madhur rasa*, *Guru Snigdha guna* and *Sheeta veerya* of *Vidarikanda* except *Madanpal Nighantu* which didn't describe *Sheeta veerya* and *Priya Nighantu* which didn't describe *Guru guna*. Every *Nighantu* included *Vidarikanda* in different *Varga*. Almost all

textbooks described *Doshghnata* of *Vidarikanda* as *Vatahara*, *Pittahara* and *Raktahara*. *Doshghnata* of *Vidarikanda* described in table no.2 is also supportive of *Brimhana Karma*. Only *Raj Nighantu* and *Shaligram Nighantu* mentioned that *Vidarikanda* has *Kaphavardhak* effect.

**Table 2** *Doshghnata* of *Vidarikanda* as per Various *Samhita*

<i>Doshghnata</i>	C.S.	S.S.	A.H.S.	B.P.N.	K.N.	M.P.N.	R.N.	S.N.	D.N.
<i>Vaat</i>	-	✓	✓	✓	✓	✓	-	-	✓
<i>Pitta</i>	-	✓	✓	✓	✓	✓	✓	✓	✓
<i>Kapha</i>	-	-	-	-	-	-	<i>Kaphakar</i>	<i>Kaphakar</i>	-
<i>Rakta</i>	-	-	-	✓	✓	✓	✓	✓	✓

C.C.-Charaka *Samhita*, S.S.-Sushruta *Samhita*, A.H.S.-Ashtang *Hridaya Samhita*, B.P.N.-Bhava *Prakash Nighantu*, K.N.-Kaiyyadeva *Nighantu*, M.P.N.-Madana *Pal Nighantu*, R.N.-Raj *Nighantu*, S.N.-Shaligram *Nighantu*, D.N.-Dhanwantari *Nighantu*.

*Vidarikanda* perform many functions which are helpful for the body growth and development.

Most of the *Samhita*'s and *Nighantu*'s described *Brimhana Karma* and also some *Karma*'s that help body in growth and development. Some *Karma*'s according to various textbooks are described in table no.3.

C.S.-Charak *Samhita*, S.S.-Sushrut *Samhita*, A.H.S.-Ashtang *Hridaya Samhita*, B.P.N.-Bhavaprakash *Nighantu*, M.P.-Madanpal

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*Nighantu, R.N.-Raj Nighantu, K.N.-Kaiyyadeva Dhanvantari Nighantu, P.N.-Priya Nighantu*  
*Nighantu, G.R.M.-Gunaratnamala, D.N.- S.N.- Shaligram Nighantu.*

**Table 3 Karma of Vidarikanda as per Various Samhita**

Karma	C.S.	S.S.	A.H.S.	B.P.N.	K.N.	M.P.N.	R.N.	S.N.	D.N.
<i>Jeevan</i>	✓	-	✓	✓	✓	-	-	-	-
<i>Brimhana</i>	✓	✓	✓	✓	✓	✓	-	-	-
<i>Rasayan</i>	✓	-	✓	✓	✓	✓	-	-	-
<i>Mutral</i>	✓	✓	✓	✓	✓	-	-	-	-
<i>Kanthya</i>	✓	✓	✓	✓	✓	-	-	-	-
<i>Balya</i>	✓	✓	-	✓	✓	-	✓	✓	✓
<i>Varnya</i>	-	-	-	✓	✓	-	-	-	-
<i>Vrushya</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓
<i>Stanya</i>	-	-	-	✓	✓	✓	-	-	-
<i>Pushtikar</i>	-	-	-	-	-	-	✓	✓	-

**Description of Vidarikanda: -**

**a) Macroscopic**

Generally, tuber is available as cut pieces in market. Outer side of tuber is reddish-brown, smooth except at prominence. Cut surfaces are creamish colored, starchy, slightly porous, does not break, but pliable and tastes sweetish.

**b) Microscopic**

Tuber of *Vidarikanda* has 20-30 layers of cork. Cork has rectangular and radially arranged cells. Secondary cortex formed of 6-15 layers of circular and rectangular cells. Stone cells form yellow band of 2-6 layers towards inner side of cortex. Calcium oxalate found in parenchymatous cells of tuber. Inner white spongy zone formed by xylem. Xylem formed of thin walled, radially elongated cells. Plenty of starch grains present in all parenchymatous cells<sup>16</sup>.

**Phytoconstituents**

Gluconic and Malic acids present in *Vidarikanda*. B-sitosterol, glucose, fructose and sucrose are also present in *Vidarikanda*. Pterocarpan-tuberosin, pterocarpanone-hydroxytuberosone,

two pterocarpenes anhydrotuberosin and 3-O-methylanhydrotuberosin, and coumestan tuberostan, an isoflavone-puerarone and a coumestan-puerarostan are found in its tuber<sup>16</sup>. Tubers contains plenty of isoflavanoids like puerarin, daidzein and genistein<sup>17</sup>. Nutritious contents are Carbohydrates, Mono Saccharides, Poly Saccharides, Hexose Sugars, Steroids, Alkaloids, Anthraquinone glycosides, Saponin, Flavonoids<sup>18</sup>. Some parameters related to physico-chemical study of *Vidarikanda* are described in table no.4.

**Table 4 Physico-Chemical Properties - Purity and Strength<sup>16</sup>**

Testing parameter	A.P.I. Standards
Foreign matter	Not more than 2 %
Moisture content	Not more than 10%
Total Ash	Not more than 17 %
Acid-insoluble ash	Not more than 4.5 %
Alcohol-soluble extractive	Not less than 4 %
Water-soluble extractive	Not less than 24 %
Starch	Not less than 14%

Nutritional value of any drug is main factor that affect growth of body and thereby induce *Brimhana* effect on body. Nutritional value of *Vidarikanda* is described in table no.5.

**Table 5 Nutritional value of Vidarikanda<sup>19</sup>**

Sr. N.	Nutrient	Quantity
1.	Carbohydrate	64.6%

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2.	Protein	10.9%
3.	Fiber	3.5%

## DISCUSSION ON ACTION OF PHYTOCONSTITUENTS IN GROWTH

Proteins in it are the main building blocks of body. Increased protein intake contributes to muscle mass gains and provide more muscle protein producing power<sup>20</sup>.

Carbohydrates stored in muscles are called muscle glycogen and they determine the anabolic and catabolic state of muscles. If glycogen is in sufficient amount, then there are more chances of improved growth.

Monosaccharides are carbohydrates and nutritionally more important are pentoses like ribose and the hexoses like glucose.

Polysaccharides serve as sources and storage of energy and form the supporting tissue of plants and some animals. The mostly available polysaccharides in nature are cellulose and starch<sup>21</sup>.

Hexose sugar is mainly glucose and fructose and both of these are main source of energy for the body.

Glucocorticoids are steroids which regulate many cellular functions like metabolism, development, homeostasis<sup>22</sup>.

Alkaloids has cardioprotective and anti-inflammatory properties<sup>23</sup>.

Anthraquinones shows immunoregulatory, anti-hyperlipidemic and anti-inflammatory effect<sup>24</sup>.

Saponins also has wide range of pharmaceutical properties which helps to prevent some infections and disease and thereby healthy growth of body<sup>25</sup>.

Antioxidative potential of flavonoids is more than that of Vitamin C and vitamin E<sup>26</sup>. Flavonoids also have cardioprotective<sup>27</sup> and neuroprotective<sup>28</sup> actions and chemoprotective abilities<sup>29</sup>. Flavonoids prevent neurodegenerative diseases like dementia<sup>30</sup>, Parkinson's<sup>31</sup> and Alzheimer's disease<sup>32</sup>. Natural bioactive flavonoids have antiviral activity<sup>33</sup>. By damaging the cytoplasmic membrane and inhibition of energy metabolism and nucleic acid synthesis of microorganisms<sup>34</sup> flavonoids shows bacteriostatic and bactericidal activity. Flavonoids decreases blood glucose level and increase insulin sensitivity in animals<sup>35</sup>.

$\beta$ -sitosterol can also be used as nutritional supplement<sup>36</sup>

Tuberosin have antioxidant property<sup>37</sup>.

*P. tuberosa* improves activity of RBC's and also increases the level of LH, FSH, testosterone and also gonadotropin release hormone GnRH<sup>38</sup>.

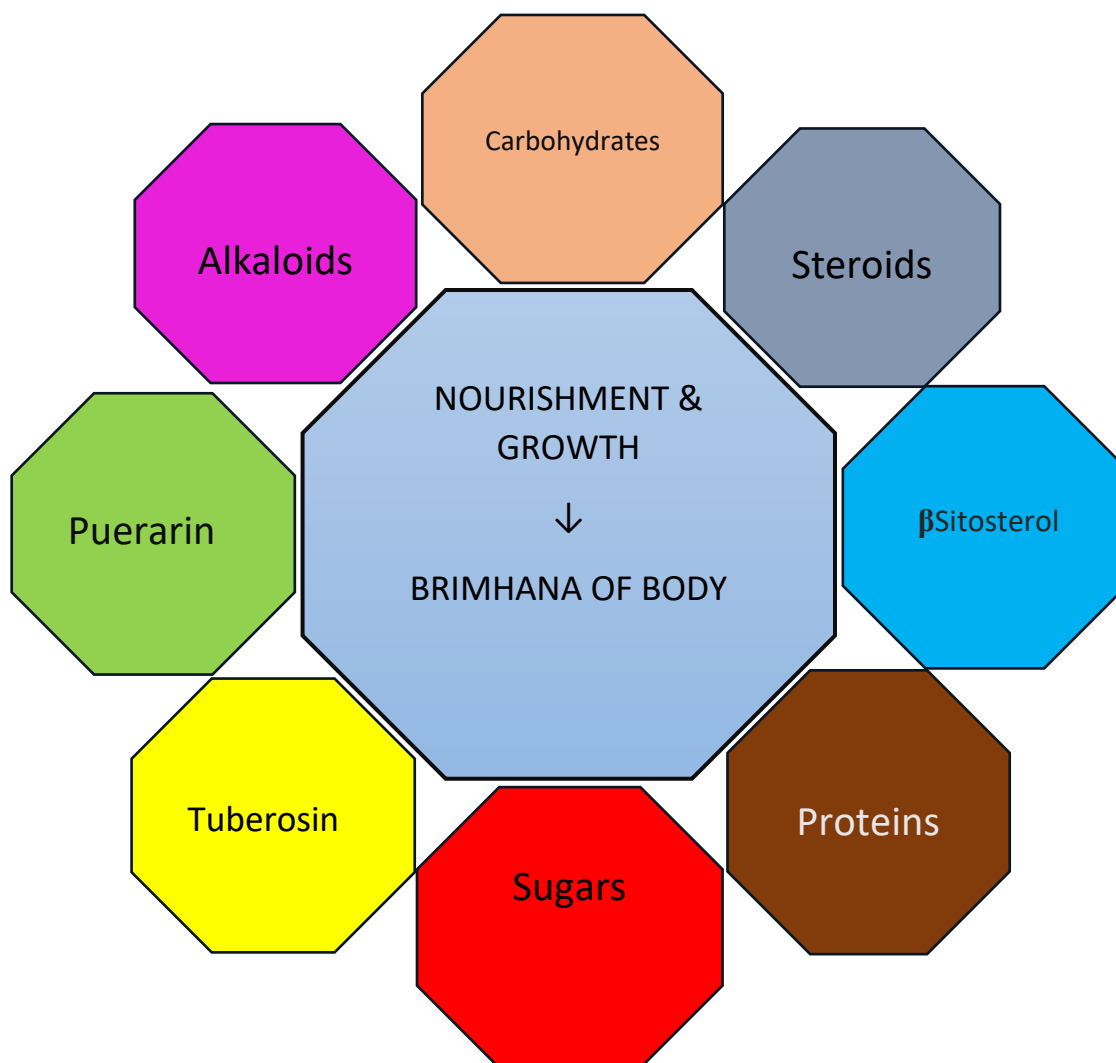
All these are functions of phytoconstituents of *Vidarikanda* that are useful in growth and development of body and thereby *Brimhana* of body is showed in schematic representation in figure no.1.

Hence in short, according to modern science phytoconstituents from *Vidarikanda* helps to increase body mass and also protect body from various disease conditions. Proteins in it are building blocks of body implies proteins has  
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*Brimhana* effect. Carbohydrate in muscle state. Implies that it has power to build muscle determines whether anabolic or muscle building i.e., *Brimhana*.

*Schematic representation of Brimhana by Vidarikanda ingredients: -*



**Figure 1** Schematic representation of *Brimhana karma* by *Vidarikanda* ingredients

Monosaccharides and polysaccharides are source of energy to body without which body can't be nourished and built. Glucocorticoids in it regulate cell metabolism and functioning which implies that they support growth and helps in *Brimhana*. Alkaloids, anthraquinones, saponins mostly protect body from various disease conditions and thereby protect growth from getting negatively affected. Flavonoids protect body from various diseases using its antioxidant potential.

According to Ayurveda, properties of *Vidarikanda* like *Guru Snigdha guna*, *Madhur rasa*, *Madhur vipaka* and *Sheeta veerya* brings *Brimhana* effect in it.

## CONCLUSION

*Guru Snigdha guna*, *Madhur rasa*, and *Sheeta veerya* of *Vidarikanda* brings *Brimhana* effect in it. Also, we can conclude that its chemical

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composition helps to nourish, build and strengthen body and thereby carries out *Brimhana karma*.

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