

**REVIEW OF *DHAULA PHINDAWRI* (*Nothosaerva brachiata* Linn. Wight.) A FOLKLORE DRUG USED IN MANAGEMENT OF URINARY STONES**

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**ABSTRACT**

*Dhauila Phindawri* is a drug that is used in management of urinary stones by the local *Vaidyas* and tribal peoples of Marathwada in Maharashtra and some region of Rajasthan. Literature of the drug is not available in the classics hence to focus on the drug and its treasure, its action the study carried.

**KEYWORDS:-** *Dhauila Phindawri*, *Nothosaerva brachiata*, *Ashmari*, Folklore.

**INTRODUCTION**

There are so many herbal drugs explained by *Acharya* in *Brihatrayi*, *Laghutrayi* & different *Nighantus*. In these literatures, they also explain the properties of *Dravya*. But most important thing they had

mentioned morphology of drugs by means of various synonyms- based on the external and internal features. So that we can identify the specific *Dravya* and then we can use them in concern preparations for treatment. There are so many herbal drugs in the world which has same external features or by necked eyes they seem to be look-a-like. Hence it create confusion to identify the real one. *Acharyas* has classified the herbal drugs on various bases. In the *Ayurvedic* literatures there are so many drugs which has controversies because of their minimum knowledge about morphology or due to similar names given in *Nighantu* for

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different drugs. Today by the modern technologies taxonomists has done important work for identification of drugs.

The Indigenous drugs have great importance. “*Dhauila Phindawri*” is a traditional drug useful for *Mutrashmari*. It is a weed grown in a eried region. During literary research on this *Dravya*, the only reference was studied in “Medicinal plants used in *Ayurveda*” with its name as “*Dhauila Phindawri*” with botanical name as *Nothosaerva brachiata* Linn. Wight. and family Amaranthaceae. It is correlated with *Ayurvedic* herb “*Pashanbheda*” which is very controversial *dravya*. There is no such reference about such morphology in *Ayurvedic Granthas* that we *can* correlate this drug as per updated knowledge. A book written by Dr. Jharkhanday Ojha from B.H.U. named “A scientific study on controversial drugs (with special reference to *Pashanbheda*)”, he has included this *Dravya* under his study for the same. Journal of Research in *Ayurvedic* medicine in 1967, V. Narayana Swami has given reference of *Nothosaerva brachiata* Linn. Wight. as a controversial *Dravya* of *Pashanabheda*. By the means of modern technologies and various references about external morphology with guidance of taxonomist, following conclusion was drawn-

**Latin name** : *Nothosaerva brachiata* Linn. Wight.

**Family** : Amaranthaceae

**Local name** : Rajasthani- *Dhauila Phindawri*.

Oriya- *Moduranga*

This article is an attempt to explore the minimally known herb *Dhauila Phindawri* (*Nothosaerva brachiata* Linn. Wight) which is widely used in the treatment of urinary calculi.

## MATERIALS AND METHODS

Various texts including different floras and articles from internet were reviewed for the literary search of the herb *Dhauila Phindawri* (*Nothosaerva brachiata* Linn. Wight).

## OBSERVATIONS AND DISCUSSION

### Classification of *Dhauila Phindawri*

#### Ayurvedic method of *Dravya* classification

Many *Dravyas* can be found in our nature & due to their number it is difficult to define them separately. Because of this, their classification is required so that they can be easily identified. From ancient period *Udbhija Dravya* are classified by its structure.

In *Vedas Udbhijas* are divided into two main categories

- 1) *Sapushpa*
- 2) *Apushpa*

Since *Dhauila Phindawri* is a traditional *Dravya* & there are no references available in *Samhita Granthas*, it can be classified as follow according to its external morphology.

- 1) *Chetana Dravya*.
- 2) *Antah Chetan Dravya*.
- 3) *Karya Dravya*.
- 4) *Oudbhidam - Vanaspati*
- 5) Terrestrial plant
- 6) On the basis of shape - Under shrub
- 7) On the basis of shape age - Annual or seasonal plant.

### Modern method of *Dravya* classification

Botanical & Pharmacognostic information of *Nothosaerva brachiata* Linn. Wight.

Botanical classification:

Kingdom	: Plantae
Division	: Phanerogams
Sub-division	: Angiospermae
Class	: Dicotyledonae
Sub-class	: Polypetalae
Family	: Amaranthaceae
Genus	: <i>Nothosaerva</i>
Species	: <i>brachiata</i> (Linn. Wight.)

### Family- Amaranthaceae

#### Description of amaranthaceae family

A = Not, Maraina = To wither

Herbs are clambering sub-shrub, shrubs or lianas. Leaves are alternate or opposite, entire exstipulate. Flowers are small, bisexual or unisexual or sterile & reduced, subtended by 1 membranous bract & 2 bracteoles, solitary or aggregated in cymes. Inflorescence elongated or condensed spikes (heads), racemes or thyrsoid structures of varying complexity. Bracteoles are membranous or scarious. Tepals 3-5, membranous, scarious or subleathery, 1-, 3-, 5-, or 7 (-23) veined, stamens as many tepals & opposite these rarely fewer than tepals,

filaments true, united into a cup at base or +\_ entirely into a tube, filament lobes present or absent, pseudostaminoides present or absent, anthers (1-or) 2- loculed, dorsiflexed, introrsely dehiscent. Overy superioe, 1-loculed, Ovule 1 to many, style persistent, short & indistinct or long & slender, stigma capitate, penicillate, 2-lobed. Fruit a dry utricle or fleshy capsule, indehiscent, irregularly bursting or circumscissile. Seeds are lenticular, reniform, subglobose, or shortly cylindric, smooth or verruculose. There are 70 genera & 900 species present in this family world-wide.

Other drugs from family- Amaranthaceae

1. *Achyranthus aspera* Linn. (Sanskrit - *Apamarga*)- Action- Astringent, diuretic, alterative and antiperiodic; purgative.
2. *Aerva lanata* Juss. (Sanskrit - *Ashmabheda*)- Action-Anthelmintic, diuretic.
3. *Alternanthera echinata*.
4. *Alternanthera sessile* R. Br or Linn.(Bombay - *Lanchari*)- Action- Used in snake-bite.
5. *Amaranthus anardana* Hamit.(Hindi - *Chua*) - Action- Used in scrofula and diarrhoea.
6. *Amaranthus blitum* Linn. (Marathi - *Tambada Math*)- Action- Used for vegetable purpose.
7. *Amaranthus caudatus* Linn.(Himalayan - *Kedari-Chua*)
8. *Amaranthus farinaceus* Roxb. - Action- Diuretics
9. *Amaranthus frumentaceus* Ham. (Bombay - *Kahola - bhaji*)- Action- Diuretics, *Rakta-Shodhak* & also beneficial for piles.
10. *Amaranthus gangenticus* Linn. (Marathi - *Lal-Sag*)- Action- Used for vegetable purpose.
11. *Amaranthus hypochonriacus* Linn.- Action- Astringent
12. *Amaranthus mangostanus* Linn.(Marathi - *Polka*)- Action- Used for vegetable purpose.
13. *Amaranthus oleraceus* Linn. & Wild.(Marathi - *Tandulja*)- Action- Used for vegetable purpose.
14. *Amaranthus paniculatus* Miq. & Linn.(Marathi - *Rajgira*)- Action- Diuretics, *Rakta-Shodhak* & also beneficial for piles.
15. *Amaranthus polygamus* Wild. (Marathi - *Koordoo*)- Action- Astringent and nervine tonic; anodyne.
16. *Amaranthus tristis* Linn. & Wild.(Marathi - *Math*)- Action- Demulcent, diuretics
17. *Amaranthus viridis* Linn.(Sanskrit - *Tanduliya*)- Action- Used in snake-bite and scorpion-sting.
18. *Celosia argentea* Linn.(Hindi - *Safed Murga*)- Action- seeds used in Diarrhoea

19. *Celosia cristata* Linn.(Hindi - *Lal Murga*)- Action- Seeds are demulcent.

**Genera - *Nothosaerva***

***Description of Nothosaerva genera***

Leaves - Opposite or Clustered

Anther - 2-Celled

Flowers- Perfect in spikes;

Stamens-2,

Staminoides- Absent

**Pharmacognosy of genera- *Nothosaerva***

Leaves - Alternate

Staminodes present between the stamens or forming a short hypogynous cap - [Aerva]

Staminodes absent

Overy two to many, ovuled;

Flowers in simple or branched spikes - [Celosia]

Overy 1, ovuled;

Flowers in axillary clusters or in spikes or panicles:

Flowers bisexual, pink, in spikes; Fruit a crustaceous nut - [Digera]

Flowers unisexual or polygamous; Fruit indehiscent or circumsciss- [Amaranthus]

Leaves- Opposite or Clustered

Anther- 1-celled, leaves opposite;

Flowers in ovoid, terminal heads becoming cylindrical later, stigma bifid- [Gomphrena]

Flowers in axillary, clustered heads, stigma capitate- [Alternanthera]

Anther- 2-celled

Flowers perfect in spikes;

Stamens-2, staminoides absent- [Nothosaerva]

Stamens-5, with interposed staminoides- [Achyranthes]

Flowers fascicled, Perfect flower one, imperfect ones several with hooked

Bristles- [Pupilia]

**There is only one species included in this genera**

**i.e. *Nothosaerva brachiata* Linn. Wight.**

External morphology of- *Nothosaerva brachiata* Linn. Wight.

### External morphology

Annual herb, (4-)10-45 cm, with many spreading branches from about the base upwards; stem and branches sub erect, striate, glabrous or thinly hairy. Leaves narrowly to broadly elliptic, elliptic-oblong or ovate, entire, thinly hairy to glabrous or almost so, obtuse to sub acute at the tip, lamina of the lower main stem-leaves c. 10-40 (-50) x 6-20 mm, gradually or more abruptly narrowed to a petiole about half the length of the lamina, upper and branch leaves becoming shorter and narrower. Flowers in dense, 3-15x 2-2.5 mm spikes, which are clustered in the leaf-axils of the stem and branches or on very short auxiliary shoots; spikes sessile, or the terminal spike on auxiliary shoots shortly (3 mm) pedunculate, inflorescence axis thinly to rather densely pilose; bracts hyaline, minutely erose, concave, acute or shortly acuminate, 0.5 mm, glabrous or very thinly hairy, nerveless; bracteoles minute, hyaline. Perianth segments broadly oval, 1-1.25 mm, sub-acute to shortly acuminate, villous on the outer surface, with a thick greenish vitta along the midrib, which extends. two-thirds of the way up each segment. Stamens are longer than the ovary and style. Capsule included, 0.75 mm, falling with the perianth. Seed are 0.4 mm, chestnut-brown, smooth and shining.

### Distribution

South and South East Asia from India to Burma, Shrilanka & Ceylon, also reported from Borneo; tropical Africa from Nigeria and the Sudan south to Angola and Rhodesia, Mauritius. The normal habitat of this species is in sandy depressions or ditches in which water stands during some part of the year. Apparently a rare plant in the East and South east of Pakistan, this being the westernmost part of the Asiatic range of the species.

### Figures (a), (b), (c) and (d) : *Dhauila Phindawri* plant



(a)



(b)

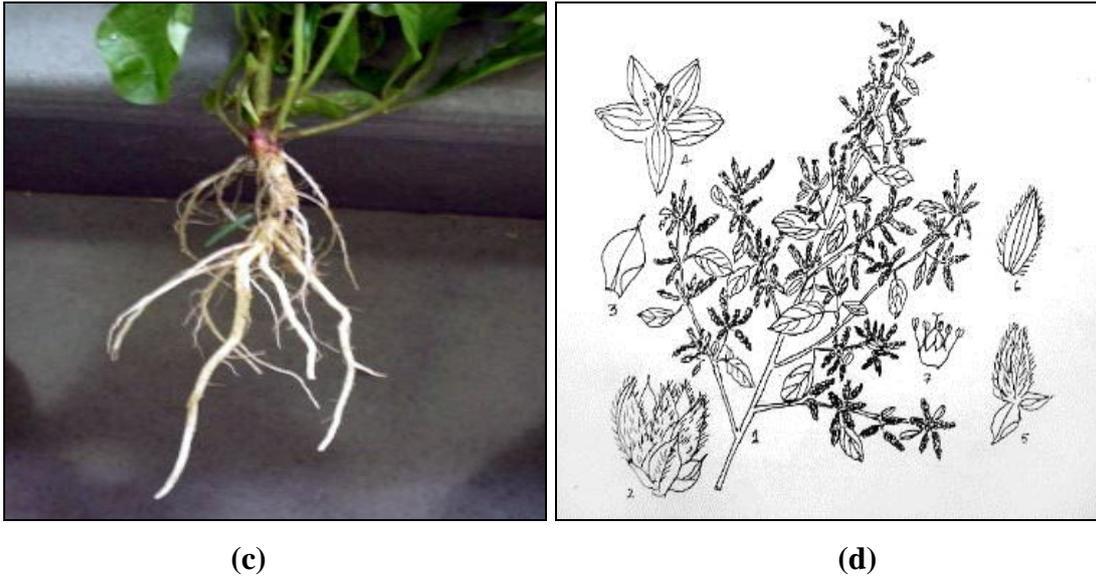


Figure (a) - Whole plant

Figure (b) - Whole plant with inflorescence

Figure (c) - Roots of plants

Figure (d) shows:

- 1) Twig
- 2) Part of Inflorescence
- 3) Bract
- 4) Open Flower
- 5) Flower
- 6) Sepal
- 7) Gynoecium

**Details about external morphology in various texts-** *Nothosaerva brachiata* Linn. Wight.

### Flora of Saurashtra

Annual, erect, slender herbs,

20-60cms high,

Much branched from the base, deciduous, branches striate, spreading, glabrous or puberulous often with purplish- tinge or reddish.

Leaves- 1-5.5 x 0.7-2.2 cm, Ovate or elliptic, acute or sub-acute at apex, tapering at base,

Entire along the margins, membranous, green, glabrous, petiole- 0.9-1.8 cm long.

Flowers –Small, creamy-white or pinkish, in solitary or auxiliary fascicled

Spikes 0.5-1.5 cm long, sessile, cylindrical, dense, 2-stamens.

Utricles –0.3cm long, falling off, obovoid or oblong compressed, smooth, pointed at base, rounded at apex circumscise at middle.

Seeds- Minute, reddish-black, shining, lenticular,

Flowering --- August to February

Occurrence – Junagadh, Girnar hill, Sasan in gir forest, Jamnagar.

Uses- the plant is used as pot-herb.

### **Flora of Maharashtra**

An erect, slender herb, 15-20 cm high, glabrous or nearly so.

Stem branched from the base, branches spreading, usually glabrous.

Leaves- 2-4 by 0.9-2 cm, Elliptic- lanceolate, acute or sub-obtuse, Thinly membranous, green, glabrous or minutely puberulous, Base tapering into a short often obscure petiole.

Flowers- Sessile, crowded in small, dense, axillary, sub-sessile, solitary or clustered, white cylindrical spikes 4-10 mm long. Bracts & bracteoles hyaline, acute, persistent.

Perianth- Less than 1 mm long, Sepals-Acute or sub-acute, hyaline.

Seeds- Minute, shining, black.

Flowering -October to February

Distribution- Karjat. Mumra, Nhava, Borivali, Tungar, jogeshwari, Malad, Kalwa, Goregaon, Ratanagiri, Koncan (stocks), Pune, Raigad, Thane, Sindhuduraga, Khandesh, Dhule, Palghar, Nashik, Vidarbha, Somanpalli, Ashti, Nagpur, Chandrapur, Native of Tropical Africa, Mauritius, Tropical Asia.

### **Flora of Delhi**

An erect or diffuse, much-branched, glabrous herb.

Leaves-2-4 x 1-2 cm. thin membranous, elliptic or ovate, lanceolate, tapering to the base.

Flowers-Greenish-white, in small, dense, axillary 6-10 x 3mm. spikes. Stamens- 2

Seeds minute, dark brown, shining

Flowers & Fruits- September-February

Occurs in moist crevices between rocks or in soils near temporary ponds in the hilly tracts near Faridabad & in low-lying areas of Najafgarh.

### **Flora of British India**

An annual with opposite spreading branches

Leaves-opposite

Flowers- Most minute, woolly in axillary solitary or clustered spikelets.

Sepals-3-5, hyaline, obtuse-1-nerved.

Stamens-1-2, free, anther-2-celled.

Staminoides- 0.

Ovary oblong, compressed. Stigma subsessile, capitate,

Ovule 1, pendulous from a long basal funicle.

Utricle- oblong, compressed indehiscent.

Seed- Inverse, lenticular, Testa- crustaceous, Embryo-hooked, Cotyledons linear

**Table 1: Comparative description according to different floras.**

No.	Plant Parts description	Flora of Delhi	Flora of British India	Flora of Maharashtra	Flora of Saurashtra	Description by Zandu pharmacy	Self-seen features
1	Age	--	Annual	--	Annual	Annual	Annual
2	Stems	erect or diffuse, glabrous herb	--	erect, slender herb, 15-20 cm high, glabrous or nearly so	20-60cms high, erect, slender herbs,	(4-)10-45 cm subterete, striate, glabrous or thinly hairy	20-60cms high, erect, slender herbs,
3	Branches	much-branched	Opposite spreading branches	branched from the base, spreading, usually glabrous	Much branched from the base, deciduous, branches striate, spreading, glabrous or puberulous often with purplish-tinge or reddish.	many spreading branches from about the base upwards, subterete, striate, glabrous or thinly hairy	Much branched from the base, spreading, usually glabrous
4	Leaves	2-4 X 1-2 cm thin membranous, elliptic or ovate, lanceolate, tapering to the base.	Opposite	2-4 by 0.9-2 cm, Elliptic-lanceolate, acute or sub-obtuse, Thinly membranous, green, glabrous or minutely puberulous, Base tapering into a short	1-5.5 X 0.7-2.2 cm, Ovate or elliptic, acute or sub-acute at apex, tapering at base, Entire along the margins, membranous, green, glabrous,	narrowly to broadly elliptic, elliptic-oblong or ovate, entire, thinly hairy to glabrous or almost so	narrowly to broadly elliptic, elliptic-oblong or ovate, entire, thinly hairy to glabrous

				often obscure petiole.			
5	Tip of leaf	--	--	--	--	obtuse to subacute	subacute
6	Lamina of leaf	--	--	--	--	narrower	--
7	Petiole	--	--	--	0.9-1.8 cm long.	--	0.5-1 cm long.
8	Flower	greenish-white, in small, dense, axillary 6-10 x 3mm. spikes	most minute, woolly in axillary solitary or clustered spikelets.	Sessile, crowded in small, dense, axillary, subsessile, solitary or clustered,	small, creamy-white or pinkish, in solitary or axillary fascicled	dense, , 3-15x 2-2.5 mm spikes, which are clustered in the leaf-axils of the stem and branches or on very short axillary shoots	small, creamy-white
9	Spikes	--	--	white cylindric spikes 4-10 mm long.	0.5-1.5 cm long, sessile, cylindric, dense	sessile, or the terminal spike on axillary shoots shortly (to c. 3 mm) pedunculate	0.5-1.5 cm long, sessile, white cylindric, dense
10	Inflorescence	--	--	--	--	axis thinly to rather densely pilose;	axis thinly to rather densely pilose;
11	Bracts	--	--	Bracts & bracteoles hyaline, acute, persistent.	--	hyaline, minutely erose, concave, acute or shortly acuminate, c. 0.5 mm, glabrous or very thinly hairy, nerveless	hyaline, minutely erose, concave, acute or shortly acuminate, 0.5 mm, glabrous or very thinly hairy, nerveless
12	Bracteole	--	--	--	--	minute, hyaline	minute, hyaline
13	Perianth	--	--	less than 1 mm long	--	segments broadly oval 1-1.25 mm, sub-acute to shortly acuminate,	less than 1 mm long

						villous on the outer surface, with a thick greenish vitta along the midrib, which extends c. two-thirds of the way up each segment.	
14	Stamens	2	1-2, free, anther-2-celled	--	2	longer than the ovary and style	longer than the ovary and style
15	Capsule	--	--	--	--	included, c. 0.75 mm, falling with the perianth	--
16	Seeds	minute, dark brown, shining	inverse, lenticular Testa-sructoseous Embryo-hooked Cotyledons linear	minute, shining, black.	minute, reddish-black, shining, lenticular	0.4 mm, chestnut-brown, smooth and shining.	minute, shining, black.
17	Sepals	--	3-5, hyline, obtuse-1-nerved	acute or sub-acute, hyaline	--	--	acute or sub-acute, hyaline
18	Staminoids	--	0	--	--	--	0
19	Ovary	--	oblong, compressed.	--	--	--	oblong, compressed
20	Stigma	--	subsessile, capitate,	--	--	--	subsessile, capitate
21	Ovule	--	1, pendulous from a long basal funicle	--	--	--	--
22	Utricle	--	oblong, compressed indehiscent	--	0.3cm long, falling off, obovoid or oblong compressed, smooth, pointed at base, rounded at apex circumscise at middle.	--	--

23	Flowering	Flowers & Fruits- September-February	--	October to February	August to February	--	August to February
24	Distribution	Occurs in moist crevices between rocks or in soils near temporary ponds in the hilly tracts near Faridabad & in low-lying areas of Najafgarh.	--	Karjat, Mumra, Nhava, Borivali, Tungar, jogeshwari, Malad, Kalwa, Goregaon, Ratanagiri, concan (stocks), Pune, raigad, Thane, sindhuduraga, Khandesh, dhule, pal, nashik, Vidarbha, somanpalli, ashti, nagpur, chandrapur,	Junagadh, Girnar hill, Sasan in gir forest, Jamnagar.	--	--
25	Native of	--	--	Tropical Africa, Mauritius, Tropical Asia.	--	S. and S.E. Asia from India to Burma & Ceylon, also reported from Borneo; tropical Africa from Nigeria and the Sudan south to Angola and Rhodesia, Mauritius	--

Note- S- South and S.E. South east

### *Aushadhi Dravya Sangraha*

#### **Harvesting herbs**

The process of harvesting, preparing and storing herbs provided a very enriching & satisfying experience. Workings with herbs directly teach invaluable information about them which

cannot be substituted by books. Herbs are always more potent when handled with care & reverence.

### **Nature of collected *Dravya***

Drugs were avoided which had been moth-eaten, contaminated by toxins, injured by weapons, burnt by sun or fire, affected by intense breeze, decayed in water or grown in an inauspicious space such as crematorium, etc. The plant had appropriate *Rasa & Gandha*. That was grown in a favourable season and that was from the east side. The normal habitat of this species is in sandy depressions or ditches in which water stands during some part of the year.

### **Mode of collection**

Harvesting a plant which grows wild in nature without any cultivation is called wild-crafting. This provides the purest & best source for making herbal medicines with nature. The essence of wild-crafting is harvesting plants in a manner that increase their number & health. When wild-crafting herbs, that was important to follow certain procedures to ensure that the plant populations are not destroyed in the process. Herbs were collected personally by the possible methods mentioned in *Granthas* on time of *Ashwini Nakshtra* because plants have maximum potency at that time.

### **Collection of herbs**

<i>Desh</i>	- Sadharan.
<i>Sangraha Kala</i>	- Vasant Ritu
<i>Sangraha Nakshtra</i>	- Ashwini Nakshatra,
<i>Draya- Vistar</i>	- Annual herb, much branched from the base, spreading.
Root	- Tap root.
Stem	- 20-60cms high, erect, slender herbs,
Branches	- Much branched from the base, spreading, usually glabrous.
Leaves	- Narrowly to broadly elliptic, elliptic-oblong or ovate, entire, thinly hairy to glabrous

### **Method of collection**

Drug was collected in the early morning after the dew has dried & by 12:00 noon as this is when the life force is at its strongest. Later in the day the plants may wither & wilt under the stress of the sun & so weaker energy. Before plucking, ritual of making an offering to the mother plant was performed. The offering was rice and a special prayer mentioned in

*Ashtanga Sangraha Samhita* was chanted. That was a personal gift in exchange for the plants sacrifice of life. Herbs should be harvested in such a way as to not deplete or inhibit their future growth & development. Herbs were collected as a whole herb by making their roots free from soil with tools. Then measure their weight as total herbs and average single herb and record in a note book. Then with the help of scissor separation of roots from the other parts of herb was done. Then, remove the impurities such as sand, earth etc. from root by the *Prakshalana & Chalana* processes. Gently washed the herbs first & scrubbed roots well.

### **Preservation of plants**

Collected herbs were placed in an appropriate cloth at a place with sufficient ventilation.

### **Drying and Storage of herbs**

Whole herbs were kept in dry air, under shade spreading in thin layer on cloth for eighteen consecutive days till the weight become constant. Confirmation of dryness of herb by breaking the root with hands till the “kat” sound comes, and also crushing leaves for cracky sound. (The flowers crushed off separately or leaves easily stripped off & dried. All plant parts are dry when brittle.)

### **Storing of herbs**

Herb potency is destroyed by heat, bright light, exposure to air & bacteria. Slice the roots, stems, branches into small pieces. Leaves were removed from their stems by running the hand along the stem from its top towards its bottom. Place them in a cool, dry place away from windows, direct sunlight, the stove or other places of high heat.

### ***Saviryata Avadhi***

The shelf life of dried loose *Dhauila Phindawri* is from one to two years. Since this dravya is annual herb.

### **CONCLUSION**

Considering the facts mentioned above it is concluded that majority of the texts suggest *Dhauila Phindawri* i. e. *Nothosaerva brachiata* Linn. Wight as useful for medicinal use and also for vegetable use. This herb possesses diuretic properties and hence it is useful in urinary calculi. *Nothosaerva brachiata* Linn. Wight. belongs to the family-Amaranthaceae and useful in *Ashmari Chikitsa* (clinical management of urinary calculi).

**REFERENCES****Ayurveda samhita grantha**

1. Ashtanga Hridaya—Atrideva Gupt— Chaukhamba Sanskrit Sansthan, Dashama Sanskrana
2. Ashtanga Sangraha—Sarvangasundari vyakya—Pt. Lalchandra Shastri Vaidya, Baidyanatha Ayurveda Bhavana Ltd.
3. Ayurveda Shabdakosha—Venu Madhava Shastri, P.M.R.S.S.M. Nirnaya Sagar Press-Mumbai.
4. Sanskrit Hindi Kosha—Vaman Shivaram Apte, Motilal Banarasi Das, Delhi.
5. Dravyaguana Vidyana—Priyavat Sharma, Chaukhamba Baharati Academy.
6. Dravyaguana Vidyana--Yadavaji Trikamaji, Nirnaya Sagar Press- Mumbai.
7. Dravyaguana Vidyana—Vd. Javalgekar.
8. Sandigdha Nirnaya Vanaushadhi Shastra—Bhagirath Swami.
9. The Wealth of India (Raw material)—Publication and information Directorak CSIR. New Delhi.
10. Nadkarni K.M. Indian Materia Medica—Popular Prakashan, Bombay.
11. Indigenous Drugs of India—Col. R. N. Chopra.
12. Glossary of India Medicinal Plants—CSIR, Publications, New Delhi.
13. Indian Medicinal Plants—Kirtikar & Basu. L.M. Basu & co. Allahabad.
14. The Ayurvedic Pharmacopoeia of India—The controller of publication civil lines Delhi.
15. Medicinal Plants Used in Ayurveda.
16. API Textbook of Medicine—G.S.Sainani, Published by Association of Physicians of India, Bombay,
17. College Botony- New central book agency, Gangullee, Das & Datta.
18. Indian Pharmacopoeia—Manager of Publication Division, New Delhi.
19. The Flora of British India—J.D.Hookar.
20. The Flora of Maharashtra—Dr. Almeda.
21. The Flora of Delhi—
22. The Flora of Saurashtra.
23. A Scientific Study on Controversial Drugs (with special ref. to Pashanabheda)—Dr. Zarakhande ojha.
24. Journal of research in Ayurvedic medicine.