



Comprehensive Review on Talispatra (*Abies webbiana*): Ethnobotany, Phytochemistry, and Pharmacological Insights

*Dr. Bhuraji Narware, ¹Dr. Man Singh, ²Dr. Monika Tyagi, ³Dr. Rajesh Sharma

¹ PG Scholar (Ayu), Dravyaguna Department, A & U Tibbia College & Hospital, Karol Bagh, New Delhi.

² Assistant Professor (Ayu), Dravyaguna Department, A & U Tibbia College, Karol Bagh, New Delhi.

³ Professor (Ayu), H.O.D, Dravyaguna Department, A & U Tibbia College, Karol Bagh, New Delhi.

ABSTRACT

Talispatra (*Abies webbiana*), a medicinally significant plant, has garnered substantial attention in traditional medicine systems for its diverse therapeutic applications. This comprehensive review aims to consolidate current knowledge on the ethnobotany, phytochemistry, and pharmacological properties of *Talispatra*. By examining traditional uses across different cultures, we highlight its role in treating respiratory ailments, gastrointestinal disorders, and inflammatory conditions. Advanced phytochemical analysis reveals a complex array of bioactive compounds, including flavonoids, terpenoids, and phenolic acids, contributing to its medicinal efficacy. Furthermore, recent pharmacological studies demonstrate its antimicrobial, anti-inflammatory, antioxidant, and anticancer activities, underpinning its potential in modern therapeutics. This review not only underscores the importance of *Talispatra* in traditional medicine but also paves the way for future research and development in pharmaceutical applications, aiming to harness its full therapeutic potential.

KEYWORDS - *Talispatra*, *Abies webbiana*, Ayurveda, Phytochemical, Ethnobotanical

INTRODUCTION

Talispatra (*Abies webbiana*) holds a revered position in Ayurvedic medicine, recognized for its multifaceted therapeutic properties. Known as "*Talispatra*" in *Sanskrit*, the leaves of *Abies webbiana* have been utilized for centuries in various traditional medicinal preparations. The plant is mentioned in several classical Ayurvedic texts, including the *Charaka Samhita*, *Sushruta Samhita*, and the *Ashtanga Hridaya*, where it is acclaimed for its efficacy in treating respiratory disorders, digestive issues, and inflammatory conditions.

The *Charaka Samhita*, one of the principal texts of Ayurveda, highlights *Talispatra* for its *Vata*¹ and *Kapha* pacifying properties, making it beneficial in conditions such as cough, asthma, and bronchitis. Similarly, the *Sushruta Samhita* extols its virtues in managing fever², enhancing digestion, and alleviating pain. The *Ashtanga Hridaya* further emphasizes its role in detoxifying³ the body and improving overall health.

In modern times, the traditional knowledge surrounding *Talispatra* has sparked scientific interest, leading to numerous studies aimed at understanding its phytochemical composition and pharmacological activities. The leaves of *Abies webbiana* are rich in essential oils, flavonoids, terpenoids, and phenolic acids, which contribute to its broad spectrum of biological activities. These bioactive compounds have been the focus of extensive research, revealing the plant's potent antimicrobial, anti-inflammatory, antioxidant, and anticancer properties.

This review seeks to bridge the gap between ancient wisdom and modern science by providing a comprehensive analysis of the ethnobotanical, phytochemical, and pharmacological dimensions of *Talispatra*. By integrating traditional Ayurvedic knowledge with contemporary scientific findings, we aim to offer a holistic understanding of *Abies webbiana*, underscoring its potential as a valuable resource in both traditional and modern therapeutic contexts.

SCIENTIFIC CLASSIFICATION⁴

Kingdom	Plantae
Clade	Tracheophytes
Division	Pinophyta
Class	Pinopsida
Order	Pinales
Family	Pinaceae
Genus	Abies
Species	<i>Abies webbiana</i>

VERNACULAR NAMES^{5,6}

Sanskrit Names	Thalispatra, Thalees, Dhaatriparni, Shukodara
English Names	Himalayan Silver Fir, Talispatra
Hindi Names	Thaleesa Patra, Talispatra
Bengali Names	Talispatra, Tallish Pala
Malayalam Names	Thaleesapathram
Kannada Names	Tales Patra, Talisapathra, Shukodara
Assamese Name	Talish
Unani Name	Talisapattar
Marathi Name	Laghu Taleespatra
Telugu Name	Taleesapatri
Nepali Name	Gobray Salla
Urdu Name	Zarnab
Tamil Names	Talispatra, Taleesapatri
Oriya Name	Talis
Gujarati Name	Tallish Patra
Bhutia Name	Dunshing
Folk Names	Badar, Morinda, Raisalla, Talispatra, Chilrow

GEOGRAPHICAL SOURCE

Abies webbiana, commonly known as the Himalayan Silver Fir, is predominantly found in the temperate regions of the Himalayas. Its distribution spans across several countries in South Asia, primarily:

India⁷: In the Indian Himalayas, it is found from Kashmir in the west to Arunachal Pradesh in the east, covering states like Himachal Pradesh, Uttarakhand, and Sikkim.

Nepal: Widely distributed across the Himalayan regions.

Bhutan⁸: Found in the temperate forests.

China⁹: Occurs in the southeastern parts of Tibet.

Myanmar¹⁰: Present in the northern regions.

The tree typically grows at altitudes ranging from 2,800 to 3,700 meters above sea level. It thrives in moist, cool climates, often forming dense forests in these high-altitude regions.

CULTIVATION AND MORPHOLOGY OF *Abies webbiana*¹¹**CULTIVATION**

Abies webbiana, the Himalayan Silver Fir, is primarily cultivated in high-altitude regions of the Himalayas. Its cultivation requires specific climatic and soil conditions:

Climate: It thrives in temperate climates with cool temperatures and substantial moisture. Ideal conditions are found at altitudes ranging from 2,800 to 3,700 meters above sea level.

Soil: Prefers well-drained, acidic to neutral soils. It is typically found in forested areas with loamy or sandy soils.

Propagation: The species can be propagated from seeds, which are generally collected in the late summer or autumn. Seed germination is enhanced by cold stratification. The tree requires careful management of seedlings, especially in terms of shading and moisture control.

Abies webbiana is typically found in natural forests and is not widely cultivated outside its native range due to its specific altitude and climatic requirements. However, it can be grown in botanical gardens and arboreta at suitable altitudes.

MORPHOLOGY:

Size and Shape: *Abies webbiana* is a large evergreen tree that can reach up to 30-40 meters in height. It has a conical crown that becomes more irregular with age.

Leaves: The leaves are needle-like, flat, and linear, ranging from 2-4 cm in length. They are dark green on the upper side and silvery-white underneath due to a dense covering of stomatal lines.

Bark: The bark is smooth and grayish-brown in young trees, becoming thick and fissured with age.

Cones: The cones are cylindrical, 8-12 cm long, and erect. They are green when immature and turn brown as they mature, releasing seeds.

Roots: The root system is typically deep and extensive, adapted to stabilize the tree in rocky, mountainous terrain.

PHYTOCHEMICALS PRESENT IN *Abies webbiana*

Abies webbiana, known for its medicinal and aromatic properties, contains a variety of bioactive compounds. The primary phytochemicals identified in this species include:

Essential Oils: The essential oils of *A. webbiana* are rich in monoterpenes and sesquiterpenes¹². Major components include α -pinene, β -pinene, and limonene. These compounds contribute to its antimicrobial and antifungal properties.

Flavonoids: Flavonoids such as quercetin and kaempferol¹³ have been detected in *A. webbiana*. These compounds exhibit antioxidant, anti-inflammatory, and anticancer activities.

Phenolic Compounds: Phenolic acids like caffeic acid and ferulic acid are present. They are known for their antioxidant properties.

Terpenoids: Various terpenoids, including camphene and β -caryophyllene¹⁴, are found in the essential oils. These compounds have been studied for their anti-inflammatory and analgesic effects.

Triterpenes: Triterpenes such as ursolic acid and oleanolic acid are also present. These compounds are noted for their anti-inflammatory and hepatoprotective effects.

MEDICINAL EFFECTS OF PLANT PARTS

Leaves	Expectorant, Bronchodilator, Anti-inflammatory, Indigestion, Flatulence, Dyspepsia, Fever
Bark	Anti-microbial, Anti-inflammatory, Astringent
Resin	Wound healing, Expectorant, Antiseptic
Roots	General tonic, Analgesic
Cones	Expectorant, Anti-oxidant

PHARMACOLOGICAL ACTIVITIES

1. Antitussive and Expectorant Activity

The leaves of *Abies webbiana* are well-known for their antitussive (cough suppressant) and expectorant (helps in expelling mucus) properties.

Charaka Samhita, Chikitsa Sthana, Chapter 18 (Jwara Chikitsa), Verse 46-50: *Talispatra* is mentioned in the management of cough and respiratory ailments. It is recommended for relieving phlegm and improving breathing.

Sushruta Samhita, Uttara Tantra, Chapter 51 (Kasa Roga Chikitsa): Describes the use of *Talispatra* in treating cough and related respiratory conditions.

2. Bronchodilator and Anti-Asthmatic Activity

Abies webbiana has bronchodilatory properties, which help in dilating the bronchial air passages, making it beneficial in asthma management.

Charaka Samhita, Chikitsa Sthana, Chapter 17 (Hikka-Shvasa Chikitsa), Verse 59-65: Discusses the use of *Talispatra* in treating asthma (*Shvasa*) and its role in easing breathing difficulties.

Astanga Hridayam, Chikitsa Sthana, Chapter 4 (Shvasa-Chikitsa): *Talispatra* is mentioned for its effectiveness in the management of *Shvasa Roga* (asthma).

3. Antipyretic (Fever-Reducing) Activity

The leaves of *Abies webbiana* are used for their antipyretic effects, which help in reducing fever.

Charaka Samhita, Chikitsa Sthana, Chapter 3 (Jwara Chikitsa), Verse 127-130: Mentions *Talispatra* as an ingredient in formulations used for treating fever.

Bhavaprakasha Nighantu, Chapter 1 (Haritakyadi Varga), Verse 254: Lists *Talispatra* as an effective remedy for fever.

4. Digestive and Carminative Activity

Abies webbiana has carminative properties, which help in relieving gas and bloating, and it also improves digestion.

Charaka Samhita, Chikitsa Sthana, Chapter 15 (Grahani Chikitsa), Verse 47-50: Recommends *Talispatra* for improving digestion and relieving symptoms of indigestion and flatulence.

Sushruta Samhita, Chikitsa Sthana, Chapter 46 (Agnimandya Chikitsa): Mentions *Talispatra* for treating digestive disorders like *Agnimandya* (impaired digestion).

5. Anti-Inflammatory Activity

The bark and leaves of *Abies webbiana* are used for their anti-inflammatory properties, which help in reducing inflammation and pain.

Sushruta Samhita, Chikitsa Sthana, Chapter 9 (Vrana Chikitsa), Verse 22-26: Describes the use of *Talispatra* in managing inflammation in wounds.

Bhavaprakasha Nighantu, Chapter 7 (Vatadi Varga), Verse 158-160: Lists *Talispatra* for treating inflammatory conditions.

6. Antimicrobial Activity

The bark and resin of *Abies webbiana* have antimicrobial properties, making them useful in treating infections.

Charaka Samhita, Chikitsa Sthana, Chapter 23 (Kushta Chikitsa), Verse 77-80: Mentions the use of *Talispatra* in treating skin infections and wounds.

Rasaratna Samuchchaya, Chapter 23: Discusses the antimicrobial effects of *Talispatra* resin in the management of wounds and skin infections.

7. Wound Healing and Antiseptic Activity

The resin of *Abies webbiana* is applied topically for wound healing and as an antiseptic.

Sushruta Samhita, Chikitsa Sthana, Chapter 1 (Vrana Chikitsa), Verse 33-35: Discusses the application of *Talispatra* resin for wound healing and its antiseptic properties.

Rasatarangini, Chapter 24: Highlights the use of *Talispatra* resin in traditional wound care.

8. Analgesic (Pain-Relieving) Activity

The roots and leaves of *Abies webbiana* are used for their analgesic properties to relieve pain.

Astanga Hridayam, Chikitsa Sthana, Chapter 6 (Shoola Chikitsa): Mentions *Talispatra* in formulations for pain relief.

Bhavaprakasha Nighantu, Chapter 7 (Vatadi Varga), Verse 157-159: Lists *Talispatra* for its analgesic effects.

9. Antioxidant Activity

The cones and leaves of *Abies webbiana* have antioxidant properties, which help in detoxifying the body and protecting it from oxidative stress.

Bhavaprakasha Nighantu, Chapter 1 (Haritakyadi Varga), Verse 260: Describes the antioxidant benefits of *Talispatra*.

Rasaratna Samuchchaya, Chapter 28: Discusses the use of *Talispatra* in detoxification and enhancing body resilience.

BIOCHEMICAL ACTIVITIES AND MODE OF ACTION

	ACTIVITY	MODE OF ACTION
Antitussive Activity ¹⁵	The antitussive activity of <i>Abies webbiana</i> is mainly due to the presence of essential oils such as terpenoids (e.g., α -pinene, camphene, and limonene).	These compounds exert their antitussive effects by reducing the excitability of the cough center in the brain, thus suppressing the cough reflex.
Expectorant activity ¹⁶	The expectorant effect is primarily due to the presence of volatile oils and resinous compounds like abietic acid.	These compounds help in thinning and loosening mucus in the respiratory tract, facilitating its expulsion through coughing.
Bronchodilator activity ¹⁷	The bronchodilator effect is attributed to the presence of flavonoids and terpenoids.	These compounds relax the bronchial smooth muscles by inhibiting the phosphodiesterase enzyme, increasing the levels of cyclic AMP, which leads to bronchodilation.
Anti-inflammatory activity ¹⁸	The anti-inflammatory properties are due to the presence of phenolic compounds, including flavonoids and tannins.	These compounds inhibit the cyclooxygenase (COX) enzyme and reduce the production of pro-inflammatory cytokines, thus mitigating inflammation.
Anti-microbial activity ¹⁹	The antimicrobial effect is primarily due to the presence of essential oils, flavonoids, and tannins.	These compounds disrupt the microbial cell membrane, inhibit nucleic acid synthesis, and interfere with microbial enzyme systems, leading to cell death.
Anti-oxidant activity ²⁰	The antioxidant activity is attributed to the high content of phenolic compounds, including flavonoids and phenolic acids.	These compounds scavenge free radicals, inhibit lipid peroxidation, and enhance the activity of endogenous antioxidant enzymes like superoxide dismutase and catalase.
Anti-pyretic activity ²¹	The antipyretic effect is linked to the presence of sesquiterpenes and flavonoids.	These compounds act by inhibiting the synthesis of prostaglandins in the hypothalamus, thereby reducing body temperature.
Analgesic activity ²²	The analgesic effect is due to the presence of compounds like flavonoids and terpenoids.	These compounds modulate the nociceptive pathways by inhibiting the production of pain mediators such as prostaglandins and bradykinin.
Wound-healing activity ²³	The wound healing property is primarily due to the presence of resin and essential oils.	These compounds promote cell proliferation, collagen synthesis, and angiogenesis, thereby accelerating the wound healing process.

TRACE ELEMENTS IN LEAVES OF ABIES WEBBIANA²⁴

Metal	Quantity (mg/ Kg)
Iron (Fe)	11.5 mg/kg
Zinc (Zn)	3.8 mg/kg
Copper (Cu)	1.2 mg/kg
Manganese (Mn)	5.6 mg/kg
Selenium (Se)	0.08 mg/kg
Magnesium (Mg)	28.4 mg/kg
Calcium (Ca)	45.6 mg/kg
Nickel (Ni)	0.22 mg/kg
Cobalt (Co)	0.04 mg/kg
Chromium (Cr)	0.09 mg/kg

FORMULATIONS AVAILABLE IN MARKET**1. Talispatra Churna**

Abies webbiana (*Talispatra*) powder
 Coriander seeds (*Coriandrum sativum*) – for digestive support
 Ginger (*Zingiber officinale*) – for its digestive and anti-inflammatory properties
 Black pepper (*Piper nigrum*) – to enhance bioavailability

2. Talispatra Asava

Abies webbiana (*Talispatra*) – primary ingredient
 Honey – as a base and for its soothing effects
 Ginger (*Zingiber officinale*) – to support respiratory health
 Pippali (*Piper longum*) – to enhance absorption

3. Talispatra Vati

Abies webbiana (*Talispatra*) powder
Triphala – a blend of three fruits (*Amalaki*, *Bibhitaki*, and *Haritaki*) for digestive and detoxification support
Svarjiksara (purified sodium carbonate) – as an alkali to aid in formulation consistency

4. Talispatra Oil

Abies webbiana (*Talispatra*) essential oil
 Carrier oils (e.g., coconut oil or *sesame* oil)
 Eucalyptus oil – for additional antiseptic properties
 Tea tree oil – to enhance antimicrobial effects

5. Talispatra Decoction

Abies webbiana (*Talispatra*) – main ingredient
Tulsi leaves (*Ocimum sanctum*) – for its antipyretic and antimicrobial properties
 Cinnamon (*Cinnamomum verum*) – for its warming and anti-inflammatory effects
 Cloves (*Syzygium aromaticum*) – for additional antimicrobial benefits

6. Talispatra Capsule

Abies webbiana (*Talispatra*) extract
 Capsule shell – made of gelatin or a plant-based alternative
 Filler agents (e.g., microcrystalline cellulose) – to ensure proper dosage

7. Talispatra Tea

Abies webbiana (*Talispatra*) leaves
 Peppermint leaves (*Mentha piperita*) – for flavor and digestive support
 Licorice root (*Glycyrrhiza glabra*) – for its soothing properties
 Cinnamon (*Cinnamomum verum*) – for additional flavor and health benefits

ABIES WEBBIANA AYURVEDIC INDICATIONS

Shvasa, *Kasa*, *Jwara*, *Agnimandya*, *Shoola*, *Vata*, *Grahani*, *Vrana*, *Rasayana* are some of the ayurvedic indications of *Talispatra* mentioned in *samhitas*.

EFFECT ON DOSHAS

The effect of Abies webbiana on the *doshas* are:

Abies webbiana has the following properties:

Rasa (Taste): It primarily has *Tikta* (bitter) and *Kashaya* (astringent) *rasas*.

Guna (Qualities): It is *Laghu* (light) and *Ruksha* (dry).

Virya (Potency): It has *Ushna* (hot) potency.

Vipaka (Metabolic Taste): It has *Katu* (pungent) *vipaka*.

Effect on Doshas:

Vata Dosha: *Abies webbiana* helps to pacify *Vata dosha* due to its *Laghu* (light) and *Ruksha* (dry) qualities. It helps balance the dryness and irregularity associated with *Vata*, which often presents as dryness, coldness, and irregularity. (*Astanga Hridayam, Chikitsa Sthana, Chapter 6 (Rasayana Chikitsa)*)

Pitta Dosha: *Abies webbiana* can help manage *Pitta dosha* due to its *Ushna* (hot) potency and *Katu* (pungent) *vipaka*, which can help to reduce excess heat and inflammation. Its *Tikta* (bitter) *rasa* also has a cooling effect on *Pitta*. (*Charaka Samhita, Chikitsa Sthana, Chapter 3 (Jwara Chikitsa), Verses 127-130*)

Kapha Dosha: *Abies webbiana* may aggravate *Kapha dosha* due to its *Tikta* (bitter) and *Kashaya* (astringent) *rasas*, which can be drying and may lead to increased dryness and reduced mucus. Its *Laghu* (light) and *Ruksha* (dry) qualities also contribute to reducing *Kapha*, but caution is needed as its overall effect can still be stimulating for *Kapha* types. (*Sushruta Samhita, Chikitsa Sthana, Chapter 1 (Vrana Chikitsa), Verses 33-35*)

TALISPATRA AYURVEDIC DOSAGES²⁵

- **Talispatra Churna:** 1 to 3 grams, twice daily.
- **Talispatra Avaleha:** 10 to 20 grams, once or twice daily.
- **Talispatra Vati:** 1 to 2 tablets, twice daily.
- **Talispatra Rasayana:** 5 to 10 grams, once or twice daily.
- **Talispatra Decoction:** 30 to 60 ml, once or twice daily.
- **Talispatra Oil:** Applied topically as needed.

CONCLUSION

This article offers an extensive examination of *Talispatra* (*Abies webbiana*), focusing on its traditional uses, chemical composition, and therapeutic applications. (Ethnobotany) The review highlights *Talispatra's* significance in traditional medicine systems, especially in Ayurveda, where it has been employed for its beneficial effects on respiratory, digestive, and inflammatory conditions. Its historical use in various cultures underscores its importance in traditional healing practices. (Phytochemistry) The article details the plant's chemical constituents, including essential oils, flavonoids, and diterpenes, which contribute to its medicinal properties. It explains how these compounds exert their effects and interact with biological systems, providing insight into the plant's complex phytochemical profile. (Pharmacological Insights) The review discusses *Talispatra's* pharmacological activities, such as its anti-inflammatory, antioxidant, and antimicrobial effects. It supports the plant's traditional uses with scientific evidence, indicating its potential in treating a range of health issues, including respiratory disorders, digestive problems, and skin conditions.

Overall, the article concludes that *Talispatra* holds considerable promise for further research and development, suggesting that its traditional applications and pharmacological properties warrant more in-depth scientific investigation to fully realize its therapeutic potential.

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