International Journal of Botany Studies
www.botanyjournals.com
ISSN: 2455-541X
Received: 20-06-2021, Accepted: 05-07-2021, Published: 20-07-2021
Volume 6, Issue 4, 2021, Page No. 317-319

A review on medicinal and phytochemical aspects of *Boswellia serrata* Roxb

Khodade Hrishikesh
Assistant Professor, Department of Botany, SM Joshi College Hadapsar Pune, Maharashtra, India

Abstract
The current review is based on medicinal valuable plant *Boswellia serrata* Roxb. from family burseraceae. The manuscript covers the important of ethnomedicinal and their used in different level followed by the detailed taxonomical studies on *Boswellia serrata.* Plants has been used by various medicinal practitioners and so significant work has been done on phytochemical and pharmaceutical aspects of *Boswellia serrata.* Plant stem produce oleo-gum which is used to treat chronic ulcers, nervous diseases, urinary tract disorders, skin diseases, cervical tuberculosis lymphadentitis, diseased bones, rheumaticamenorrhea, dysmenorrhea and many more.

Keywords: *Boswellia serrata*, ethnomedicinal, plant, phytochemical and pharmaceutical

Introduction

Medicinal plant and ancient human being civilization have strong binding due to plant have been used by mankind for its medicinal and therapeutic value. From the thousands of years nature has been a direct source of medicinal agents in impressive number of modern drugs have been isolated from natural sources. Many of these extractions and isolations were based folk information available already in traditional medicine system. The folk plant-based medicinal system many time sated as "Ethnobotany" or "Traditional Botany" played an essential role in health and nutrition care, for about 80% of the world's population, inhabitants relying mainly on traditional medicines for their primary health care (Owolabi *et al.*, 2007) [1]. Plants have been the main source of medicine for man before than the current advancement of Science and Technology (Schmelzer and Omino, 2003) [2].

In India, lots of information is available about the medicinal plants, the sages mastered in unparallel knowledge of medicinal plants from ancient time and their medicinal practice is popularly known as Ayurvedic Medicine (Arash *et al.*, 2010) [3]. The oldest known repository of our Indian culture is *Rig-Veda* (4500-2500 BC) mentions about hundreds of medicinal plants and is followed by *Yajurveda* 81 species, *Atharva Veda* (2500-2000 BC) describes elaborate description of medicinal plants (Prakash & Gupta 2005) [4]. Among two important ancient treats *The Charak Samhita* (1000 BC) written by Charaka describes the use of over 1100 medicinal plant. Whereas *Sushruta Samhita* (1000-800BC) by *Sushruta* describes properties and use of 1270 species and their medicinal practice is popularly known as Ayurvedic Medicine (Arash *et al.*, 2010) [3].

Recently, it is clearly known that they have roles in the protection of human health, when their dietary intake is significant. More than 4,000 phytochemicals have been cataloged (American Cancer Society 2000)[5] and are classified by protective function, physical characteristics and chemical characteristics and About 150 phytochemicals have been studied in Detail (American Cancer Society 2000) [5].

Boswellia serrata Roxb. exColebr. In Asiat. Res. 9: 379. t. 5. 1807; A.W. Bennett in Hook. f., Fl. Brit. India 1: 528. 1875. *B. serrata* Roxb. exColebr. var. *glabra* (Roxb.) A.W. Bennett in Hook. f., Fl. Brit. India 1: 528. 1875. *B. glabra* Roxb., Pl. Coromandel 3: t. 207. 1811.

Common Names

Bengali. *Kundro, luban, salai*; guajarati. *Mukul-salai*; hindi: *luban, salai, salhe, salpe*; kannad.: *chitta, maddi*; mal.: *vella-kundirukkam*; marathi.; *salai*; sans.: *kunduru, sallaki*; tam.: *guggulumaram, kundrikam, kundutukkan-pishin, kungiliam, parangisambrani*; tel.: *andaka, anduga-pisunu, tellaguggilamu*; english.: *indian olibanum.*

Trees; 6-20 m high; branches with annular swelling at intervals. Leaves 15.5-44 cm long; axis pubescent or puberulous; leaflets 8-23, variable in size, shape and degree of pubescence (sometimes the lowermost pair much smaller than the others, ovate-lanceolate, oblong-ovate or elliptic, 0.8 - 9.4 x 0.4 - 3.5 cm, coriaceous, oblique, cuneate, rounded at base, crenate-serrate, sometimes entire or repand along margins, acute, obtuse or retuse, mucronate at apex. Panicles axillary, up to 21 cm long; bracts subulate, pubescent, caducous. Flowers pink, or white with pinkish tinge, fragrant. Calyx tube broadly campanulate, 1.5-3 x 2.5-3 mm; calyx-lobes triangular-ovate, pubescent, persistent. Petals ovate-oblong, 5-7 x 2.5-4 mm, shortly clawed, obtuse, inflexed at apex; pubescent outside except margins. Stamens 2.5 - 5 mm long, glabrous, pubescent or puberulous; anther lobes oblong; connective produced beyond the anther lobes. Pistil ca 4 mm long; stigma capitate. Capsules 3-gonous, 1.2-2.4 x 1-1.4 cm Pawar S and Patil D A (2008) [6, 7].

Flowering

Jan - May, Sept - Dec.

Fruit

April - Aug, Nov - March.

Distribution

India: On dry hills and slopes, on gravelly soils at altitudes 275 – 900 mt. Punjab, Uttar Pradesh, Madhya Pradesh, Rajasthan, Maharashtra, Andhra Pradesh, Karnataka, Tamil Nadu, Endemic.

(a) Inflorescence (b) Branches (c) Leaves

Fig 1: *Boswellia serrata*

Boswellia serrata Roxb. (Family-Burseraceae) is well known as Kundru or Shallaki, referrers as *Indian frankincense* and distributed in dry forests (Pawar*et al.*, 2011) [6, 7]. The word frankincense is derived from the ancient French name "frankincense" meaning "pure incense." Frankincense is also known in Arabic as "luban," which means "white" or "cream;" in Greek as "libanos;" in Ethiopia as "etan".The properties of *Boswellia* plants have been exploited for millennia in the traditional medicines of Africa, China, and especially inthe Indian Ayurveda. The plant is widely distributed in India, it occurs in dry hilly forests of Rajasthan, Madhya Pradesh, Maharashtra, Gujarat, Bihar, Assam, Orrisa, central peninsular regions of Andhra Pradesh etc. Plant is known by various vernacular names like *Kundur*in Unani, Arabic; Indian frankincense tree in English; *kundur*, *luban*, *salai*inHindi; *parangisambrani*in Tamil; *phirangisambrani*,*parang*, *sambrani*, inTelugu; *kundur*in Persian; *kundur*in Urdu; *ashwamuthri*, *kundurui*n Sanskrit; *Chilakdhupa*, *Tallaki*, *Maddi*in Kannada (Maupetit P 1984 and Arshiya Sultana *et al.*, 2013) [8, 9].

This search also provided the better information regarding to the formulation and evaluation parameters of the novel herbal gel for anti-inflammatory activity (Pawar *et al.*, 2011) [6, 7].

Description, distribution and ecology of gum and resin bearing species, their production aspects and food and non food applications of *Boswellia* species are reported by Tadesse *et al.*, 2007.Widely used of raw materials in several industries such as pharmacology, food, beverage, flavouring, liqueurs, cosmetics, detergents, creams and perfumery, paints, adhesive and dye manufacturing, etc. by Mulugeta *et al*., 2003.

Ghorpade *et al*., (2010 and 2011) study the *in vitro* production of boswellic acid from callus cultures of *B. serrata*using various biotic and abiotic elicitors. Accumulation and enhancement of the active metabolites like boswellic acid using tissue culture techniques. They also studied effect of biotic and abiotic elicitors on production of four major components of boswellic acids, 11-keto boswellic acid (KBBA), acetyl-11-keto boswellic acid (AKBBA), boswellic acid (BBA) and acetyl boswellic acid (ABBA) in callus culture.

In vitro antioxidant activity and anti-inflammatory activity and Phytochemical screening reveals the presence of saponins, tannins, anthraquinones, terpenoids, and flavonoids are reported by Afsar *et al.*, 2012, in leaf extract.

Sunayan and Prakash, 2012 [4], reported the fungal endophytes about 17 genera, isolated from bark and twing of the *Boswellia serrata.*

This critical review opened up vision to have specific biomolecules in different organs with its drug actions. The detailed studies will certainly bring numerous bioactive components to benefit human in better health practice and disease cure.

Conclusion

Boswellia serrata a valuable tree as current review of literature especially with its ole-gum secretes from stem. Phytochemical and pharmacological studies so far have been done for gum that's used in various disease. Plant stem, root and leaves also might have a useful ingredient and remains good field of research for farther studies.

Acknowledgement

Author is thankful to the Principal, head of Botany department and supporting staffs of S. M. Joshi College Hadapsar Pune for their kind support, motivation and help for current study work.

References

1. Owolabi J, Omogbai EKI, Obasuyi O. Antifungal and antibacterial activities of the ethanolic and aqueous extract of *Kigella africana* (Bignoniaceae) stem bark. Afr J Biotechnol,2007:6:882-885.
2. Schmelzer GH, Omino EA. Plant resources of tropical Africa Proceedings ofthe first PROTA International Workshop Nairobi Kenya PROTA Foundation Wageningen the Netherlands, 2003, 360.
3. Arash R, Koshy P, Sekaran M. Antioxidant Potential and Phenol Content of Ethanol Extract of Selected Malaysian Plants. Research Journal of Biotechnology, 2010:5:16-19.

4. Prakash P and Gupta N Therapeutic uses of *Ocimum sanctum* Linn (Tulsi) with a Note on Eugenol and Its Pharmacological Actions A Review. Indian Journal of Physiology and Pharmacology,2005:49:125-131.
5. American Cancer Society Guidelines for Cancer Detection, 2000.
6. Pawar S, Patil DA. Ethnobotany of Jalgaon district Daya Publishing Houses, New Delhi, 2000, 8-9.
7. Pawar RK, Sharma S, Singh KC, Sharma RK. Physico-chemical standardization and development of HPTLC method for the determination of β-boswellic acid from *Boswellia serrata* Roxb. (Exudate). Int J App Pharm,2010:3:8-13.
8. Maupetit P. New constituents in *Olibanum resinoid* and essential oils Perfumer Flavorist,1984:9:19-37.
9. Arshiya Sultana, Khaleeq Ur Rahman, AR Padmaja, Shafeeq Ur Rahman. *Boswellia serrata* Roxb. A Traditional Herb with Versatile Pharmacological Activity A Review IJPSR,2013:4(6):2106-2117.
10. Leung AY, Foster S Encyclopedia of common natural ingredients used in food, drugs and cosmetics New York John Wiley and Sons,1996:3(2):89-91.
11. Ramesh Marasini, Susan Joshi, Antibacterial and Antifungal Activity of Medicinal Orchids Growing in Nepal. J Nepal Chem Soc, 2013, 29.
12. Arunabha Mallik, Damodhar Goupalea, Hemant Dhongadeb and Satish Nayaka Evaluation of *Boswellia Serrata* oleo-gum resin for wound healing activity Der Pharmacia Lettre,2012:2(2):457-463.