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A REVIEW ARTICLE ON *VISHAGHNA* PROPERTIES OF *CHANDANA* (*Santalum album*)

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ABSTRACT

The goal of Ayurvedic medicine, which is holistic in nature, is to restore health by identifying the root cause of illness and treating it accordingly. Herbs from the Ayurvedic medicine system are crucial to using in illness treatment. Acharya Charaka's explanation of the Ayurvedic Vishaghna Mahakashaya concept has the ability to cleanse. One of them is Chandana, which is renowned for having a distinct and one-of-a-kind scent. Moreover, this plant is revered, and literature such as the Vedas, Puranic texts, Buddhist texts, epics, and scriptures all discuss its significance and application. It is employed for auspicious activity in many religions, including Buddhism, Hinduism, and Jainism. Both macro and micro levels are affected by Vishaghna Mahakashaya Dravya; on the micro level, it neutralizes toxins at the cellular level, denatures them, and aids in their elimination from the body. These drugs are effective against Vishas (plant-based poisons) as well as powerful against snake-scorpion stings, Dushi Vishas, and Gara Visha bites. Because it can be found in both single and multiple preparations, Chandan is useful in treating a variety of poisonings. It may be helpful for illnesses falling under any category of toxicity. Thus, a great deal of toxicological illnesses are preventable and treatable. Chandan's Vishaghana characteristics allow it to be widely employed in the modern day for both curative and preventive purposes, including preventing sickness and protecting the body from toxicological agents.

KEYWORDS- *Chandan, Vishaghna, Anti-toxic.*

INTRODUCTION

Vishagarvairodhik Prashaman, *Agada Tantra*, and *Damshtra Chikitsa* are synonymous. The sixth branch of Ayurveda, *Damshtra Chikitsa*, focuses mostly on *Agada*, or anti-poisonous medicines.[1] *Visha* means the *Dravya* which causes *Vishaad* (sorrow or depression) is known as *Visha*.[2] *Laghu, Ruksha, Aashu, Vishad, Vyavayi, Tikshna, Vikaashi, Sookshma, Ushna, Anirdeshyarasa* are the ten properties of poisonous drugs.[3] Drugs which act against toxic effect of substances are called as *Vishghna*.[4] It includes *Haridra*, *Manjishtha*, *Suvaha*, *Sukshama Ela*, *Paalindi*, *Chandana*, *Kataka*, *Shirisha*, *Sinduvara*, *Shleshmataka*. Santalum album is commonly known as white sandalwood, it is one of the most valuable trees and second costliest wood in the world. Sandalwood and its oil are extensively used in the traditional systems of medicine as it has blood purifier, anti-inflammatory, analgesic, exhilarant, cardiotonic, antiseptic, nervine tonic and expectorant properties. It is used in skin, cardiac, liver, gastrointestinal, respiratory, integument and urogenital disorders. The proven pharmacological activities of S. album are antimicrobial, anti-oxidant, anti-inflammatory, antimutagenic and anti-fatigue.[5]

Aim- The aim is to study the *Vishaghna* properties of *Chandana*
Materials and Methods- Reviewed from various journals, articles and Ayurvedic literature.

Common Discription[6]
Chandana consists of dried heart wood of Santalum album Linn. an evergreen, semiparasitic tree, 8 to 18m in height and 2 to 4 m in girth, widely distributed in the country, commonly found in the dry regions of peninsular India from Vindhya mountains southwards, especially in Karnataka and Tamil Nadu, it is cultivated for its aromatic wood and oil.

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Table 1: Taxonomical Classification of Sandalwood[7]

Taxonomical rank	Taxon
Kingdom	Plantae
Sub-kingdom	Tracheophytes
Superdivision	Spermatophyta
Division	Magnoliophyta
Class	Magnoliopsida
Subclass	Rosidae
Order	Santalales
Family	Santalaceae
Genus	Santalum
Species	S. album
Common name	Sandalwood, chandan

Table 2: General & *Vishaghna* classifications of *Chandana* in various ayurvedic literature.

Sr. No.	Ayurvedic Literature	*Vishaghna* Classification	General Classification
1.	Charaka Samhita	+	*Varnya*[8] *Kandughna, Trishnanigrahana*[9] *Dahaprashamana*[10]
2.	Sushrutha Samhita	+	*Salasaradi gana*[11] *Patoladi gana, Sarivadi gana*[12]
3.	Ashtanga Hrudaya	-	*Tiktaskanda*[13]
4.	Danwantari Nighantu	+	*Chandanadi varga*[14]
5.	Bhavaprakasha Nighantu	+	*Karpuradi varga*[15]
6.	Raja Nighantu	-	*Chandanadi varga*[16]
7.	Priya Nighantu	-	*Haritakyadi varga*[17]
8.	Kaiyadeva Nighantu	+	*Aushadhi varga*[18]

Chemical composition of Santalum album[5]

Chandana, the major source of costliest wood and essential oil has been extensively investigated for its chemical constituents. Major constituents of sandalwood oil are sesquiterpene alcohols like α-and β-santalols. Minor constituents bergamotols and several of their stereoisomers, whereas minorconstituents includes lanceol, nuciferol, bisabolol and the sesquiterpene hydrocarbons such as α-and β-santalols.

RASAPANCHAK[19]

Rasa- Tikta, Madhura
Guna- Laghu, Ruksha
Veerya- Sheeta
Vipaka- Katu
Dosha Prabhava- Kaphapittahara
Pharmacological action- Dahaprashamana,varnya

Table 3: Therapeutic vishaghna Yoga and Agada preparation of chandana.[5]

Sr. no.	Mention	Name	Indication
1.	Charaka Samhita	*Mritasanjeevana Agada*	*Sarva Visha*
		Mahagandhahasti Agada	*Visha*
		Kshara Agada	*Sarva Visha*
		Vajradi Agada	*Sarva Visha*
		Sarvakarmika Agada	*Luta Visha*
2.	Sushruta Samhita	*Ajeya Ghrita*	*Sarva Visha*
		Tarkshya Agada	*Sarpa Visha*
		Kalyanaka Ghrita	*Bhuta Visha*
		Chandandi Agada	*Luta Visha*
		Chandandi Agada	*Keeta Visha*
3.	Ashtang samgraha	*Lodradi Modaka*	*Visha*
		Mahasughandha Agada	*Visha*
		Chandanasadhita Ksheera	*Vishaja Chardi*
		Katabhimuladi Ghrita	*Luta Visha*
		Ajeya Ghrita	*Visha*

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		Vapanakhya Agada	*Visha*
		Sanjeevana Agada	*Visha*
4.	Ashtang Hridaya	*Madhukadi Yavagu*	*Visha*
		Dooshivishari Agada	*Dushivisha*
		Trayogada	*Keeta Visha*
		Lodrasevyadi Agada	*Keeta Visha*

Actions and Properties[7]

Kaphapittashamak: It alleviates the *Kapha* and *Pitta* components of the body.
Twagdoshahara: It is useful in the treatment of skin disorders.
Durgandhhara: The odor of sweat, cuts, and mouth, among other things, is lessened by it.
Varnya: It helps in enhancing the color complexion of the skin.
Medhya: It is used as a brain tonic.
Trishnanigrahan: It helps in reducing excessive thirst.
Hridya: It helps in treating heart disorders.
Raktshodhak: It is used as a blood purifier.
Kaphanisarak: It helps in balancing the *Kapha Dosha* in the body and reduces congestion.
Shleshamputihar: It helps in reducing the vitiated *Kapha* and helps in reducing halitosis (bad breath).
Mutrajanan: It is used as a diuretic agent.
Swedjanan: It helps in inducing sweating.
Jwaraghna: It cures vitiated fever and is used as an antipyretic agent.
Daahprashaman: It is used to lessen the body's burning sensation.
Vishghna: It is used as an antivenom agent.
Angmardprashaman: It is used to cure body aches.
Kamla: It is used to treat jaundice.
Mutrakrij: It is used to treat dysuria and unpleasant micturition.
Pungyameh: It is used to cure urinary tract infections.
Vastishotha: It helps in reducing the swelling in urinary bladder.

Pharmacological action of *Santalum album* related to detoxification

1. **Analgesic & Anti-inflammatory activity:** This study evaluated the methanolic extract of Santalum album wood for analgesic and anti-inflammatory activities at various doses. The extract's analgesic and anti-inflammatory properties were evaluated against the standard, diclofenac sodium (7 mg/kg). The maximum effect of the extract was seen at 500 mg/kg.[20]
2. **The antibacterial activity:** The antibacterial properties of the five different extracts of sandalwood and sandalwood oil were evaluated. The extracts were screened against nine Gram-negative and five Gram-positive bacterial strains by disc diffusion, agar spot, and TLC bio-autography methods. And the extracts showed the strongest antibacterial activity.[21]
3. **Insecticidal activities:** Sandalwood oil acts as a repellent against Varroa jacobsoni in honey bee colonies thus used as an acaricide.[22]
4. **Genotoxicity effects:** The DNA damaging activity of sandalwood oil in Bacillus subtilis was studied and was found to be non-genotoxic.[22]
5. **Cardioprotective activity:** Aqueous extract of sandalwood reported to inhibit significantly the cardiac tissue damage by reducing lipid peroxidation on doxorubicin induced cardiotoxicity in rat model and significant protective effect against ISO induced myocardial infarction in albino Wistar rats in dose dependent manner.[22]
6. **Anticancer activity:** Investigations have shown the chemo-preventive effects and molecular mechanisms of α- santalol on skin cancer development in both animal models and skin cancer cell lines.[22]
7. **Antioxidant efficacy:** It has been reported to have nitrous oxide scavenging activity and DPPH antioxidant activity. Santalum album can protect cardiac tissue from oxidative stress induced cell injury and lipid peroxidation and also interferes with DOX-induced inflammatory and apoptotic induction in cardiac tissue.[22]
8. **Neuroprotective activity:** Concluded that Santalum album shows neuroprotective effect against septic encephalopathy via reduction of oxidative stress and improvement in learning and memory, neurological severity score and exploratory behavior. Suggests that Santalum album may have beneficial effects in septic encephalopathy by improving biochemical, behavioral changes.[23]
9. **Antiaging activity:** The antiaging assay showed that Ximenynic acid isolated from the seeds of Santalum album exhibited significant collagenase inhibition activity.[24]
10. **Anti-diarrheal activity:** At doses of 200, 400 and 800 mg/kg, Sandalwood Extract showed significantly anti-diarrheal activity against castor oil-induced diarrhea as compared with the control.[25]
11. **Toxicity:** The sandalwood plant consists of several major and minor chemical constituents. Alpha-santalol, the main phytochemical component of sandalwood, has undergone toxicity testing. It was found that the sandalwood oil and its derivatives show low acute oral and dermal toxicity in experimental models. As per the literature review, there are very few

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cases of irritation or sensitization reactions of sandalwood oil. However, the information on the toxicity of sandalwood oil is limited. Although the plant has a long history of its use without any reported adverse effects and is considered safe. [26]

DISCUSSION AND CONCLUSION

In several *Agada* (antitoxic) concoctions found in our classical literature, *Chandana* is a key ingredient. *Sarpa, Luta, Keeta, and Sarva Visha* ailments are among the various harmful bites that these *Agada* are mostly used to treat. *Agada* is a multi-mineral, herbo-drug mixture that shows up in several kinds of poisoning. As a component of *Vishaghna Mahakashaya Dravya*, *Chandana* will exhibit antitoxic properties by neutralizing and denaturing toxins and aiding in their escape from the body at the cellular level.

According to recent studies, *Chandana* also has anti-inflammatory, analgesic, anti-microbial, and antioxidant properties. In addition to helping to comprehend the detoxifying phenomenon, it may be a useful integrated concept for metabolic toxicity, drug acquired acute and chronic toxicity, biological toxicity, cumulative toxicity, etc.

According to some, *Chandana* is the best *Vishaghna Drvaya* for all kinds of toxicity. All *Brihattrayi* contain the *Vishaghna* references of *Chandana*. Additionally, recent studies have demonstrated the various anti-inflammatory, analgesic, anti-microbial, immune-modulating, and other properties of *Chandana*. In the modern period, *Chandana* can therefore be utilized with simplicity to both prevent and cure illness and rid the world of harmful substances.

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