

**A COMPREHENSIVE REVIEW AND STANDARDIZATION OF
TALISAPATRA W.S.R. TO BRIHATTRAYEE AND NIGHANTUS**

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ABSTRACT

Various medicinal plants have been used from the Vedic era. For thousands of years, they have been used to treat and prevent many types of ailments and diseases. A well-known plant is *Abies webbiana* Lindl which is popularly known as the *Talisapatra* used in treatment of various ailments and diseases. Evidenced therapeutic use of *Talisapatra* is found since Veda to many Ayurveda texts. This is a compilation work on review literature from Ayurveda texts to now days Database on Indian medicinal plants, Ayurveda Pharmacopeia of India, current works have been found from google scholar, PubMed, Scopus, Ayurveda journals and research works are which may be useful for researcher, scholar, scientist to easy documentation further work.

KEYWORDS: Review, *Talisapatra*, *Abies webbiana*, Standardization, *Nighantu*.

INTRODUCTION

Talisapatra is a Himalayan high altitude tall evergreen tree, grows up to 60m x 10m with strong horizontally spreading branches. It is found in the forest of Himalayas from Kashmir to Assam, Sikkim, Nepal, Bhutan at altitudes of 3000 -4500 m. as it is belonging to Pinaceae Family and the Botanical Name of *Talisapatra* is *Abies webbiana* Lindl. Syn. *A. spectabilis* (D.Don) Spach.^[1] As this plant leaves are highly demands in Indian Medicine and local

markets of India has substitutes of talisapatra are *Flacourtia catacarphracta* Roxb.; *Taxus baccata* Linn.; *Rhododendron lepidotum* D. Don.; *Rhododendron anthopogon* D. Don.; *Abies pindrow* Royale.; *Pinus wellichiana* and *Cinnamomum tamala* Nees & Ebrem.^[1] From Vedic texts to Ayurveda samhitas had formulated it in several medicines, Even in different Lexicon or nighantus of dravyaguna vijnana had describe it's morphological features and Rasa Guna Virya, Vipak and Karma etc. The standardization methods and phytochemical assessments are going to document here with new researches going on with talisapatra as indicated in various illness like svasa, kasa, mukharoga, kshaya, chardi, aruchi, agnimandya, gulma, rakta pitta, hikka etc. Pharmacological action of talisapatra has good responses in antibacterial, mast cell stabilizing, anxiolytic, anti-tumor, anti-inflammatory, antitussive and central nervous system (CNS) depressant actions, anti-spasmodic, bronchodilator, antiplatelet, hepato-protective, kidney-protective etc.^[1]

AIMS & OBJECTIVE

Detailed knowledge on *Talisapatra* from various Ayurveda texts and standard tools to claim its originality from the substitutes. Which may further help scientist and researchers for interest future works and moreover serves for the humanity and any branch of medical professionals.

Botanical Name

Abies webbiana Lindl.

Syn. *A. spectabilis* (D.Don) Spach.

Family: Pinaceae

Botanical description – It is a tall evergreen tree, grows up to 60m x 10m with strong horizontally spreading branches.

Bark- silvery white to greyish brown, very thin. Winter buds are large, strong, globose, resinous.

Leaves- flat, linear and spirally arranged in the small branches about 1-5cm long and 2mm broad, shining dark green in colour when dried it becomes greyish-brown needle like. There is a midrib in the upper surface and routes downs the middle with two faint lines on both sides. Petioles are very short and greyish brown in colour.

Flowers- monoecious with both male and female on the same plant.

Fruits- round to rectangular shaped, grows 2-4inches, cones when ripe turns into dark purple.

Seeds- winged and the young shoots are covered with small thin brown hairs.^[1]

Basonym

तालीसं तलतीतिज । तलगतौ । इशः पर्वतः ।

- A tree that grows in the high mountains.

Vernacular Names:		
English - Indian silver fir	Hindi - Talisapatra	Bengali -Talispatra
Malyalam - Talispatram	Kannada -Shukodara	
Marathi - Laghu Taleespatra		
Kashmiri - Kalri, Badar, Paludar		

Synonyms (Morphology)^[1]

धात्रीपत्र - धात्री पत्र सदृशं पत्रमस्याः ।

- Leaves are resembled like Āmalaki (*Embllica officinalis*).

पत्रद्वया - पत्रे आद्वया बहवः पत्रमस्याः ।

- Plant bears plenty of leaves.

A. Literature Review**Vedas**

'तलाशा वृक्षाणामिवाहं भूयासमुत्तमः'-शौ० ६।१५।३; ८।१०।७ कौ० सू०-८।१६;

'तलाशा मालिका अवली प्रसिद्धः'-दा०; वेतसी (के)^[2]

In vedic literature, Kaushik Sutra and Shaunakiya Sutra Atharvaveda, Kesava Paddhati, Talasa is considered as the best among all tree which is talisapatra; quoted by P.V. Sharma.

Samhitas

In Bruhatrayi Charak Samhita, it is quoted several times but not mentioned in the ganas/varga. Only Sushruta categorized in Sirovirechana dravya.^[2] In Astanga Hridayam talisapatra formulated as medicinal herb in polyherbal preparation.^[3] Acharya Kasyap had indicated and formulated its external use in balarogas.^[4]

Nighantus

Later all nighantus high-lighted its morphological features, habitat by basonyms and synonyms, medicinal properties and uses in respiratory diseases etc. Here, Dhanvantari Nighantu^[DN] Kaideva Nighantu^[KN] Madanpal Nighantu^[MPN] Raj Nighantu^[RN] Bhavprakash Nighantu^[BPN] Saligram Nighantu^[SN] are listed below.

Classical Categorization

Table no. 1: Showing the indication of *Talisapatra* according to various Ayurvedic texts.

Classical texts	Time-period	Indication Reference
<i>Carak Samhita</i>	400-200 BCE	Indicated for Rajyakshma (Chi.8/145-148)
<i>Sushruta Samhita</i>	600 -1500 BC	<i>Sirovirechana Gana</i> (Sut.39/5)
<i>Astanga Hridayam</i>	6 th -7 th AD	Indicated in Svasahidhma (chi.4/54), Rajyakshma (chi.5/58-60); Madatyaya (chi.7/83); Grahanidosa (chi.10/16-21); Balasosha (utt.2/50); Sadyovrana (utt.26/55)
<i>Kashyap Samhita</i>	11-13 th AD	Indicated for Pitragraha (Chi.4/77); Sutika Jvara (Khi11/122); Visarpa (Khi14/51.1,55.1); Charmadala (Khi15/16); Sotha (Khi17/62.2,64.1)

Table no. 2: Showing the Classical categorization of *Talisapatra* according to various Nighantus.

Nighantu (Lexicon)	Time-period	Reference
<i>Dhanvantari Nighantu</i> ^[DN]	10-13 th AD	<i>Satapushpadi Varga</i> ^[5]
<i>Kaideva Nighantu</i> ^[KN]	15 th AD	<i>Ausadhi Varga</i> ^[6]
<i>Madanpal Nighantu</i> ^[MPN]	14 th AD	<i>Karpuradi Varga</i> ^[7]
<i>Raj Nighantu</i> ^[RN]	15 th AD	<i>Pippalyadi Varga</i> ^[8]
<i>Bhavprakash Nighantu</i> ^[BPN]	16 th AD	<i>Karpuradi Varga</i> ^[9]
<i>Saligram Nighantu</i> ^[SN]	19 th AD	<i>Karpuradi Varga</i> ^[10]

Table no. 3: Showing synonyms of *Talisapatra* according to various Nighantus.

Sl.no.	Synonyms	D.N. 10-13 th AD	K.N. 15 th AD	M.P.N 14 th AD	R.N. 15 th AD	B.P.N. 16 th AD	S.N. 19 th AD
1.	<i>Amalakiapatra</i>	+	+	-	-	-	-
2.	<i>Apara</i>	-	-	+	-	-	+
3.	<i>Arkavedha</i>	-	-	-	+	-	-
4.	<i>Dhatripatra</i>	-	-	+	+	+	+
5.	<i>Granthikapatra</i>	-	-	+	-	-	+
6.	<i>Ghanacchadam</i>	-	-	-	+	-	-
7.	<i>Karipatram</i>	-	-	-	+	-	-
8.	<i>Nilam</i>	+	-	-	+	-	-
9.	<i>Nilambara</i>	-	-	-	+	-	-
10.	<i>Patra</i>	+	+	-	-	-	-
11.	<i>Patradhya</i>	+	+	+	-	+	+
12.	<i>Patrakhya</i>	-	-	-	+	-	-
13.	<i>Sukodara</i>	+	+	-	+	-	+
14.	<i>Sakodana</i>	-	-	+	-	-	-
15.	<i>Talam</i>	-	-	-	+	-	-
16.	<i>Talahvaya</i>	-	-	-	+	-	-
17.	<i>Talipatram</i>	-	-	-	+	+	-
18.	<i>Talisa</i>	+	+	+	+	-	-
19.	<i>Talisak</i>	+	+	-	-	-	+

20.	<i>Talispatra</i>	-	-	+	+	-	+
21.	<i>Talispatrak</i>	+	+	-	-	-	-
22.	<i>Tanvanta</i>	-	+	-	-	-	-
23.	<i>Tulasicchada</i>	-	-	+	-	-	+

Table no. 4: Showing Rasapanchak, Main Action and Uses of Talisapatra according to various Nighantus.

Properties	D.N.	K.N.	M.P.N	R.N.	B.P.N	S.N.
<i>Rasa</i>	-	Tikta Katu	-	Tikta	-	Tikta Madhura
<i>Guna</i>	-	-	Laghu Tikshna	-	+	+
<i>Virya</i>	-	-	Ushna	+	+	+
<i>Vipak</i>	-	-	-	Madhura	-	+
<i>Dosa-karma</i>	Kapha Pittahara	Vata Kapha shamak	Kapha Vatahara	Kapha Vatanuta	+	+
<i>Karma</i>	Dipana	Krimighna	Svasa- Kasahara	+	+	+
<i>Indication</i>	Svasa Kasa Hridya Mukharoga	-	Ruchikara Gulma Agnimandya Kshayaroga	Hikka Kshaya Cchardi	Ama Aruchi Agni mandya Gulma	Svarya Hridya Raktadosa Mukharoga

Parts used: Leaves

Properties^[11]

- **Rasa** – Tikta, Madhur.
- **Guna** – Laghu, Tikshna.
- **Virya**- Ushna.
- **Vipaka** – Katu.
- **Karma** – Kapha-Vatahara, Hrudy, Dipana.

Indication – svasa, kasa, mukharoga, kshaya, chardi, aruchi, agnimandya, gulma, rakta pitta, hikka.

Dosage: Powder 2 to 3 gms.

Important formulations: Talisadi Churna, Bhaskara Lavana, Pranada Gutika, Jatiphaladi Churna, Puga Khanda, Drakshadi Churna, Talisadi Modak.^[11]

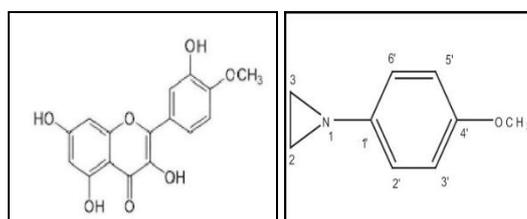
Talisapatra is the most controversial drug till date. Nadkarni, R.S.S. (V.N.p.166) mentioned talishpatra which is *T. baccata* Linn. (Thuner) commonly available in Garhwal (UP, Punjab,

Rajasthan, Maharastra, Gujrat). But it is identified a derivative of sthauneyaka by B. S. Thakur. Dalhana also quoted this as thuneraka which is accepted by Bhavmishra too. The Pharmacopeia Committee of Govt. of India advises to use *A. webbiana* as Talispatra which is mostly used in Bengal.^[12]

Major Chemical constituents – essential oils & alkaloids, abiesin a biflavonoids, n-triacontanol, β -sitosterol, abietane, betuloside.

New chemical compound isolated

1-(4'-methoxyphenyl)-aziridine and 4'-methoxy quercetin.



B. Experimental Work

Material & Methods of standardization

Collection and identification of Raw Herbs

Raw herb is purchased from Kolkata's local market. Then it was identified by API, Database quality control of Medicinal plants. Etc.

Preparation of Powder and hydro-alcoholic extract: After collection the leaves were separated from branches, washed thoroughly with tap water and shade dried at room temperature and then pulverized by mechanical grinder. Then powder was passed through 40-mesh sieve and stored in a well closed glass vessel until use.

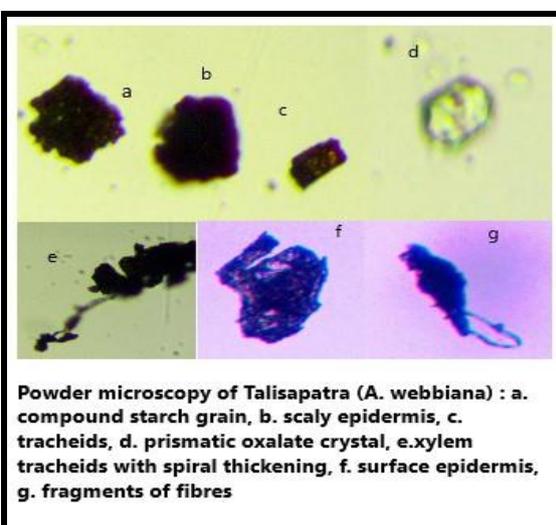
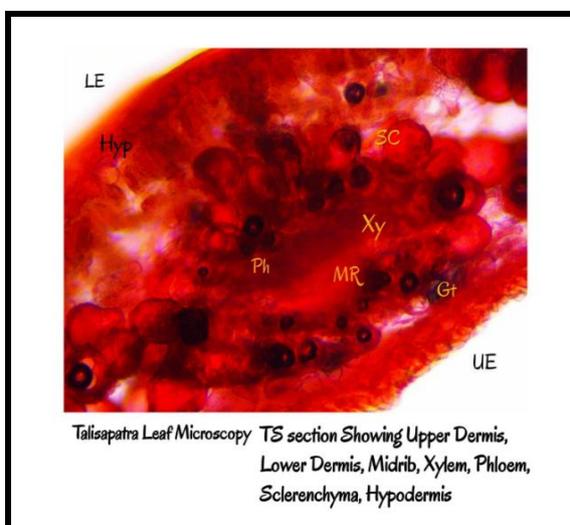
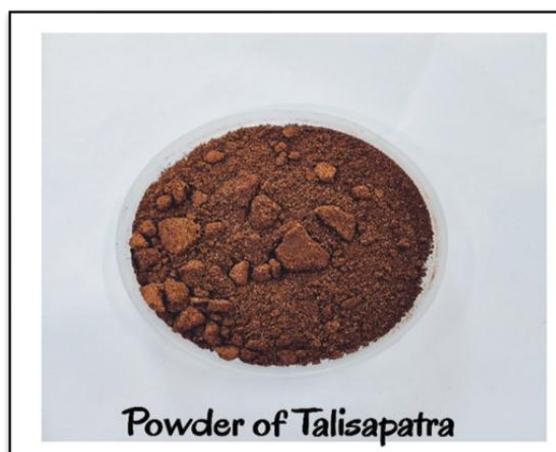
The powdered leaves(400gm) were macerated in massion jar with hydro-alcoholic solution (30:70). The mixture was shaken well, strained with muslin cloth and filtered with Whatman no.-1 filter paper. The filtrate was centered by water bath and stored in air tight petri-dish until use.

PHARMACOGNOSTIC AND PHYTOCHEMICAL STANDARDIZATION

a) Gross Morphological features

Dry leaves were greyish-brown in color with an aromatic odor, it was flattened, linear, brittle 3 to 5.5 cm long, about 2 mm broad; shining, prominent midrib in the upper surface

channeled down the middle but raised beneath; with two faint white lines on either side of the midrib beneath, petiole is very short. Astringent in taste slightly pungent.



b) Microscopic findings of Talisapatra

Transvers section of the mature leaf shows single layered epidermis on either side covered with thick cuticle; upper epidermis followed by single layered sclerenchyma and hypodermis. Lower epidermis shows papillate projections at some places followed by 1 or 2 layers of hypodermis; palisade 2 layered; spongy parenchyma 4-6 layered; vascular bundle single, situated centrally, consisting of xylem and phloem, enclosed by a single layered endodermis; xylem on upper side and phloem on lower side; cambium inconspicuous; secretory cavities located on either side of vascular bundle, stomata sunken type, present only on the lower surface.

c) Powder Microscopy findings Talisapatra

Grossly powder of Talisa leaves appears dark brown in colour; powder shows compound starch grains, scaly epidermis, tracheid, prismatic oxalate crystals, xylem tracheid with spiral thickening, surface epidermis, few fragments of fiber.

Table no. 5: Showing Pharmacognostic evaluation of Talisapatra.

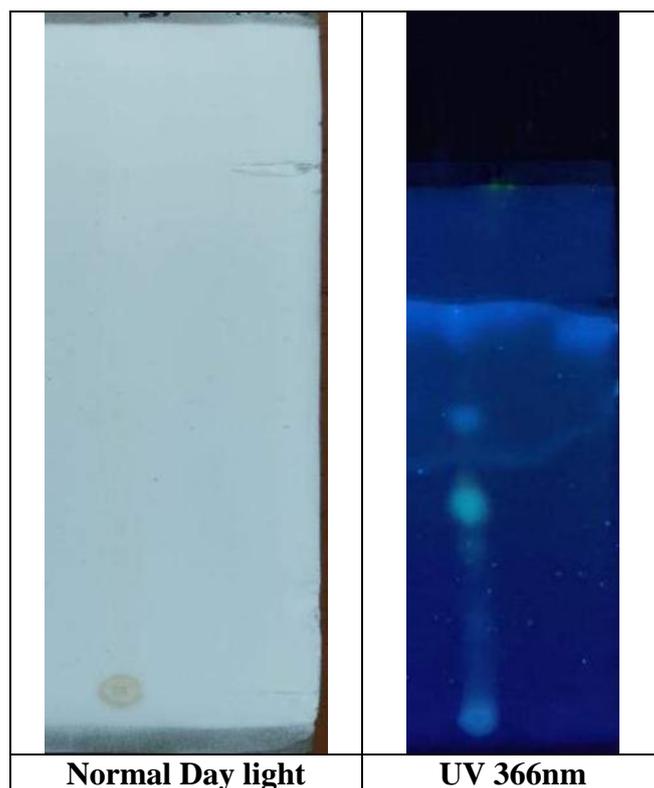
Foreign matter	Not more than 2 per cent
Total Ash	Not more than 9 per cent
Acid-insoluble ash	Not more than 1.5 per cent
Alcohol-soluble extractive	Not less than 20 per cent
Water-soluble extractive	Not less than 4 per cent
Fixed Oil	Not less than 35 per cent

Table no. 5: Showing Phytochemical evaluation of Talisapatra.

Phytochemical Detection For	Reagent	Appearance (Precipitate)	Results
ALKALOID	DRAGENDROFF'S	Orange Brown	+
	MAYER'S	Cream Color	+
	WAGNER'S	Reddish Brown	+
CARBOHYDRATE	FEHLING'S	Brick Red	+
	BENEDICT'S	Red or Brown	+
PROTEIN	NINHYDRIN	Blue Color	+
	BIURET	Violet Pink	-
PHYTOSTEROL	SALKOWASKI	Bluish or Red to Cherry	-
TANIN	5% FeCl ₃	Deep Blue or Black	+
	10% Lead Acetate Pb(C ₂ H ₃ O ₂) ₂	White or Yellow	+
FLAVONOID	ALKALINE REAGENT	Intense Yellow Color	+
SAPONIN	FOAM TEST	1cm Layer Foam	+

Thin layer chromatography

Solvent system used	Detection reagent	Colour of spots	Rf value
Toluene : Ethyl acetate (9.3 : 0.7)	Iodine vapours	Blackish-brown	0.36, 0.54, 0.6



Some major Pharmacological activities of *Talishpatra*

A. webbiana leaf has been reported to exhibit antibacterial, antifungal, mast cell stabilizing, anxiolytic, antitumor, anti-inflammatory, antitussive, female antifertility, febrifuge, antispasmodic properties, central nervous system depressant actions and effective against hyperglycemia, conception, and rheumatism.^[14,15]

Bronchodilator and antiplatelet activities of *A. webbiana* were investigated^[16,17] and evaluated the antioxidant and antimicrobial activity of *A. webbiana* extract. Effect of *A. webbiana* leaf extract on sleeping time and inflammation was analyzed.^[13]

Ghosh and Bhattacharya applied planar chromatographic technique using different solvent extracts and visualize the chemical diversity in *A. webbiana* leaves and detected amino acids, flavonoids, saponins, tannins, alkaloids, lipids, triterpenoids, and steroids.^[17]

In phytochemical screening certain chemical constituents, mainly monoterpenes (from essential oil), biflavonoid glycosides, phytosterols, and diterpene glycosides were found and a new alkaloid, namely, 1-(4'-methoxyphenyl)-aziridine, nitrogenous compound and new biflavonoid, Abiesin have been isolated.^[14,15,18]

CONCLUSION

In this review article and experimental studies, we have evaluated the pharmacognostical characters of *A. webbiana* leaf, which is the important herbal ingredient in various Ayurveda formulations. Botanical characteristics of *A. webbiana* leaf were reported based on the observation of transverse section and powder microscopy results. Chemical standards, such as foreign matters, ash content, and extractive values, were determined for *A. webbiana* leaf. Phytochemical screening revealed the presence of large number of compounds such as sterols, terpenes, phenols, flavonoids, tannins, and saponins only in the hydroalcoholic extract of *A. webbiana*. Thus, this current review and experimental study provides the scientific evidence for the presence of various phytoconstituents, which might be responsible for the reported medicinal properties of this plant. The comprehensive review of this plant from vedas to modern ayurvedic classical text will be helpful for all ayurvedic researcher, students and doctors. The pharmacognostic characters observed from the present experimental study could be useful in the identification and authentication of this drug.

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