



### “Pharmacognostical study of kulattha (*Dolichos Biflorus*).”

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#### ABSTRACT:

*Kulattha* (*Dolichos biflorus* Linn.) has been well documented in *Ayurvedic Pharmacopoeia* which includes *Samhita*, *Nighantus*, *Chikitsa Grantha*. It provides collective information regarding *Kulattha*, its morphological characters, properties and actions from *Nighantu*, *Samhita*. The article reveals its taxonomic classification, synonyms, botanical description and pharmacognosy. It also reveals indications in various diseases as per *Samhitas* and *Nighantu*.

#### KEY WORDS:

*Kulattha*, *Dolichos biflorus* Linn. Pharmacognosy, Phyto-Constituents, Pharmacopoeia

#### INTRODUCTION:

The word *Kulattha* is derived from the root word “*kul+stha+ka*” .Nirukti of *Kulattha*

is “*kulambum lagnam sat tisthati*” which means one which stays deep rooted in the ground.<sup>[1]</sup> *Dolichos* belongs to the genus of twining herbs found in both hemispheres. About 8 species are found in India, out of which *Dolichos biflorus* (*D. biflorus*) and *Dolichos lablab* are extensively cultivated and used. It is a common twining creeper, a branched suberect or trailing annual with small trifoliate leaves with narrow flat curved pods 1.5-2.0 inches long tipped with a persistent style. The pods contain 5-6 flattened, ellipsoid seeds which are 1/8-1/4 inch long. It is native to most parts of India, and is found up to an altitude of 5000 m. Here organoleptic characters, ash value, water soluble and alcohol soluble extracts and moisture content along with HPTLC and TLC studies are given.

#### BOTANICAL DESCRIPTION:<sup>[2]</sup>

Latin name	<i>Dolichos biflorus</i>
Family	Fabaceae

<b>Vernacular name</b>	Sanskrit- kulattha Hindi- kulthi ,kurathi Telugu- vulavalu Kannad- huruli ,hurali Tamil – kollu,kannam Punjabi – lodhar Urdu- kulthi English – horse Gram
<b>Habitat</b>	A common twinning plant growing all over India, especially in Bombay and Madras
<b>Botanical description</b>	It is an annual herb , which grows 500cm height and bears light yellow flowers.it is cultivated in most parts of India.
<b>Part used</b>	Seeds

**Properties of kulatha mentioned in various samhita and nighantus:**

	<u>RASA</u>	<u>VIRYA</u>	<u>VIPAKA</u>	<u>GUNA</u>
<i>Charak samhita</i> <sup>[3]</sup>	<i>kashaya</i>	<i>ushana</i>	<i>amla</i>	<i>ushana</i>
<i>Sushrut samhita</i> <sup>[4]</sup>	<i>kashaya</i>	<i>ushana</i>	<i>katu</i>	<i>ushana</i>
<i>Ashtanga sangraha</i> <sup>[5]</sup>	<i>kashaya , swadu</i>	<i>ushana</i>	<i>amla</i>	<i>Ruksha, laghu, vidahi, tikshna.</i>
<i>Ashtang hridaya</i> <sup>[6]</sup>	<i>Kashaya, swadu</i>	<i>ushana</i>	<i>amla</i>	<i>Ruksha, laghu, vidahi</i>
<i>Bhavprakash nighantu</i> <sup>[7]</sup>	<i>kashaya</i>	<i>ushana</i>	<i>katu</i>	<i>Laghu, vidahi, medohara</i>
<i>Raja nighantu</i> <sup>[8]</sup>	<i>Kashaya, katu, tikata</i>	<i>ushana</i>	<i>katu</i>	<i>ruksha</i>
<i>yogratnakar</i> <sup>[9]</sup>	<i>kashaya</i>	<i>ushana</i>	<i>amla</i>	<i>Ruksha, ushana, sara</i>
<i>Madanpal nighantu</i> <sup>[10]</sup>	<i>kashaya</i>	<i>ushana</i>	<i>katu</i>	<i>Laghu vidahi, sarah</i>
<i>Priya nighantu</i> <sup>[11]</sup>	<i>kashaya</i>	<i>ushana</i>	<i>amla</i>	<i>Ushna, grahi</i>
<i>Kaidev</i>	<i>Kashaya</i>	<i>ushana</i>	<i>amla</i>	<i>Laghu,ruksha,</i>

<i>nighantu</i> <sup>[12]</sup>	<i>madhura</i>			<i>vidahi</i>
<i>Shaligram nighantu</i> <sup>[13]</sup>	<i>Kashaya</i>	<i>Ushana</i>	<i>Amla</i>	<i>ruksha , vata kapha nashak</i>

**RASAPANCHAKA:** *Rasa* of *Kulattha* is *kashaya*. Its *guna* are *laghu, ruksh*. It is *ushna virya* and has *katu vipaka*. It is mainly *vata-kapha hara*.<sup>[14]</sup>

**SYNONYMS:**<sup>[15]</sup>

<i>Tamravarna</i>	<i>Pitamguda</i>
<i>Kalavruta</i>	<i>Aaliskandha</i>
<i>Anilapaha</i>	<i>Surashtrak</i>
<i>Karshana</i>	<i>Druk prasada</i>

### VARIETIES OF KULATTHA:

According to *Acharya Sushrut*, *Kulattha* is of two types = *kulattha* and *vanya kulattha*.<sup>[16]</sup>

According to *Raja nighantu*, it is of three types = *tamra beej, shweta beej, sitetarbeeja*.<sup>[17]</sup>

### MATERIALS AND METHODS:

Raw product that is seeds of the *Dolichos biflorus* Linn. selected for study was collected from the local market, Mumbai, Maharashtra. Standardisation and analytical report was done by Alarsin Pharmaceuticals, Andheri, Mumbai, India and HPTLC was done by Seth Govind Raghunath Sable College Of Pharmacy, Pune, Maharashtra, India.

### PHARMACOGNOSTICAL

#### EVALUATION:

The formulation was identified, authenticated and standardised. The study includes organoleptic evaluation and microscopic evaluation. They are stored according to the SOP provided in the API.<sup>[18]</sup>

a) Macroscopic:

Seeds are hard with smooth surface, ellipsoid, flattened, greyish to reddish brown, 4-6 mm long and 4 mm wide, prominent micropyle and taste, somewhat astringent.

Taxonomical classification

- Kingdom - Plantae
- Division- Biflorus
- Order – Fabales
- Family – Fabaceae
- Subfamily -Faboideae
- Tribe - phaseoleae
- Scientific name – *Dolichos biflorus*
- Genus – *Dolichos*
- Species – *biflorus*

b) Microscopic

Transverse section of seed shows testa consisting of a single layer of columnar, thin-walled, parenchymatous, palisade like cells covered with a thin cuticle followed by single layer of rectangular to square bearer cells and 3-4 layers of thin-walled rectangular parenchymatous cells, more wide at micropylar region, cotyledon consisting of single layer of upper and lower epidermis covered with a thin cuticle, epidermal cells thin-walled, rectangular and parenchymatous followed

by mesophyll, consisting of angular parenchymatous cells, filled with numerous simple starch grains and protein bodies are also present.

#### PHARMACOKINETICS<sup>[19,20]</sup>

**KARMA** :Grahi,mootrala ,vidahi,sweda samgraha ,krimihara , pittakruta , medohara

**ROGAGHNATA** : kasa, shwas, hikka, peenasa, daaha, anaha, arsa,ashmari, shukrashmari, gulma, shoola, krimi roga, amavata,prameha, mootraroga, medaroga, jwara.

**Kashaya preparation as per Samhita:**<sup>[21]</sup>

क्वाथकल्पना:

पानीयंषोडशगुणक्षुण्णेद्रव्यपलेक्षिपेत्।

मृतपात्रेक्वाथयेद्ग्राहयम्अष्टमांशावशोषितम्

॥

तत्तजलंपाययेद्धीमानंकोष्णम्मृदुअग्निसाधितम्।

श्रुतः

क्वाथम्कषायश्चनिर्यूहः सनिगद्यते॥

(शा.म.खण्डद्वितीयअध्याय/१-२)

#### PHYSICO CHEMICAL ANALYSIS:

Physicochemical parameters of *Kulatthabharad* like weight variation, hardness, disintegration time, loss of drying, Ash value, water soluble extract, pH were determined as per API guidelines. Analytical report of sample of *Kulattha bharad* as per Alarsin reports is as follows: (reports are attached within )

Test	Specifications	Results
Appearance	Dry bharad	Dry bharad
Colour	Greyish to reddish brown	Light reddish brown
Odour	Characteristics	Characteristics
Taste	Astringent	Astringent
Moisture content	NMT 5%	3.41%
ASH	NMT 5%	2.96%
AIA	NMT 1%	0.53%
ASE	NLT 3%	5.60%
WSE	NLT 12%	14.57%
NMT – NOT more than	NLT – NOT less than	

#### CHEMICAL COMPOSITION:<sup>[22]</sup>

*Kulattha* extract contains alkaloids, flavonoids,tannins, carbohydrates and proteins. It was reported that seeds (both Tender and mature) are rich in urease but a considerable amount of amino acid was not reported. A new and nonspecific lectin having the inner carbohydrate moiety as N-acetyl glucosamine, N-M-glycosidically linked to asparagine has been isolated from the seeds of *Dolichos biflorus*.

Constituents of grain with husk are albuminoids, starch, oil, fibre, ash, and phosphoric acid, Enzyme urease.

#### CONCLUSION :

Ayurvedic pharmacodynamics of *Kulattha* shows its *laghu*, *ruksha* property and pacifies *vatakapha doshas* and has properties like *grahi*, *mootrala* ,*sweda samgraha*, *vidahi*, *medohar* etc. Sample taken matches with API standards. *Kulattha* is indicated in diseases like

*ashmari, daha, arsa,shukrashmari, mootraroga* etc. Versatile nature of *Kulattha* has been attributed to the status of both diet and drug. Its extract contains alkaloids, flavonoids, proteins ,tannins, seeds extract rich in urease.

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*Conflict of Interest: Non | Source of funding: Nil*

*Cite this article:*

*“Pharmacognostical study of kulattha (Dolichos Biflorus).”  
Balaji S. Sawant, Bhagyashree Gaikwad, Shraddha Chaudhari*

*Ayurlog: National Journal of Research in Ayurved Science- 2022; (10) (02): 01-09*



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## ANALYTICAL REPORT: KULTHA BHARAD (*Dolichos biflorus*)

TEST	SPECIFICATIONS	RESULT
APPEARANCE	Dry Bharad	Dry Bharad
COLOUR	Greyish To Reddish Brown	Light Reddish Brown
ODOUR	Characteristic	Characteristic
TASTE	Astringent	Astringent
MOISTURE CONTENT	NMT 5 %	3.41 %
ASH	NMT 5 %	2.96 %
A I A	NMT 1 %	0.53 %
A S E	NLT 3 %	5.60 %
W S E	NLT 12 %	14.57 %

### MACROSCOPY



*The sample complies with the standards as per Ayurvedic pharmacopoeia Part I Volume I page 75.*

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Outward No. : COPS / 1381 / 2022 - 22

Date : 01/02/2022

**Name of Student-** Dr. Bhagyshree Gaikwad  
**College-** Smt. K G Mittal Ayurvedic Mahavidyalaya, Charni Road, Mumbai  
**Sample Submitted:** - Bharad

**Test:-** HPTLC  
**Stationary Phase:-** Silica Gel 60 F<sub>254</sub>  
**Mobile Phase:-** Toluene: Ethyl Acetate: Methanol: Formic acid(3.2:5.5:1:0.3 w/w/v)

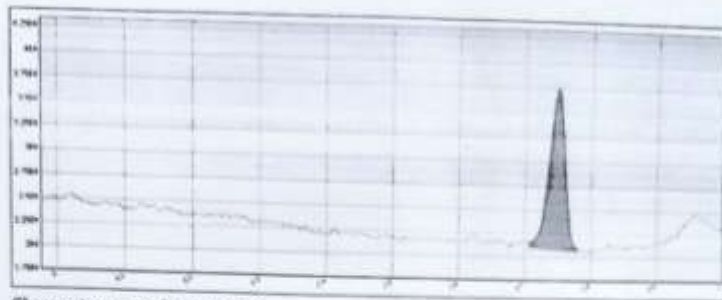
**Plate**



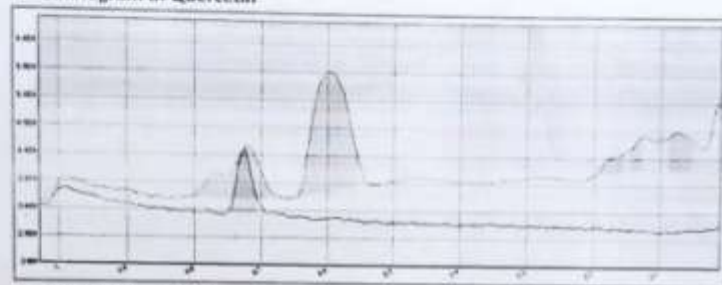
S:- Sample  
Q:- Quercetin



Graph



Chromatogram of Quercetin



Legend: ■ Lane 1 ■ Lane 2

Graph of Sample-Bharad

Lanes

ID	Width	Bands	Volume	Notes
Quercetin	76	6	1068.61	
Bharad	61	1	100.46	

Bands

Rf	Bharad	Quercetin
0.769	70.18	0
0.724	170.82	100.46
0.596	562.09	0
0.172	74.21	0
0.137	54.55	0
0.075	138.76	0

Mr. G. B. Nigade

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