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Kundur (*Boswellia serrata*): A critical evaluation of its ethnobotanical significance, physiochemical characteristics and therapeutic potential

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Abstract
Boswellia serrata Roxb, commonly known as *Salai* or *Kundur* in Unani medicine, is a prominent medicinal plant of the Burseraceae family, valued primarily for its aromatic oleo-gum resin. In Unani classical texts, the plant is described as having a hot and dry temperament and is widely used for its astringent, detergent, haemostatic, memory-enhancing, expectorant, and tissue-regenerative properties. The gum, resin, and oil are the main parts utilized, and formulations such as *Majoon Kundur* have been prescribed for urinary disorders, respiratory conditions, gastrointestinal ailments, chronic wounds, and memory enhancement. Dosage, substitutes, corrective agents, and preparation methods are well documented, reflecting centuries of traditional experience. Botanical and ethnobotanical descriptions note *Boswellia serrata* as a deciduous tree with exfoliating bark, abundant resin canals, pinkish-white flowers, and heart-shaped seeds. The oleo-gum resin, known as *sallai guggal* or *olibanum*, is harvested by making incisions in the bark and collecting the exuded gum, which is considered most potent when fresh, soft, and white-yellowish in colour. Modern pharmacological studies have validated many traditional Unani claims, showing that boswellic acids the major constituents of the resin possess anti-inflammatory, analgesic, antimicrobial, antioxidant, hepatoprotective, nephroprotective, anti-diabetic, anti-hyperlipidemic, anti-tumor, and anti-urolithiatic activities. Experimental evidence demonstrates inhibition of inflammatory mediators, reduction of edema in arthritic models, protection against chemically induced liver and kidney damage, and suppression of cancer cell proliferation. Overall, *Boswellia serrata* exemplifies a medicinal plant where classical Unani knowledge aligns with modern scientific validation. Its traditional uses, pharmacological properties, and well-documented formulations highlight its potential as a therapeutic agent and encourage further research for integration into contemporary herbal medicine.

Keywords: *Boswellia serrate*, *sallai guggal*, *olibanum*, *Majoon Kundur*, herbal medicine

Introduction
Boswellia serrata Roxb. That belongs to the *Burseraceae* family. It is commonly known as *Salai* in India and *Kondor* in Arabic. The market name of *Boswellia serrata* is frankincense. It is primarily known for its gum resin which is a milky liquid that oozes out from the bark. The gum resin is commonly known as '*sallaiguggal'* or '*olibanum'*. The English word '*Olibanum'* has been originated from the Arabic word used for milk i.e. '*alluban'*. It is also believed that the word '*Olibanum'* has derived from '*Lebanon'* a famous place where resin was sold and traded with Europeans. Arabians called this place as "*Oil of Lebanon*". Whereas the word is originated from the old French word "*francencens*" which means high quality incense. *Boswellia serrata* is known as *Kundur* in Unani Medicine and the plant is found in Arabia, South Africa and west Asia. The white to yellow colored aromatic oleo resin gum is obtained from the stem bark of this pant and the main constituents of *Boswellia serrata Roxb* is Boswellic acid [1, 2].

- **Botanical name:** *Boswellia serrata Roxb*. [3]
- **Synonyms:** *Boswellia thuriferia*. [4]
- **Family:** *Burseraceae*. [1-3]
- **Vernacular Name:** [1-6]
- **Arabic:** *Luban*, *Bastaj*.

- **English:** *Boswellia, Indian frankincense, Indian olibanum, Indian olibanum-tree.*
- **Hindi:** *Salai, Labana, Dhoop.*
- **Sanskrit:** *Kunduru, Sallaki, Gajabhakshya.*
- **Assamese**: *Sallaki*.
- **Bengali:** *Luban, Salai, Salgai*.
- **Gujrati:** *Shaledum, Saleda, Saladi, Salai guggal, Gugal, Saledhi*.
- **Kannada:** *Adimar, Chitta, Gugula, Dhupa adimar, Chilakdhupa, Madimar, Chilakdupa, Tallaki, Maddi.*
- **Tamil:** *Parangi Sambrani*
- **Telugu:** *Parangi sambrani, Anduga, Kondagugi tamu.*
- **Kashmiri:** *Kunturukkam, Samprani*
- **Marathi:** *Salai cha dink*
- **Punjabi:** *Salai Gonda*
- **Urdu:** *Kundur*.

Taxonomical Classification [2]
- **Kingdom:** Plantae
- **Subkingdom:** *Tracheobionta*
- **Division:** *Magnoliophyta*
- **Class:** *Magnoliopsida*
- **Order:** *Sapindales*
- **Family:** *Burseraceae*
- **Genus:** *Boswellia*
- **Species:** *serrata*

Mahiyat, it is gum, obtained from a thorny tree and these trees commonly found in Arab and African countries. According to *Abu Hanifa* these trees grows *kundur* only in mountainous areas. These are moderate size trees with apx. Height is of 2 yards. Seeds and leaves resemble to leaves and seeds of *Aas* and taste is somewhat bitter. To obtained, incisions made in to the trunk and gum oozes from wounded part, which is collected and preserved. Shelf life of *kundur* is 20 years but fresh, soft and white *kundur*, which is yellowish from inside is considered better than old *kundur* [7-11].

- **Part used:** Gum, resin and oil. [3, 4] 24, 35
- **Part studied:** Gum
- **Mizaj (temperament):** Hot in 2^0 and dry in 10^8 Hot in 2^0 and dry in $2^{0.7}$
- Hot in 3^0 and dry in $1^{0\ 10}$

***Af'al* (action):** Astringent (*Qabiz*) Detergent (*Jali*), Dementia (*Nisyan*), Siccative to the ulcer (*Mujjaffife wa mundammile quruh*), Haemostatic (*Habisudam*), Tissue growth promoter (*Munbite Laham*), Cicatrizant to a corneal ulcer (*Mundammile qarha chashm*), Dribbling of urine (*Taqteer baul*), Memory tonic (*Muqawwie zehan wa hifz*) Siccative to the secretion of phlegm (*Mujaffife balgham*), Siccative to the secretion of the brain (*Mujaffife rutubate dimagh*), Carminative (*Kasire riyah*), Stomachic (*Muqawwie meda*), Antidote (*Triyaq samoom*), Expectorant (*Munaffis e balgham*), Antiseptic (*DafeTauffun*) [7-10, 12].

***Istemal* (uses):** *Taqtir al-bawl, kasrat-i-tamtsh, Khafaqan, Ziq un-nafas, Saylan al rahim, Khuni bawasir, Atishaq, Zoaf e baah* [8]. *Bukhar, Nakseer, Nafas-al-dam, nisyan, Quruh e meda aw amaa* [10]. *Su'al al-shobi, Ittisa' al-shu'bi* [11].

***Miqdare khurak* (dosage):** 1-2 *Masha* (max. 3 *Masha*) [8].

- ***Muzir* (adverse effect):** Headache, *Junun*, [8, 9, 12] Toxic to lungs [8].
- ***Musleh* (corrective):** *Chawal, Shakar, Unnab, Doodh* or Ghee, *Sikanjabeen*, and *Lazan Farsi* for lungs [7-9, 13]
- ***Badal* (Substitute):** *Mastagi, kali mirch* [7, 8]
- ***Murakkabat* (formulation):** *Majoon kundur*. [13]

Ethnobotanical description: *Boswellia serrata* is a deciduous tree, of height 10-15 m, having green branchlets. The plant contains thin bark of greenish-grey, yellow or reddish color which eventually turns out into ash color and peels off in exfoliating papery sheets or flakes. The plant has many long tubular structured resin canals that spread vertically as well as horizontally in the tree. These resin canals are present throughout the tree but the bark has predominantly more resin canals than any other part of the plant. The young foliage of the plant is yellow or light brown whereas the leaves are long (about 12-42 cm) and have a greenish lower layer. There are 17-27 leaflets pairs. Veins have pubescent. The leaflets are oblong-lanceolate. The margin is present either entirely or crenate or wavy form. The tip of the leaves is obtuse or subacute. There are more than 16 pairs of secondary veins. The mid-vein is of a light reddish color. The panicles are 3-20 cm long and are shorter than leaves in little branched racemes. The pedicles are 2-4 mm long. Peduncles and pedicles both are pubescent. The flowers of this plant are pinkish white. The petals and sepals of the plant are puberulous from the outside. The petals are ovate-oblong and 6-8 mm long and 3.0 3.5mm wide. There are 10 stamens that are inserted below the disc. The wall of the anther is not tuberculate. There is one ovule in each carpel. The style is about 2.1mm in length without any vertical groove. This plant has a brown or greenish drupe with 3-pyrenes, which are heart-shaped and have a single seed. The seeds are ovate-obovate or subcordate [1, 2].

Habitat: *Boswellia serrata* is widely found in dry deciduous forests of India, Pakistan, North Africa, and the Middle East. In India, it is mainly found in Madhya Pradesh, Jharkhand, Andhra Pradesh, Orissa, Gujarat, Punjab, Assam, Rajasthan, and Karnataka [1, 2, 5].
Part used: Gum, resin, Oil and bark [4].
Action: Urinary troubles, astringent, antipyretic, anti-dysentery, anti diarroheal, expectorant, diaphoretic, diuretic, stomachic, emmenagogue, refrigerant, dyspnea, polyuria, leucorrhoea, oligospermia, piles, ulcer, burn, colic [1, 4].

Uses
- It is an internal and external stimulant diuretic and stomachic.
- It is also a slight hepatic stimulant so using jaundice.
- It is useful in some chronic diseases like diarrhea, dysentery and hemorrhoid.
- The gum of this tree is use as a diaphoretic and astringent.
- It is also prescribed with clarified butter in syphilitic disease, with coconut oil for sores.
- It is stimulant in pulmonary disease like bronchorrhea, chronic laryngitis in form of fumigation [5, 25].

Chemical constituent
Boswellia resin is a mixture containing more than 200

different substances, for instance: resin, long-chain 3 sugar compounds, essential Oils, proteins, and inorganic compounds. Boswellic acids have been identified as the putative active principle of the gum resin. BAs are pentacyclic triterpenes with different functional groups in position 3 and IL of their carbon rings. Most important BAs are: Alpha boswellic acid, beta-boswellic acid, acetyl-beta-boswcllic impo acid acetyl-alpha boswellic acid, Il-keto-beta-boswellic acid, acetyl-I I-beta-beta boswellic acid [2].

Evidence based pharmacological activities

- **Anti-inflammatory and anti-arthritic activities:** *Boswellia* extract exhibits anti-inflammatory property in human peripheral blood through inhibition of tumor necrosis factor-alpha, interleukin-I beta, NO and mitogen activated protein kinase. Insensole acetate, a novel anti-inflammatory compound isolated from *Boswellia* resin inhibits nuclear factor-kappa B activation. Boswellic acid are direct 5-1.0 inhibitors. In the anti-arthritic study on the mycobacterial adjuvant-induced poly-arthritis in rats, salai guggal showed 34% and 49% inhibition of paw swelling with 50 and 100 mg per kg oral [1, 2, 14-17].
- **Analgesic and psychopharmacological effects:** *Boswellia serrata* exhibited marked analgesic activity in experimental animals in addition to its sedative effect. *Boswellia serrata* have found that it produces reduction in the spontaneous motor activity and causes ptosis in rats [16].
- **Antifungal activity:** Its oil has weak antifungal activity against human pathogens, and highly effective against plant pathogens, where it inhibited the tested organism's *viz*. *Pytophothora parasifica* [14].
- **Anti-hyperlipidemic activity:** The mechanism of action was studied by incorporating the U.C14 acetate in cholesterol biosynthesis. They also suggested that salai gum is mainly effective in checking the rats of biosynthesis and partly effective in enhancing the excretion of cholesterol. The alcoholic extract, was tested at different dose levels in 25-50 mg/kg. P.O. doses, anti-hyperlipidemic activity on hypercholesterolemia in animals. Decrease the 30-50% in cholesterol level and 20-60% triglycerides level [16].
- **Anti-tumor and anti-carcinogenic activities:** Feeding 0.2% of Boswellin (BE) in the diet to I mice for 10-24 weeks reduced the accumulation of parametrial fat pad weight under the abdomen. And inhibited azoxymethane induced formation of aberrant crypt foci by 46%. Addition of pure beta boswellic acid, 30-acetyl-beta-bosuellic acid. I-keto-beta-boswellic acid or I-keto-beta-bosnellic acid to human leukemia HL-60 cell culture inhibited DNA synthesis in HL-60 cells. These results indicate that beta boswellic acid and its derivatives have anticarcinogenic, anti-tumour and anti-hyperlipidemic activitiems [16].
- **Antimicrobial Activity:** Bhatuda *et al*., evaluated the antibacterial activity of *Boswellia serrata* against bacterial strains such as *Escherichia coli*, *Staphylococcus aureus*, *Klebsiella pneumonia*, *Enterobacter aerogenes*, *Pseudomonas aeruginosa*, *Salmonella typhimurium*, Salmonella typhi, Staphylococcus epidermidis and *Proteus vulgaris* and suggested that methanolic extract of plant is strongly associated with the anti-bacterial activities. A study conducted by Rajendra CE *et al*., to evaluate the antimicrobial activity of *Boswellia serrata* revealed that methanolic extract of the drug had a potent antimicrobial activity. Ismail *et al*., reported that the resin extract of *Boswellia serrata* powder confirmed antimicrobial activity in different concentration against gram negative and gram-positive microbes. They observed the inhibition zone and compared with ciprofloxacin. The essential oil of *Boswellia serrata* was analyzed by GC and GC-MS, and their antimicrobial tested. The volatile oil exhibited considerable inhibitory effect against all tested organisms.[16]
- **Anti-oxidant Activity:** As per Sharma *et al*., the aqueous extract of *Boswellia serrata*, is associated with anti-oxidant activity. The extract showed effective radicle scavenging activity in 1, 1-diphenyl-2-picryl-hydrazyl (DPPH), nitric oxide, hydroxide, super oxide radicle. The extract showed maximum reducing potential at the concentration of 500 mg/mL [1, 16].
- **Anti-diabetic:** As per Azemi *et al*., *Boswellia serrata* aqueous extract exhibits anti diabetic activity. The administration of the aqueous extract at the dosage of 200, 400, and 600 mg/kg in diabetic rat models showed a significant decrease in blood glucose level which suggested that *Boswellia serrata* is a good source of anti-diabetic drug [1].
- **Diuretic:** Asif *et al*., conducted an in-vivo study on albino rat models to evaluate the diuretic potential of *Boswellia serrata*. The administration of crude aqueous extract by intraperitoneal route at the dosage of 50 mg/kg, exhibited 44% diuretic activity which showed that *Boswellia serrata* can be utilized as a potent diuretic [1, 18].
- **Hepatoprotective**: Kamath *et al*., evaluate the hepatoprotective property of *Boswellia serrata* in an in-vivo study. The models were artificially induced with liver damage by carbon tetrachloride, paracetamol or thioacetamide. It was observed that hexane extract of oleo-gum-resin of the plant at the dosage of 87.5 mg/kg P.O. helped in decreasing the elevated levels of serum marker enzymes and effectively worked on reducing liver weight in all the models [1].
- **Nephroprotective**: Alam *et al*., studied the nephroprotective impacts of *Boswellia serrata* extract against gentamicin-induced nephrotoxicity in albino rat models. Methanol soluble fraction of the plant significantly exhibited protective actions against the nephrotoxicity [1].
- **Anti-urolithiatic Activity:** Methanolic extract of *Boswellia serrata* prevented the development of stones in rats generated by calcium oxalate crystal or zinc disc implants in the urinary bladder, according to the findings. Up to 8 weeks after treatment, the extract was beneficial in both male and female rats, and at a level that decreased the formation of urinary stones, it produced no evidence of toxicity or changes in spontaneous motor activity [16, 19].

Conclusion

Boswellia serrata Roxb is an important medicinal plant valued for its oleo-gum resin rich in boswellic acids, which are responsible for its wide range of therapeutic effects. Traditional systems such as Unani medicine have used it for

centuries for its astringent, anti-inflammatory, expectorant, and memory-enhancing properties. Modern studies support these uses, demonstrating significant anti-inflammatory, analgesic, antimicrobial, antioxidant, hepatoprotective, nephroprotective, and anti-diabetic activities. Overall, *Boswellia serrata* is a scientifically validated medicinal resource with considerable potential for further research and application in modern herbal medicine.

Conflict of Interest
Not available

Financial Support
Not available

References

1. Kumari I, Chaudhary G. *Boswellia serrata* Roxb. Ex Colebr. (Salai): An Ayurvedic herb with anti-inflammatory potential; 2021.
2. Hafeel MH, Rizwana AA. Medicinal uses of *Boswellia serrata* Roxb (Kundur) with special reference to its ulcer-healing property. J Pharmacogn Phytochem. 2021;10(5):34-37.
3. Kirtikar KR, Basu BD. Indian medicinal plants. Vol. 3. Dehradun: International Book Distributors; 1999, p. 521-3, 1420-3, 2133-5, 2357-9, 2435.
4. Nadkarni KM. Indian materia medica. Mumbai: Popular Prakashan Pvt. Ltd; 2009, p. 211-2, 428, 969-71, 1108-12, 1308-1313.
5. Kabir al-Din M. Makhzan al-Mufradat. 2nd Ed. New Delhi: Idara Kitabus Shifa; 2010, p. 113-4, 271, 304-5, 335, 383-4, 400.
6. Mahdian D, Goudarzi AK, Raoofi A, Dadashizadeh G, Abroudi M, Zarepour E, *et al*. Effect of *Boswellia* species on the metabolic syndrome: A review. Iran J Basic Med Sci. 2020;23(11):1374.
7. Ghani HN. Khazain-ul-Advia. New Delhi: Idara Kitabus Shifa; 2010. p. 211-2, 388-9, 811-2, 981-3, 1069-1070.
8. Mohummad UA. Munafe-ul-Mufradat. New Delhi: Ajaz Publishing House; 2012. p. 67, 93-4, 107-8, 157-8, 166-71, 189-190.
9. Bayter I. Jame ul Mufradat al Advia al Aghiza. Vol. I-IV. New Delhi: Central Council for Research in Unani Medicine; 1999-2003. p. 277-9 (Vol. I), 349-52 (Vol. II, 2003), 46-7 (Vol. III), 201-3 (Vol. IV, 2003), 377-8 (Vol. III, 1999).
10. Gul F, Khan KM, Adhikari A, Zafar S, Akram M, Khan H, Saeed M. Antimicrobial and antioxidant activities of a new metabolite from *Quercus incana*. Nat Prod Res. 2017;31(16):1901-1909.
11. Ali HS. Unani Advia-e-Mufarrada. 10th Ed. New Delhi: Idara Kitabus Shifa; 2004, p. 80, 175-6, 209-10, 212, 232, 272.
12. Sharma SK, Singh AP. Antimicrobial investigations on rhizomes of *Cyperus rotundus* Linn. Der Pharm Lett. 2011;3(3):427-431.
13. Hakim MAH. Bustan-ul-Mufradat. New Delhi: Idara Kitab-ul-Shifa; 2002. p. 60, 137, 455, 463, 503, 583.
14. Ismail SM, Aluru S, Sambasivarao KR, Matcha B. Antimicrobial activity of frankincense of *Boswellia serrata*. Int J Curr Microbiol Appl Sci. 2014;3(10):1095-1101.
15. Mahdian D, Goudarzi AK, Raoofi A, Dadashizadeh G, Abroudi M, Zarepour E, *et al*. Effect of *Boswellia* species on the metabolic syndrome: A review. Iran J Basic Med Sci. 2020;23(11):1374.
16. Alam M, Khan H, Samiullah L, Siddique KM. A review on phytochemical and pharmacological studies of Kundur (*Boswellia serrata* Roxb. ex Colebr.): A Unani drug. J Appl Pharm Sci. 2012; (Issue):148-156.
17. Siddiqui MZ. *Boswellia serrata*, a potential anti-inflammatory agent: An overview. Indian J Pharm Sci. 2011;73(3):255.
18. Asif M, Jabeen Q, Majid AAM, Atif M. Diuretic activity of *Boswellia serrata* Roxb. Oleo-gum extract in albino rats. Pak J Pharm Sci. 2014;27(6):1811-7.
19. Kushwaha S, Tyagi CK. Evaluation of the antiurolithiatic activity of the extract of *Boswellia serrata* Roxb in rats. J Pharm Res Int. 2021;33(62B):243-249.

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