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Research Article

TAXUS BACCATA LINN. : A MYSTICAL HERBSharma AK¹, Dhyani Srishti^{2*}, Kour Gagan Deep³¹Lecturer, PG Dept. of DravyaGuna, Rishikul Govt PG Ayurvedic College & Hospital, Haridwar, Uttarakhand, India²P.G. Scholar, PG Dept. of DravyaGuna, Rishikul Govt PG Ayurvedic College & Hospital, Haridwar, Uttarakhand, India³P.G. Scholar, PG Dept. of DravyaGuna, Rishikul Govt PG Ayurvedic College & Hospital, Haridwar, Uttarakhand, India

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*Corresponding Author: **Srishti Dhyani**

PG Scholar, Dept. of Dravyaguna Rishikul Govt. Ayurvedic PG College And Hospital Haridwar Uttarakhand, E-mail: S.Srishti2012@Gmail.Com

ABSTRACT

Ayurveda is a system of traditional medicine native to Indian subcontinent and a form of alternative medicine. The vast field of ayurvedic science is gaining more importance and popularity across the globe because of its amazing therapeutic values. Many medication commonly used by us today come from plants. In ayurveda, *Taxus baccata* is one of the important plant used for medicinal purpose. *Taxus baccata*, although native to Britain, is also found across much of Europe, Western Asia and north Africa. *Taxus baccata* Linn belonging to *Taxaceae* family. *Taxus baccata* tree is a highly toxic plant that has occasionally been used medicinally. An alkaloid taxin has been obtained from the seeds of the plant and has anti-cancerous property. Leaves contain volatile oil, tannic acid, gallic acid and resinous substance. This plant can be used as anti spasmodic, cardiotoxic, expectorant, narcotic, purgative. Leaves used in the treatment of asthma, bronchitis, hiccups, indigestion, rheumatism and epilepsy. The arilles, removed from their seeds have diuretic and laxative effects. It was used medicinally to treat viper bites, hydrophobia (rabbits) and as an abortifacient. Hence this paper is an attempt to bring this effective drug to limelight by describing its importance in ayurvedic medicine.

Keywords: *Taxus baccata*, Taxaceae, Taxin, Taxol, Toxic, Seeds, Plant.

INTRODUCTION

Taxus baccata is a small to medium sized evergreen tree. It is classified in the family *Taxaceae* which is now firmly classified as a conifer in the order pinales.

Taxus baccata, has been viewed as a poisonous and mystical tree throughout human civilization. Though some ancient cultures have used the bark and spiny leaves of this evergreen conifer for several medicinal remedies, its benefits were largely overlooked by mainstream medical institutions until recent generation due to its highly toxic nature. Much of the focus in the 21st century regarding the yew tree concerns a chemical derived from this plant called taxine- the precursor to potent chemotherapy drugs like paclitaxel and docetaxel. Perhaps the most notable medical use of *Taxus baccata* is the discovery of its anti-cancerous qualities, particularly in treating cancers of ovaries and breast. Plant also contain some other useful chemicals like tannic acid, gallic acid, volatile oil and resinous substance, hence it have been used as a medicine to treat asthma, bronchitis, hiccup indigestion, rheumatism, epilepsy.

VERNACULAR NAMES

Taxus baccata is commonly known as mandukparni, talispatra, barahmi in **Sanskrit**, Himalayan yew in **English**, thuneer birmi, zirubbirmi, thuno in **Hindi**, sugandh, burmie,

bhirmie, birmi in **Bengali**, birmi, tung, barama, rikhal, thona in **Punjabi**¹, zarnab in **Urdu**, sthauneyak in **Kannada**, stauney barmi in **Marathi**².

Sthauneyaka, barhibarha, sukabarha, kukkura, sirnaromasuka, sukapuspha and sukachada are its names³.

CLASSICAL REFERENCE**Charak**

This plant is mentioned in Agurvadi taila (c.ch.3), Mritsanjivan agada (c.ch.23), Bala taila (c.ch.28) and Pradada modak (c.kalpa.1) formulations of charak samhita.

Sushruta

Sushruta described it under Ailadigana (s.su.38)⁴.

Description of *Taxus baccata* in nighantus

Bhavprakash and **Shaligram nighantu** described it under karpuradi varga, **Dhanwantri nighantu** included it under chandanadi varga, **Nighantu Adarsh** described it under devdarvadi varga, **Priya nighantu** mentioned it under Sharadi varga.

BOTANICAL DESCRIPTION

Taxus baccata is an evergreen, under storey tree to 30m tall, with a spreading crown. It tends to be forked, fluted with depressions at branch stem junctions. Branches are ascending to drooping with twigs irregularly alternate, green or yellow-green when young, reddish brown with age.

The **BARK** is reddish grey or reddish brown, thin smooth, peeling off in longitudinal narrow shreds.

LEAVES in to 2 rows, needle like, 1.5-2.8 by 0.2-2.5 cm, usually curved, acuminate. Margins, slightly in rolled, dark-green and shining above, brownish-yellow and somewhat pale beneath, single nerved and narrowing into a short petiole

FLOWERS inconspicuous, yellowish with female blooms on small flaky handles.

SEED hard, surrounded by a red fleshy aril, looking like a berry, about 7 mm in diameter⁵.

DISTRIBUTION

Taxus baccata is a conifer native to western, central and southern Europe, northwest Africa, northern Iran and southwest Asia.

It is a native of temperate Himalayas, Afghanistan to Bhutan and Kasia Hills and upper Burma. It is the tree originally known as Yew, though with other related trees becoming known, it may now be known as English yew or European yew.

It is also known as Himalayan yew^{6,7}.

BIOLOGY

Flowering occurs from March to May and seeds ripen between August and November of the same year. Seeds require shelter and moist shady areas for germination and do not survive in open areas⁸.

ECOLOGY

Yew's habitat is characterized by moist, mixed coniferous forests or cool, broad-leaved forests. It grows in a range of soil types from light to heavy acidic shallow soils⁹.

PROPAGATION AND CULTIVATION

Propagation of *Taxus baccata* : Seed - can be very slow to germinate, often taking 2 or more years. It is best sown as soon as it is ripe in the autumn when it should germinate 18 months later. Stored seed may take 2 years or more to germinate. 4 months warm followed by 4 months cold stratification may help reduce the germination time. Harvesting the seed "green" (when fully developed but before it has dried on the plant) and then sowing it immediately has not been found to reduce the germination time because the inhibiting factors develop too early. Prick out the seedlings into individual pots once they are large enough to handle and grow them on in pots in a cold frame. The seedlings are very slow-growing and will probably require at least 2 years of pot cultivation before being large enough to plant out. Any planting out is best done in late spring or early summer, after the last expected frosts. Cuttings of half-ripe terminal shoots, 5 - 8 cm long, July/August in a shaded frame. Should root by late September but leave them in the frame over winter and plant out in late spring. High percentage. Cuttings of ripe terminal shoots, taken in winter after a hard frost, in a shaded frame.

Cultivation of the herb: Woods and scrub, usually on limestone. It sometimes forms pure stands in sheltered sites on chalk in the south-east and on limestone in the north-west¹⁰.

CHEMICAL CONSTITUENTS

Most parts of the tree are toxic, except bright red aril surrounding seed. The foliage remains toxic even when wilted and toxicity increases in potency, when dried.

The fruits and seeds seem to be the most poisonous part of the tree. An alkaloid **taxin** has been obtained from the seeds. This is

poisonous, white, crystalline powder, only slightly soluble in water.

Leaves contain a **volatile oil**, **tannic acid**, **gallic acid** and **resinous substance** called toxin^{11,12}.

AYURVEDIC PROPERTIES & PHARMACOLOGICAL ACTIONS

According to Ayurveda, properties of *sthauneya* are -

RASA (taste) - katu (pungent), swadu (sweet), tikta (bitter)

GUNA (properties) - snigdha (unctuous)

VIRYA (potency) - Ushna

VIPAK (metabolism) - katu

Having these properties its pharmacological actions are:-

Tridoshanut (mitigates all three doshas), **Medha-shukrakar** (promotes intelligence and semen), **Ruchaya** (helps taste), **Rakshoghana** (destroy evil spirits), **Jwara-jantujita** (cures fever, worms infestation), **Hanti Kustha Asra Trit Daha Daurgandhaya Til-kalak** (cures leprosy and other skin diseases, diseases of blood, thirst, burning sensation, bad smell and black spots (moles) of the skin¹³).

Balapushti-vivardhanam (strength promoting)¹⁴.

Useful in **Kasa**, **shwas**, **vata-shleshma vikar**, **gulma**, **agnimandaya**, **aruchi** also¹⁵.

MEDICINAL USES

The *Taxus baccata* tree is a highly toxic plant that has occasionally been used medicinally, mainly in the treatment of **chest complaints**.

All parts of the plant, except the fleshy fruit, are **antispasmodic**, **cardiotonic**, **diaphoretic**, **emmenagogue**, **expectorant**, **narcotic** and **purgative**.

Plant contains the substance "taxol" having **anticancerous property**.

The leaves have been used internally in the treatment of **asthma**, **bronchitis**, **hiccup**, **indigestion**, **rheumatism** and **epilepsy**. Externally, the leaves have been used in a steam bath as a treatment for **rheumatism**.

A homeopathic remedy is made from the young shoots and the berries. It is used in the treatment of many diseases including **cystitis**, **eruptions**, **headaches**, **heart and kidney problems**, **rheumatism etc**¹⁶.

A tincture made from the young shoots of the plant, is used to cure **headache with giddiness**, **feeble faltering pulse**, **coldness of the extremities**, **diarrhoea**, **general prostration** and **severe biliousness**¹⁷.

CONTRAINDICATIONS

This herb is not recommended during pregnancy and lactation. Large doses (many times the recommended dosage) may result in colic, dry mouth, hypotension, paleness, rash, syncope, vertigo and vomiting¹⁸.

RESEARCH STUDIES

In 1021, Avicenna introduced the medicinal use of *T. baccata* for phytotherapy in *The Canon of Medicine*. He named this herbal drug "Zarnab" and used it as a cardiac remedy. This was the first known use of a **calcium channel blocker** drug, which were not in wide use in the Western world until the 1960s.

Certain compounds found in the bark of yew trees were discovered by Wall and Wani in 1967 to have efficacy as **anti-cancer agents**. The precursors of the chemotherapy drug

paclitaxel (*taxol*) can be synthesized easily from the extracts of the leaves of European yew.

In the Central Himalayas, the plant is used as a treatment for breast and ovarian cancer¹⁹.

Modern research has shown that the plants contain the substance "*Taxol*" in their shoots. Taxol has shown exciting potential as an anti-cancer drug, particularly in the treatment of ovarian cancers. Unfortunately, the concentrations of taxol in this species are too low to be of much value commercially, though it is being used for research purposes²⁰.

CONCLUSION

The *Taxus baccata* is a remarkable plant once one begins to understand its importance. Human have long greeted the yew with a mixture of awe and fearful admiration. No doubt this had a lot to do with the fact that the leaves and seeds of the tree were notoriously lethal if consumed. This may not sound like a promising quality in the raw material for a medicine, but the poisonous alkaloid found in "*Taxus baccata*" contains some incredible useful chemicals. *Taxus baccata* contain the poisonous substance "taxol" in their shoots and "Taxol" has shown exciting potential as an anti-cancer drug and this plant also very useful in treating chest disorders like asthma, bronchitis, hiccup etc. and also used in the treatment of indigestion, rheumatism, epilepsy. These plants also have diuretic and laxative effect so also used medicinally to treat viper bites, hydrophobia. So, *Taxus baccata* is plants which have incredible properties to treat the diseases. Recently yew has achieved fame as a source of the important anticancerous drug, *Taxol*. So more research is needed in defining the *Taxus baccata* for the use of majestic medicinal properties of this herb.

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