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DEODAR (*CEDRUS DEODARA* (ROXB.) LOUD.): THERAPEUTIC USES AND PHARMACOLOGICAL STUDIES-A REVIEW

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Review Paper

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ABSTRACT

Cedrus deodara (Roxb. ex D. Don) G. Don is a tree belongs to the family Pinaceae. It is important and well mentioned in traditional system of medicine of India, Pakistan, China, Korea etc. for its use in the management of skin diseases, microbial infections, joint disorders, asthma, kidney stones, ulcer, brain disorders and immunological disorders. This review provides an insight into the information available regarding traditional uses of different parts of the plant, Ethnomedicinal uses, phytochemistry and pharmacological profile of different extracts of *Cedrous deodara*. It will be helpful to explore its potential for the development of novel therapeutic agents.

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Keywords: Cedrus deodara, Deodar, pulmonary diseases.

Ayurveda, Siddha, Unani and local health traditions, provided a secure base for the utilization of large number of plants in general healthcare and alleviation of common aliments of the people. In the present scenario, allopathic medication showing severe side effects, it is important to focus consistently new remedies for treating diseases from herbs. [1] In almost all the alternative systems of medicine, usually plants are used for therapeutic purposes. *Cedrus deodara* (Roxb. ex D. Don) G. Don also known as Deodar is an important and well documented drug mentioned in traditional system of medicine of India, Pakistan, China, Korea etc. Deodar is a Persian word which is formed two words "Deo" and "Dar". "Deo" means very big, as its tree is very large, tall and straight, attend 16-20 feet heights. "Dar" means wood. In India it is also called "Deodaru" which means medicine used for stomachache.[2] Forests full of Deodar trees was the favorite abode or living place of ancient India sages and their families who were devoted to Hindu God Shiva. To gratifying lord Shiva, the sages used to perform very difficult "*Tapasya*" (meditation) in deodars forests, so this plant is believed as sacred tree. The tree of deodar can live up to 600 years. [3] It is brought at the considerable prices by English shipwrights and sailors for building large boat and ships. [2] This tree grows in abundance in the Himalayan region. [4] Some related species of Deodar are also

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mentioned in Unani medicine. One is *Chid* or *Behroza* (*Pinus longifolia*), second is *Deodar Shehwania,* which smells like a drunken elephant, third is *Deodar Saral,* which is aromatic and used to glow the face of skin and to clear dark spots. The fourth one is *Deodar Kasht* which function and property has not been described. [2] The wood of Deodar tree is very sharp and flavorsome. Its root is similar to *Barzard*/*Behroza* (*Pinus longifolia*). According to *Ibn Sina* this tree resembles from the genus Juniper. [2,5] As one of the widely used traditional medicine it exhibits a variety of biological and pharmacological activities. [6,7] In Unani Medicine Deodar is prescribed for the treatment of inflammation, cough, fever, urinary disorders, itching, ophthalmic disorders, nervous disorders diseases of skin blood etc. [2,5] In addition, it has been widely utilized in Chinese drinks and has been recommended in the Ayurveda system of medicine.

Apart from the medicinal uses the primary use of deodar is for railway sleepers; also employed for beams, floor-boards, posts, door and window frames, shingles etc. Deodar is also used for bridge construction, carriage and wagon building, masts and spars, furniture, packing cases, brush backs, carvings and several other purposes. It is suitable for pattern making, electric poles and battery separators [8,9]In Kashmir the mortar (Kanz) in which paddy is husked are usually made of deodar the timber is employed in the manufacture of House Boats. It is also used to make pestles (Chotta) for pounding meat and for grinding spices and condiments. [10]

Distribution

The plant is native to large stretch of the Himalayan region starting from Western Himalayas in east Afghanistan, north and northwest Pakistan, North and Central India, southwestern Tibet, Bangladesh, Syria, Western Nepal and also found in North and west frontier provinces, Baluchistan. [11,12] The plant generally grows at an altitudinal range of 1800 m–2600 m above sea level. [2,13,14] In India it is found in North-western Himalayas from Kashmir to Garhwal from 1000 to 3500m. In Kashmir it is found throughout the Valley, from 5500 to 10,000 feet; dense forests in Dachigam Sanctuary, forest near Harwan Park and on Shankaracharya Hill. [15,16]

Taxonomical classification: [14,15,17]

Kingdom:	Plantae
Division:	Pinophyta
Class:	Pinopsida
Order:	Pinales
Family:	Pinaceae
Genus:	Cedrus
Species:	*C. deodara*

Botanical Description

A large evergreen coniferous tree, reaching 65m tall with a trunk up to 3m in diameter. [14,17,18] It has thick bark, fissured vertically and cracked transversely. The stem has spreading branches in irregular fashion with drooping branch lets and drooping leading shoots.[19] The stem is covered by the barks having grayish-brown to dark brown color with vertical or diagonal cracks divided into oblong scales. The leaves are either solitary or in dense clusters, dark green or sometimes bluish-green, rigid, leathery, three-sided, sharp-pointed.[20] Deodar is monoecious, although male and female cones appear on separate branches. Female cones barrel shaped, seeds triangular with a broad wings. The female flowers are solitary and erect to born at the end of arrested bracelets. At the time of pollination the female flowers are oblong, ovoid, 1.2-2cm in length and 0.06cm in diameter, and pale glucose green in color. At the time of maturity the female cones become 7.5-12 cm long and 5-8.7 cm in diameter with many fan shaped scales or megasporophyll arranged in spiral fashion on a persistent woody central axis. The flowering occurs in the month of October. Male flowers are solitary, erect, catkin-like pale green to purplish oblong, ovoid 2.5 to 4.6 cm in length and 1–1.5 cm in diameter at maturity they attain a height of 5–7.5 cm and become a yellowish due to the presence of pollen. [13,12,14,18,20,21,22]

Fig. Deodar tree (a&b), leaves (c&d), wood (e) and fruit (f)

Description of drug in Unani Literature

In Unani Medicine Deodar is described as following:

Mutaradifat **(vernacular names):**

Arabic: *Shajar al-Aqla, Shajar al-Jin* [2,5,23,24]*Sanobar al-*

Hind, *Shajar al-Deodar*. [18]

Afganistan:	*Imanza, Nakhtar* [18]
Bengali:	*Debdaru, Devadar* [14,15,18]
Deccan:	*Devadaru* [18]
English:	Himalayan Cedar, Deodar [12,15,17, 18,19,25]
French:	Deodar [18]
Gujarati:	*Devadar, Vanseo Devadar* [14,15,18,26]
Garhwal:	*Dadar, Deoda, Deowar, Dewdar, Diar* [18]
Hindi:	Cheed[5,17,26,27] Devdar, Devdaru [15,], Diyar [8,14,17,19] Deodar, Deyar, Kilan, Kilankaper [18]
Kannada:	Daevadaaru, Gunduguragi, Bhadradaaru. [15], Devdor [14,17,19]
Kashmiri:	Dadar, Deodar, Deowar, Dewdar, Diar. [18]
Malayalam:	Devatharam, devadaram, devataram. [14,15,18,19]
Marathi:	Deodar [14,15], Deodaru, Dewadar [18]
Morocco:	Deodar, Dewara
Nepali:	Devadaru
Persian:	Cheed [26], Choob Narzahn [2]
Punjabi:	Diyar, Dewdar [8,13,15] Dada, Dewdar, Geyar, Kairval, Kalain, Kalon, Keli, Kelmang, Kelu, Keolikelmang, Keori.[18]
Sanskrit:	Devadaaru, Suradruma, Suradaaru, Devakaashtha, Devadrauma, Saptaatrika, Daaru, Bhadradaaru, Amarataru, Amaradaaru, Daaruka, Devaahvaa, Surataru, Surabhuruha, Chid and Deodar, Azhadradaru [2] Amaravati, Devakasth, Daru, Suradar, Amaraaru. [8, 9, 15, 18,19,20,25]
Tamil:	Vathaaram, Devadaram, Devadari[15,25] [14,19] Tevadari [8,18]
Telugu:	Devadari [8,14,15,18,19]
Unani:	Deodar [19,25]
Urdu:	Deodar, Burada deodar, Deodar[3,13,18]

***Miqdar Khuraq* (dosage):**
The therapeutic dose of heartwood powder of Deodar is mentioned as 1-1.5 gm [23]; 3.5-7g [2]

***Mizaj* (Temperament):**
Its temperament is *Hār Yābis* (hot and dry) in the 3rd degree; *Shīr deodar* (deodar milk) is also called as oil, which is hot in 4th and dry in the 3rd degree. [2,15,24,26,27]

***Af'al* (Pharmacological action):**
Munawwim (hypnotics), *Munashshī* (narcotics), *Dāfi'-i-'Ufūnat* (antiseptics germicidal and fungicidal), *Muhallil* (anti-inflammatory), *Musakkin-i-'Alam* (analgesics), *Dāfi'-i-tashannuj* (anti-spasmodic), *Dāfi'-i-Humma* (fever),[2,5,28] *Nāfi'-i-Nafkh* (anti-flatulence), *Qābid-i-Am'a* (astringent) and *Dāfi'-i-Ishal* (antidiarrheal) [2,15,23,24,26,] *Mu'arriq* (diaphoretics). *Mudirr-i-bawl* (diuretic) and *Kāsir-i-riyāh* (carminative), *Mu'attish* (dipsetic) [2, 5,15,24,27,28]

***Iste'malat* (uses):**
It is used for the treatment of *Humma-i-Balghami* (phlegmatic fevers), *Safrāwi Waram* (bilious inflammation), *Amrad-i-Tanafus* (pulmonary disorders) like *Diq* (tuberculosis), *Istisqa'* (ascites) and *Amrād-i-Kulya* (renal disorders) like kidney stones, bladder stones, *Amrād-i-Mathāna* (urinary disorders) like dysuria[2,15,23,24,26] nerve and brain diseases like *Laqwa* (facial palsy), *Sar'* (epilepsy), *Sahr* (insomnia), *Falij* (paralysis), *Laqwa* (palsy)[2,5]; GIT disorders like *Nāfi'-i-Nafkh* (flatulence), *Fasād-al-Hadam* (dyspepsia), *Munāffith-i-Balgham* (expectorant), *Ishāl* (diarrhea), *Bawāsīr* (piles), *Hudār* (rheumatism), *Niqris* (gout), *Natu-i-Miq'd* (anal prolapse), *Waja' al-Asnān* (toothache) and *Ta'kkul-i-Asnan* (dental carries) [2,26,27]

***Tarkib-i-Iste'mal* (mode of administration)**

***Amrad-i-Jild, Awaram, Juruh wa Quruh* (diseases of skin, inflammations, wound and ulcers):**

- Roghan-i-Deodar is applied locally in several skin diseases like pityriasis. [2,26]
- Locally, the extract of wood is used in skin disease like ulcers and abscesses. [2,8,26]
- Its oil is used for healing the wound of leprosy. [2]
- The oil is topically antiseptic so useful in wounds and ulcers. [13,29]
- A formulation containing 15% essential oil of cedar wood is reported to be used for the treatment of fungal infection in sheep, goats, camel etc. also useful as insect repellant.[17]

***Ilaj-i-Tasmim* (treatment of poisoning)**

- Its oil is used orally in case of impure blood due to mercury poisonings. [2,26]

***Suda'* (headache)**

- Its liniment prepared by scrapping the wood

in water is applied on post auricular region to reduce headache. [26]

***Qabd wa Bawasir* (constipation and piles)**

- The wood powder is used to ease constipation, piles and also effective for pulmonary disorders. [2,26]

***Amrad-i-Riya* (lung diseases)**

- Cedar wood oil is used in aromatherapy for catarrhal conditions of the respiratory tract. [13,29]
- The wood powder is used to cure pulmonary diseases. [2,26]
- Deodar powder mixed with rain water is used as expectorant.
- A pill prepared from wood powder (2.5g) and jiggery (5g) is used for the treatment of *Waja' al-Sadr* (angina). [26]
- When massaged into skin, it is found efficacious in catarrh and chest infections [13,29]
- The oil is also used on eruptions of the skin in the form of 25% ointment with Vaseline [13,29]

***Humma* (fever)**

- Its bark decoction is used in fever, diarrhea and dysentery. [2,15]

***Ishal wa Pechis* (diarrhea & dysentery)**

- Its bark decoction is used in fever, diarrhea and dysentery. [15]

***Filpa* (Elephantiasis)**

- It's powder as a liniment used in elephantiasis. [26]

***Amrad Mi'da wa Am'a* (Diseases of GIT)**

- Its leaves used as a foods and act as anthelmintic. [2,5]
- In the form of liniment it acts as anti-inflammatory and the decoction is used in sitz bath to cure rectal prolapse. [2,24,27]

***Amrad-i-Dandan wa liththa* (diseases of tooth and gingiva)**

- Resin of the stem mixed with a few drops of kerosene oil and a pinch of common salt is applied on teeth against severe tooth aches. [30]

***Amrad Mafāsil* (diseases of joints)**

- The cedar oil is massaged on joints for the treatment of gout. [2]
- It also shows anti-inflammatory activity useful for the treatment of rheumatoid arthritis. [2]

Ethanomedicinal uses:

The aromatic wood is employed medicinally as a carminative, diaphoretic, diuretic and useful in fever, flatulence, inflammation, dropsy, and urinary diseases.[31] The bark is astringent and useful for fevers, diarrhea and dysentery.[17] The oleo-resin of deodar and the dark colored oil obtained from the wood are valued as an application for ulcers and skin diseases. They are also useful to manage sore feet of cattle (horses etc). [32] The resin of the plant possesses anthelmintic properties and is used for the treatment of rheumatism, ulcers, boils, bone fracture, cracks in sole of feet, leprosy, skin diseases, snakebites, sprains, swellings, ulcers, and urine problems. The oil possesses strongly antiseptic, astringent, expectorant, sedative and diuretic properties. It is used for the treatment of arthritis, joints pain, cracks, body ache, skin rashes, external ulcers, and itching, while bark oil is used to cure itching, dermatitis, and relief from stomach worms. The leaves are bitter, acrid and thermogenic and are useful in inflammations and tubercular glands.[13,18,29] Its leaves have ability to increase fertility and vitality in sterile women. [2]

***Mazarrat* (toxicity, side effect and adverse effect):**

It is harmful for lungs [2,24] and hot temperament people [23]

Musleh (correctives):

Katira (Tragacantha gum), *Samagh-i-Arabi (Acacia arabica), Roghan-i-Badam* (*Prunus amygdalus*), [2,24] cold and wet things (oils etc.) are used as correctives [23]

***Badal* (alternative)**

According to Hakim Abdul Hakim there is no any alternative of this medicine [23]

***Murakkabat* (compound formulation):**

Rogan-i-Deodar, *Marham-i-Jadwar*, *Rogan-i-Zard*, *Rogan-i-Kharish, Burada Deodar* (see detail in table 01)

Table 1: Showing name of compounds having Deodar as one of the important ingredient along with its dose, mode of administration and indications.

Name of compound and its form	Dose and Mode of administration	Indications
Burada Deodar (Powder)	Locally as liniment	For dissolving lymph nodes of neck[33]
Habb-i-Ashkhar (Pills)	2 tablets twice a day with water	Splenomegaly
Marham-i-Jadwar (ointment)	Q.S. for local application only.	It possesses the healing and analgesics property so it is recommended for wounds, ulcers, traumatic pain and dissolves cysts like plague.[34,35]
Rogan Kharish (oil)	Mix with Rogan Kamila and apply locally.	For itching.[33,35]
Rogan-i-Deodar (oil)	Lukewarm oil is used as a massage.	It is useful in the treatment of otalgia, ring worm, scabies and traumatic joint pain. [33,36,37,38,39]
Rogan-i-Zard (oil)	As a massage, locally	Traumatic pain, wounds healing.[35]

Major chemical constituents

It has Himachalol, allohimachalol, centclarol, isocentdarol, dewarene, dewarol, dewardiol, dewarenol, taxifloin, cedeolarin, dihydromyricetin, cedrin, cedrinoside, dihydrodehydrodiconiferyl alcohol.[40] Himalayan Cedarwood Oil contains two major sesquiterpenoids—alpha and beta-himchalenes. Presence of butyric and caproic acids is also reported. The bark contains 8-C methyltaxifoline, dihydroquercetin, 8-C methylquercetin, quercetin, sitosterol, and tannins 8.25%, non-tannins 6.95% (varies with the age of the tree). [25] Deodara isolated from essential oil (tetrahedron Lett.1973,427); centdarol isolated and characterised as 2beta,7 beta-dihydroxy- Himachal-3-ene (photochemistry 1975,14,2237); isolation and structures of isocentdrarol (photochemistry 1976,15,557) structures determination of oxide Himachalene isolated from essential oil (tetrahedron 1997,33,885) ; structure of deodardione and limonencarboxylic acid(I) isolated from wood (tetrahedron 1978). [3,19,41]

Pharmacological studies

Many pharmacological activity of *Cedrus deodar* have been reported in vivo and in vitro studies. Various parts of this plant bear anti-inflammatory, immune modulatory, anti-spasmodic, anti-cancer, anti-apoptotic, anti-bacterial as well as other activities.

Anti-inflammatory Activity:

Anti-inflammatory activity of the essential oil of the wood of *C. deodara* was studied on rat's model. In the study it is indicated that essential oil exhibited significant anti-inflammatory action against carrageenan-induced inflammation at a dose of 50 mg/kg and 100 mg/kg, respectively. In addition, the essential oil also inhibited adjuvant-induced arthritis as clearly shown by suppression of increase in paw thickness of rats. The analgesic activity of the essential oil was also revealed. [42]

Anxiolytic and anticonvulsant activity:

The heart wood extracts of *Cedrus deodara* was studied for anxiolytic activity by three experimental models namely Elevated plus maze test, Light dark model and locomotor activity by actophotometer and anticonvulsant activity was studied by using Pentylene-tetrazole (PTZ), Maximal-electro shock induced convulsions in pretreated rats with alcoholic extract of *Cedrus deodara* (ALCD) followed by administration of GABA (Gamma- Aminobutyric acid) in rat brain tissues was performed to study the effect of ALCD on GABA levels of brain. In PTZ induced convulsions model the ALCD (100, 200 mg/kg) has significantly increased the onset of clonus, onset of tonus and percentage protection when compare to control group and in MES induced convulsions model. [43]

Antidepressant Activity:
3, 4-bis (3,4-dimethoxyphenyl) furan-2,5-dione (BDFD) isolated from heartwood of *Cedrus deodar* was studied for antidepressant activity using albino mice model. The findings indicated that treatment with BDFD results in a significant decrease in immobility time of the mice when subject to forced swim test. In addition to it, BDFD treatment resulted in increased serotonin and noradrenaline levels in the brains which indicated its positive antidepressant action. [44]

Neuroprotective Activity:
Cedrin, a substance isolated from *Cedrus deodara*, is thought to have neuroprotective properties. According to a study Cedrin was found to increase cell viability in a concentration-dependent way in PC12 cells (the cell line originating from a pheochromocytoma of the rat adrenal medulla) damaged by treatment with A1-42. A1-42 (beta-amyloid) treatment of PC12 cells led to an increase in intracellular ROS and malondialdehyde (MDA) and a decrease in SOD (superoxide dismutase) activity. Cedrin pre-treatment of the cells was able to reverse this state, demonstrating its antioxidant properties against oxidative stress brought on by A1-42. In PC12 cells, where A1-42 had first failed, Cedrin also enhanced mitochondrial membrane potential and the opening of the mitochondrial permeability transition pore.[45]

Anti-bacterial activity:
Ethanolic extract from the wood part of plant was evaluated against three gram positive (Staphylococcus aureus, Enterococcus faecalis, Bacillus cereus) and three gram negative (*Klebsiella pneumonia*, *Pseudomonas aeruginosa*, *Escherichia coli*) micro-organism it indicated that *C. deodara* found to have a good antibacterial action. [46] All volatile oils were tested against Gram-positive and Gram-negative bacteria to gauge their in vitro antibacterial activity. Extract and oil obtained from the root, stem, and leaf of plant were tested against *E. coli*. Both the oil and extract shows significant inhibition of the above mentioned organism. [47]

Anti-fungal activity:
The fungicidal activity is persisted for longer period in essential oils of the plant.[48] The anti-fungal effects of the essential oil of *Cedrus deodar* Roxb. as well as some of its active components have been previously investigated against storage moulds of *Capsicum annuum* L. [49] The antifungal activity of root oil and compounds isolated from the oil were evaluated against *Candida albicans* and *Aspergillus fumigatus*. *C. deodara* oil at the concentration of 150 □g/disc showed zone of inhibition against *A. fumigatus* but at the same concentration did not show any antifungal activity against *C. albicans*. Trans-atlantone and allo-himachalol, isolated from the oil also have not shown any antifungal activity while himachalol at the concentration of 150 □g/disc showed zone of inhibition against *A. fumigates*. [50] The anti-fusarium oxysporum f. sp cicer (FOC) and anti-Alternaria porri (*A. porri*) effects of *C. deodara* shows potent anti-fungal activity against both the fungal strains. [51]

Insecticidal activity/ Larvicidal activity:
Due to having insecticidal properties, it was found that Himalayan cedar wood oil shows insecticidal property against adult Indian mosquitoes, *Anopheles slephensis*, at low conc. (KD50 0.4452% in acetone). Chromatographic fractions of Himalayan Cedar wood oil were bio-assayed against the Pulse beetle (*Callosobruchus analis* F.) and housefly (*Mucus domestica* L.). Almost all fractions showed insecticidal activity against both the test species. [52]

The essential oil of *C. deodar* reveals larvicidal activity against diamondback moth, *Plutella xylostella*. It was reported that essential oil obtained from hydrodistillation of wood chips of the plant and its fractions showed larvicidal activity against second instars of diamondback moth *P. xylostella* among which pentane fraction of essential oil was most effective having a LC50 value of 287 μg/mL. It was also reported that fractions enriched with himachalenes were more toxic than that of allantone enriched fractions. The above findings indicated that himachalenes and allantone probably contributed for the larvicidal activity. [53]

Anthelmintic activity
The leaf extract of *Cedrus deodara* was reported to have anthelmintic activity against adult *Pheretima posthuma*. The petroleum ether took least time to cause paralysis and death of the worms followed by methanol, ethyl acetate, and chloroform. [1]

Antioxidant Activity
The brain and nervous system contain large amounts of lipid and iron, both of which are known to be involved in the production of free radicals, making them more susceptible to free radical damage than other tissues. Additionally, *Cerdrus deodara* was said to possess potent antioxidant qualities. To identify the antioxidant components of *Cedrus deodara*, two

techniques were used. The dried heartwood powder of *Cedrus deodara* was dissolved and purified by first being defatted with petroleum ether and then being extracted with chloroform. The chloroform extract showed strong antioxidant activity on 1, 1-diphenyl-2-picrylhydrazyl (DPPH) free radical. [54]

Anti-Tubercular activity:
Chloroform and acetone extract obtained from the leaf and cone part of *Cedrous deodara* shows good anti-tubercular activity caused by mycobacterium tuberculosis in tuberculosis gland. Cone exhibits 13 and 14mm zone of inhibition and leaf exhibited 12 and 14mm of inhibition respectively. Methodology applied was broth dilution method and ampicillin was taken as positive control, which exhibit 14mm of zone inhibition. [55]

Diuretic and Anti- Urolithiatic Activity:
The diuretic and anti-urolithiatic property of the petroleum ether extract of the heart wood of *Cedrus deodara* was investigated. In an experiment, urolithiasis was induced using sodium oxalate (70mg/kg, i.p.) for 10 days. Crystals were found in the urine of rats treated with sodium oxalate under a light microscope, and elevated serum values suggested that nephrolithiasis had developed in the control group. Elevated serum biochemical levels caused by these being eliminated in urine were prevented by administering PECD for 10 days along with the triggering agent, sodium oxalate. According to a histology investigation, PECD therapy prevented nephrolithiasis brought on by sodium oxalate. Therefore, it was determined from the aforementioned study that the plant has excellent ability to prevent stone formation. [56]

Anti-secretory and anti-ulcer activities:
In the pylorus-ligated rat model and in rats with ethanol-induced gastric lesions, the stomach anti-secretory and antiulcer effects of volatile oil produced by steam distillation of *Cedrus deodara* wood were investigated. The study found that pretreatment with *C. deodara* significantly reduced the number of ulcers, ulcer score, and ulcer index in pylorus-ligated and ethanol treated rats. Volatile oil was reported to have significant antisecretory activity as evidenced by decreased gastric fluid volume, total acidity, free acidity, and increase in the pH of the gastric fluid in pylorus-ligated rats. [44]

Antispasmodic Activity:
Himachalol is one of the major constituent of wood of plant, which is having antispasmodic activity. In the conscious immobilized cat, intragastric administration of himachalol or papaverine (100 mg/kg) produced same rate of inhibition of carbachol-induced spasm of the intestine, lasting about 2 hr, but himachalol had much faster onset of action than papaverine. [57]

CONCLUSION
On the basis of above findings it is concluded the various parts of Deodar (a well-known tree) are used for various medicinal properties like analgesic, anti-inflammatory, antiseptic, antispasmodic, antisecratory, antiulcer, lithotriptic, antibacterial, antifungal, antioxidant, antianxiety etc.

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