



(REVIEW ARTICLE)



A comprehensive review on medicinal importance of *Bombax ceiba*

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Abstract

Medicinal properties of plants have been recognized and utilized by humans since prehistoric times. Today, there is a growing trend towards using plant-based remedies, health products, medications, dietary supplements, and beauty aids due to their natural origins and holistic benefits. *Bombax ceiba*, a member of the Bombacaceae family, is a notable example. Also known as shalmali or red silk cotton tree, this plant is native to tropical and subtropical regions of Asia and is well known in various traditional medical systems, including Ayurveda, Siddha, and Unani.

Bombax ceiba is highly valued for its wide range of medicinal uses, with different parts of the plant -such as the roots, gum, leaves, stem bark, prickles, fruit, flowers, and seeds-being used to treat a variety of ailments. Traditional healers, tribal communities, and forest monks have long utilized these parts to address health issues like dysentery, acne, diarrhoea, wounds, skin blemishes, pigmentation problems, colds, coughs, and more. The plant is also known to have emetic properties, which means it can induce vomiting when needed.

Modern scientific studies have confirmed many of the traditional uses of *Bombax ceiba*, showcasing its wide-ranging pharmacological benefits. Research indicates that the plant exhibits anti-inflammatory, antidiabetic, antibacterial, anti-obesity, antihypertensive, anti-angiogenesis (preventing the formation of new blood vessels), and antipyretic (fever-reducing) effects. These properties highlight *Bombax ceiba* as a potent natural remedy, capable of supporting health and treating a variety of conditions, making it a valuable resource in both traditional and contemporary herbal medicine.

Keywords: Anti-inflammatory; *Bombax ceiba*; Phytoconstituents; Red silk cotton; Shalmali

1. Introduction

This enormous deciduous tree, *Bombax ceiba* Linn., is a member of Bombacaceae family and may reach altitudes of up to 1,500 m. It requires 50 to 460 cm of rainfall each year, spread out throughout the year, and prefers well-drained soils, such as deep sandy loams, especially in valleys. It's called as Indian Kapok tree and Red-Silk Cotton tree in English, Kateshivari in Marathi, Shalmali in Sanskrit, Shimalo in Gujarati, Shimul in Bengali, Semal in Hindi, Mullilavu in Malayalam, and Kondaburuga in Telugu in other languages. It is said that red Kapok tree "makes a stunning presence in any environment." In December, when the tree loses its leaves for the winter, it will burst into crimson blossoms on the bare branches, giving the impression of a fully red tree, in January. 'Pitamaha' paused beneath the 'Shalmali' tree, as recounted in the Hindu epic 'Mahabharata,' forming the world. It is mentioned in the 'Yajnavalkya' with the trees of the underworld. Adhering to Ayurvedic principles, it possesses intoxicating, astringent, aphrodisiac, antidiarrheal, haemostatic, diuretic, demulcent, emetic, antidysenteric, cardiotoxic, alterative, and antipyretic characteristics (1-4).

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Figure 1 *Bombax ceiba*



Figure 2 *Bombax ceiba* Flowering

1.1. Morphology

Growing to a height of 40 meters and a width of 6 meters, it is a tall deciduous tree with prickles that are dense and stiff that cover the young stems and branches that stretch out horizontally. The bark can be any shade from light ashy grey to silvery silver. There is an abundance of nectar in the enormously large, crimson flowers. Pine trees are characterised by their compound leaves, which have a palmate shape. Digitate, robust, spreading, and hairy, it has a common petiole and 15–30 cm long leaves. From 10 to 20 centimetres in length, the larvae vary in size. The fruit pods can be as long as 15 mm and can be dark in colour. Inside, they contain numerous black seeds that are oblong in shape, unevenly distributed, sticky, and covered in dense silky hair. You can't beat the sweetness and flavour of apple pulp. The colour of semul gum can range from pale brown to a deep, dark brown (5,6).

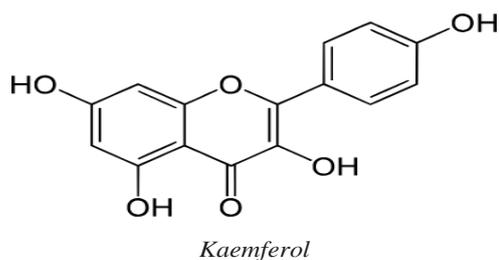
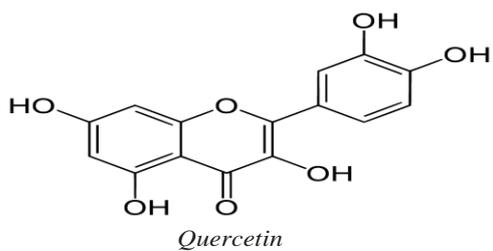
Table 1 Taxonomical Classification

TAXONOMICAL CLASSIFICATION	
Kingdome	Plantae
Sub-Kingdome	Tracheobionta - Vascular plants
Division	Magniophyta
Class	Magniolipsida
Subclass	Dilleniidae
Order	Malvales
Family	Malvaceae (Bombacaceae)
Genus	Bombax
Species	Ceiba

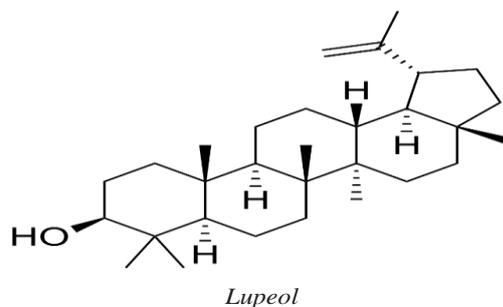
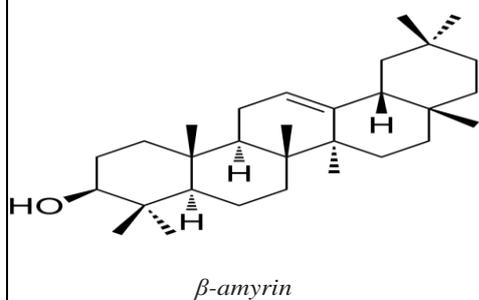
1.2. Phytoconstituents

The list of phytochemicals most commonly found in food includes flavonoids, carotenoids, coumarins, polyphenols, lignans, catechins, indoles, phenolicacids, isothiocyanates, saponins anthraquinones, procyanidins, phenylpropanoids, and many more (7–12).

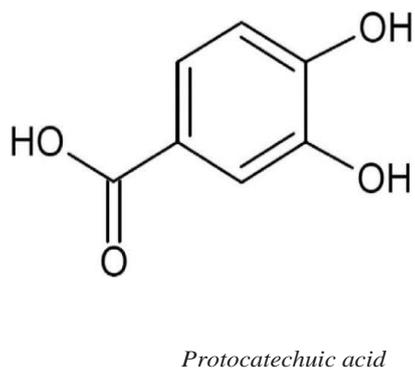
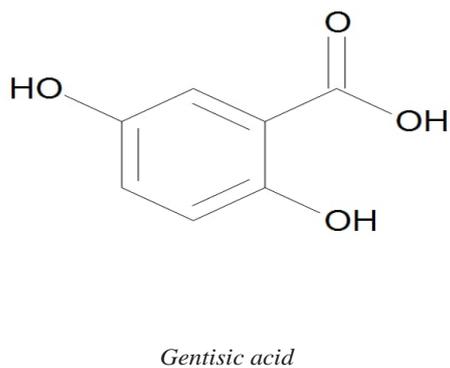
Flavonoids -



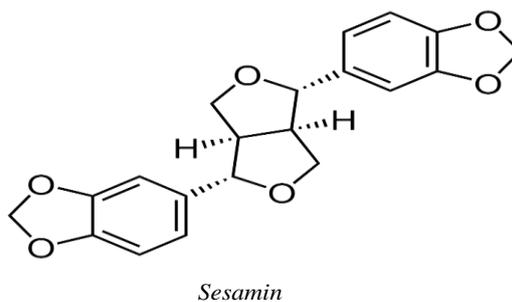
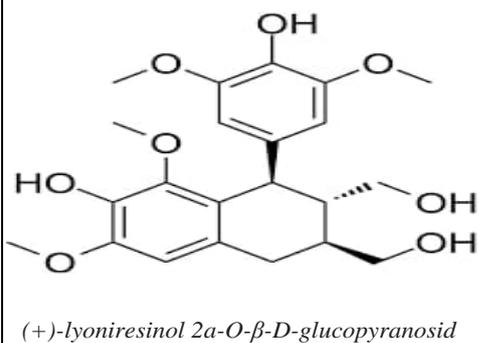
Terpenoids -

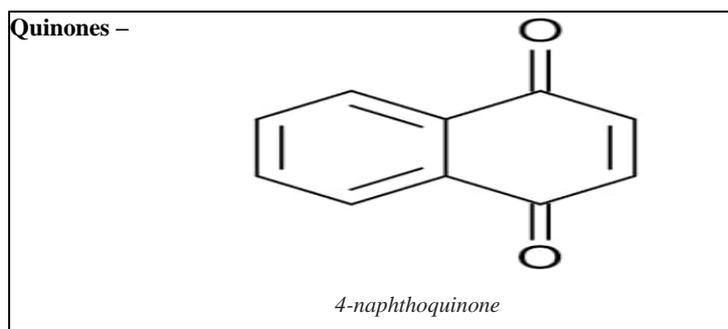


Phenolic acids -



Lignans -





1.3. *Bombax ceiba* medical use(8,13)

Table 2 Uses of *Bombax ceiba* plant

Parts of plant	Uses
Black pepper + <i>Bombax ceiba</i> root and ginger powder	Get rid of a cough or cold with just a little.
Water + root powder of Red silk cotton tree	Assistance in leucorrhea.
Vidari (<i>Ipomoea digitata</i>) root + Red silk cotton tree root powder + shatawar and misri	Managing ejaculation and sperm problems; take this mixture with milk twice day.
Water+ <i>Bombax ceiba</i> grinded leaves	It is useful for blood cleansing.
Water +Thorny section of the <i>Bombax ceiba</i> tree stem or thorn paste	Apply to the affected region to aid with dermis issues such as acne, pimples, and hyperpigmentation.
Paste of <i>Bombax ceiba</i> bark	Helps to lighten scabsinstigated by sores, acne vulgaris, and burns.
<i>Bombax ceiba</i> flower powder + Desi ghee + Honey + Milk	Helps to reduces Weakness.



Figure 3 Parts of plant *Bombax ceiba*

2. Pharmacological activities(12)

2.1. Analgesic Activity

Mangiferin, was shown to have a considerable amount of antioxidant in the D.P.P.H. experiment. Acetyl and cinnamoyl compounds weren't much effective than mangiferin, but methyl and 3, 6, 7-trimethylether tetraacetate derivatives were inert. It seems both the free -OH groups and the catechol moiety are necessary for the antioxidant activity. Mangiferin demonstrated hepatoprotective properties against liver injury generated by carbon tetrachloride, indicating its potential as a free radical scavenger in vivo. Crude plant extracts and pure mangiferin showed significant analgesic effects in mice when tested on hot plates and acetic acid-induced writhing, but no acute anti-inflammatory activity. The analgesic effects of plant extracts were discovered to be opioid receptor independent when administered with naloxone. Although mangiferin had a small impact on the neuronal level, it demonstrated a robust contact with the receptor in the periphery(14).

2.2. Anti-Inflammatory Activity

Bombax ceiba extracts were tested for anti-inflammatory efficacy in vitro using a modified method of stabilizing human red blood corpuscle membranes. The inhibitory effects of *B. ceiba* extracts on inflammation were investigated in vitro using the minimally modified Human Red Blood Cell (HRBC) membrane stabilising approach. Blood from healthy participant who had't used any anti-inflammatory drugs for 2-weeks before experiment was placed into heparinised centrifuge tubes. The blood samples were then separated by spinning the tubes at 3thousand rpm. Packed cells were cleaned with iso-saline before being suspended in 10% normal saline. The normal diclofenac potassium concentration was 50 mcg/mL. Four to five milliliters of hypotonic saline (0.25% w/v NaCl), one millilitre of 0.15 M phosphate buffer (pH 7.4), one milliliter test sol. containing 1000 mcg/ml in normal saline and half a milliliter of 10% H.RBC in normal saline made up reaction mixture. The test solution was substituted with one milliliter of isotonic saline as the control. After incubating solutions for thirty min. at 56°C, he cooled them with running tap water and centrifuged the mixtures for twenty min. at 3 thousand rpm. Visible spectro-photometer was employed to quantify supernatant's absorbance at 560 nm(15,16).

Study was replicated three times. Control group is comprised of all lysates.

2.3. Anthelmintic Activity

People in Southern Punjab, Pakistan, have traditionally utilized *B. malabarica* as an anthelmintic. Tests were conducted on live *Paramphistomum explanatum*, which was removed from buffalo and placed in 0.9% phosphate-buffered saline. Anthelmintic-activity of a methanolic extract of *B. malabarica* leaves was determined at doses of 10, 25, 50, and 100 mg/mL. Evidence suggests that the extract kills or causes *P. explanatum* to lose its ability to move on its own. There was a statistically significant kill of all trematodes within 45 minutes after using the extract. The most effective concentration of the extract was 100 mg/mL. In 18:50 ± 0.62 minutes, it rendered trematodes immobile, and in 22:17 ± 0.48 minutes, it killed them(17,18).

2.4. Antimicrobial or Antibacterial Action

The effectiveness of plant extracts in combating multidrug-resistant *Salmonella typhii* was evaluated in both methanol and water-based experiments. Strong antibacterial activity was demonstrated by *Salmalia malabarica* methanol extracts. After collecting and drying the plant parts, they were standardised and extracted using methanol and acetone. We used the agar disc diffusion method to find out how well it worked against *Klebsiella pneumoniae*, a kind of bacteria. The results were evaluated in comparison to those of the more traditional antibiotics piperacillin and amikacin(19,20).

2.5. Hepatoprotective Activity

Comparing the *B. ceiba* flower methanol extract (MEBC) to the control, the researchers observed that M.E.B.C. reduces T.B.A.R.S. and Enhances G.S.H. levels. MEBC reduced the amount of necrosis but did not completely undo the hepatic damage brought on by INH and RIF [34]. Hepatoprotective potential of a methanolic extract of *B. ceiba* flowers was evaluated for hepatotoxicity resulting from the intraperitoneal administration of 2 anti-tubercular medications, isoniazid and rifampicin, to rats durations of 10 and 21 days. ALP, ALT, AST, and total bilirubin were lower in MEBC subgroup at all doses, but total protein levels were higher than in control group. MEBC dramatically raised G.S.H. (reduced glutathione) levels and decreased T.B.A.R.S. at all dosages. Based on the analysis of biochemical data and histological tests, MEBC reduced the amount of necrosis but did not completely reverse the liver damage produced by RIF and INH(21,22).

2.6. Anti-Obesity Activity

When administered a methanolic extract of *B. ceiba* stem at concentrations of 200 and 400 milligram/kg, overweight rats fed a high-fat for 10 weeks shed some of their excess weight. The high-fat diet's negative effects were lessened by *B. ceiba* extract on a number of parameters, such as weight and mass index of body, LEE indices, serum glucose, lipid profile markers, tissue TBARS, A.L.T., A.S.T., nitrate and nitrite levels, fat pads, relative liver volume, caloric intake, tissue glutathione levels, and serum HDL. This could be as a result of Lupeol, a phytoconstituent, modulating PTP-1B and FAS signalling in rats(23).

2.7. Diuretic Activity

Diuretic action of *B. ceiba* fruit aqueous and ethanol extracts began to work after 5 hours and persisted for up to 24 hours when administered oral doses of 200 and 400 milligram/kg, respectively. Dehydrated rats' urine output is dramatically increased by both extracts. After 5 hours, the water-soluble extract (400 mg/kg) had the same effect as the gold standard drug, frusemide. Although it has no discernible impact on specific gravity or pH, the water-based extract enhances the excretion of electrolytes in urine(24).

2.8. Angiogenesis Activity

The methanol-based stem bark extract contains lupeol, which at dosages of 50 and 30 µg/mL prevents human umbilical venous endothelial cells from forming tubes. Lupeol had no effect on formation of cancer cells in several cell lines, such as SK-MEL-2, A549, and B16-F10 melanoma(25–28).

2.9. Aphrodisiac Activity

It was investigated whether *B. ceiba* root extract had any stimulating effects. For 28 days, extracts were administered orally by gavages at dosage of 400 milligram/kg body weight daily. This sexual behaviour study included pre- and post-ejaculatory interval (PEI) measurements at 0, 7, 14, 21, and 28 days, as well as mount latency (ML), ejaculation latency (EL), intromission lag (IL), intromission frequency, mounting frequency, ejaculation frequency (EF), and other parameters. The levels of ML, IL, EL, and PEI were significantly reduced by the extract ($p < 0.05$). Significant improvements in MF, IF, and EF were also observed in the extract ($p < 0.05$). Male mice that were physically active and those that were not exhibited the same results(29,30).

2.10. Cancer Cell Growth Inhibition

The 7 human cancer cell lines tested (ACHN, HeLa, MCF-7, C32, COR-L23, A375, and LNCaP) were all positively affected by the antioxidant and anti-proliferative properties of *B. ceiba* flowers. Using the HL-60 cell line, researchers examined the anticancer effectiveness of BCM extract in vitro. The quantity of BCM was varied from 1 to 100 µg/mL, and density was raised to 1.5×10^6 cells/millilitre. The cells were then subjected to different treatments for different amounts of time(5).

2.11. Cytotoxicity

To assess the cytotoxicity of plant water extracts, brine shrimp lethality test was employed. results show that brine shrimp bioassay is a reliable and practical way to test the bioactivity of herbs and other therapeutic plants. Increases in mount, intromission, and ejaculation rates, as well as other benefits, lend credence to their use in traditional medicine. Both the amount of sperm in the epididymis and the amount of fructose in the seminal fluid dramatically increased. To determine the lethality of each extract on cells, we used a brine prawn test. The brine shrimp lethality test was used to determine the cytotoxicity of plant water extracts. The study shows that brine shrimp bioassay is a practical and reliable technique for assessing the bioactivity of medicinal herbs, hence endorsing its application in traditional medicine(31).

2.12. Antioxidant Activity

To assess a *B. ceiba* methanolic extract's antioxidant potential, several tests were carried out. The following experiments were performed on rat liver microsomes and soy bean phosphatidylcholine liposomes: DPPH and hydroxyl free radical scavenging, inhibition of myeloperoxidase activity, and suppression of lipid peroxidation produced by ascorbyl radicals and peroxynitrite. The cytotoxic effect was assessed by using Vero cell line to track mitochondrial activity. No experiment was unable to demonstrate the extract's antioxidant properties. The DPPH EC50 was found to be 87 µg/ml. Ascorbyl radicals generated lipid peroxidation of microsomes and soy bean liposomes at concentrations of 141 microgram/ml and 105 microgram/ml, while peroxynitrite caused it at concentrations of 115 microgram/ml and 77 microgram/ml. The K-value at which the extract inhibits myeloperoxidase activity is 0.5. When tested on Vero cells, the extract showed negligible toxicity. A battery of tests, including DPPH scavenging and reducing power, were used to

examine the antioxidant activity of a *B. ceiba* root extract. Strong DPPH radical scavenging action that changes with dose is present in the methanolic root extract, which also includes large amounts of tannins (15.45% w/w) and phenolics (30.95% w/w). The antioxidant properties of *Bombax ceiba* bark (Bombacaceae) were investigated in a recent study. Both the water- and alcohol-based bark extracts were subjected to in vitro antioxidant activity testing (27,32,33).

2.13. Antidiabetic Activity

Mice with elevated blood sugar levels were able to have their levels reduced by shamimin (500 mg/kg). In STZ-induced diabetic mice, the hydromethanolic (2:3) extract of *S. malabarica* sepals considerably lowers fasting blood sugar and glycated haemoglobin (HbA1C) levels. Hexokinase, glucose-6-phosphate dehydrogenase, and glucose-6-phosphatase hyperactivity in liver and skeletal muscle are all decreased by STZ, but this is all reversed by the extract. The extract was able to reverse elevated levels of oxidative stress, SGOT, and SGPT, according to De et al. (2010). This hydro-methanolic extract's n-hexane fraction (0.1 gm/kg) significantly reduces blood sugar and cholesterol levels. In addition to reducing glycated haemoglobin, the n-hexane fraction increases blood insulin levels and haemoglobin concentration. The percentage also helped diabetic rats avoid damage to their islet cells of Langerhans, according to the findings (33,34).

2.14. Antiviral Activity

The Epstein-Bar virus early antigen (EBV-EA) is particularly susceptible to the antiviral effects of *B. ceiba* flowers. We conducted in vitro tests on Raji cells to determine whether the floral extract or any of its fractions (ethyl acetate or butenol) could inhibit the activation of EBV-EA induced by 12-Otetradecanoylphorbol-13-acetate. The percentage of EBV-EA positive cells, an indicator of early antigen activation, was lower in all extracts. At various conc. Ethyl acetate extract was found to suppress early antigen activation the most effectively.

2.15. Antipyretic Activity

Experimental evidence of the antipyretic effects of *Bombax malabaricum* (*Bombax ceiba*) leaf methanol extract (MEBM) in rats was presented in a previous study. In cases of pyrexia caused by Baker's yeast, MEBM had a robust antipyretic effect. A wide range of steroids, carbs, tannins, triterpenoids, deoxysugars, flavonoids, all, and coumarin derivatives were uncovered by phytochemical investigation (35).

2.16. Larvicidal Activity

After 24 hours of exposure, the methanolic extract and powder of *B. malabarica* leaves were discovered to possess considerable larvicidal activity against different stages of *Culex quinquefasciatus* larvae, with LC50 and LC90 values 48.85 ppm and 264.22 ppm. After being exposed to third instar larvae for 72 hours, the LC50 and LC90 levels dropped to their lowest point throughout time ($P < 0.05$) (36).

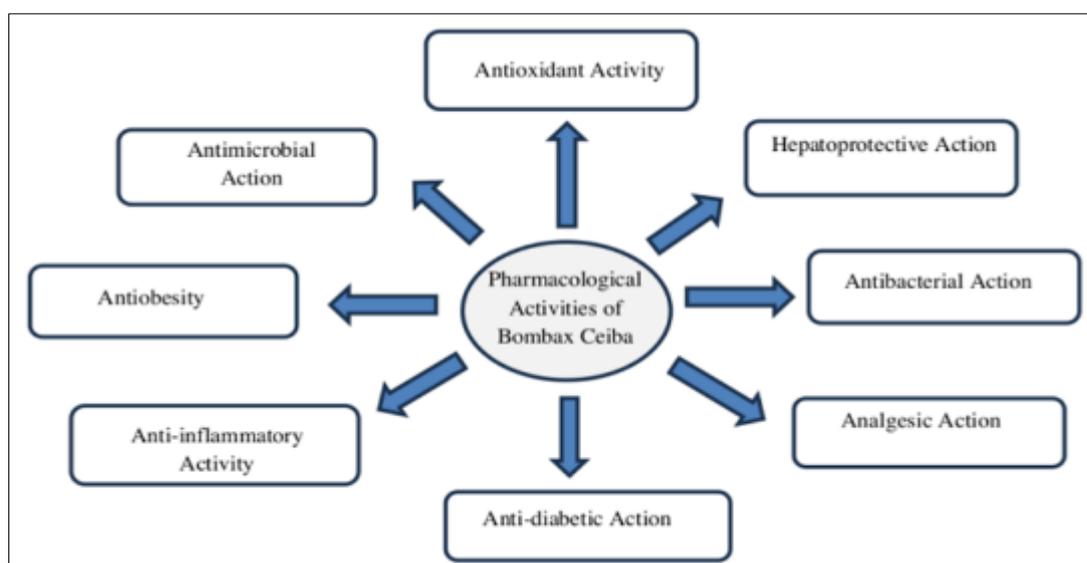


Figure 4 Various potential pharmacological activities of *Bombax ceiba*

3. Conclusion

Bombax ceiba becomes a very useful plant; the leaves, barks, flowers, roots, seeds and gums contain many chemical elements. The practical qualities of *Bombax ceiba* prove that it is the herb king. Various ethnomedicines and the Unani medical system have made extensive use of the *Bombax ceiba* from ancient times. Alkaloids, tannins, glycosides, saponins, terpenoids, reducing sugar, flavonoids, anthraquinone, steroids, anthocyanin, proteins, amino acids, and cardiac glycosides are all observed in *Bombax ceiba*. The many uses of *Bombax ceiba* include purifying the blood, increasing the consistency of semen, acting as a procreator of semen, acting as a uterine tonic, treating wounds, acne, pigmentation, colds, coughs, and haemorrhoids, among many others. Few scientific validation studies have been conducted on the plant, despite its extensive use for various ailments. Among the many bioactivities of the plant, its antioxidant and anti-inflammatory properties stand out. The plants are highly beneficial for health and illness treatment because to their significant pharmacological activities, which include anticancer, antidiabetic, antiviral, antipyretic, diuretic, aphrodisiac, hepatoprotective, antimicrobial, and antibacterial properties. The pharmacological effects of phytochemicals like lupeol, β -siterol, and mangiferin vary when tested in a laboratory setting. Differences in bioactivities seen in plants gathered from various regions demonstrate the profound impact of local climate on plant phytochemical components. To improve their utilisation, pharmacologically active chemicals from various parts of this plant still need to be identified and isolated. Additional investigation and understanding of the bioactivities shown are highly encouraged.

Compliance with ethical standards

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Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

- [1] Yugantar Sen AVAJ and AKS. *Bombax Ceiba* Linn: An Ethnopharmacological Update. *International Journal of Research and Development in Pharmacy & Life Sciences*. 2022 Oct 3;8(5).
- [2] Karole S, Gautam G, Gupta S. Pharmacognostic and pharmacological profile of *Bombax ceiba*. *Asian J Pharm Educ Res*. 2017 Jul-Sep;6(3):16-27.
- [3] Kumar S, Chandra M, Singh S, Sansthan A, Kumar Maurya S, Verma NK, et al. *Bombax ceiba* Linn. : A review of its phytochemistry and pharmacology [Internet]. Vol. 2, *Current Research Journal of Pharmaceutical and Allied Sciences*. Available from: www.crjpsonline.com
- [4] Nikita S, Shweta S. Ethnomedicinal, Phytoconstituents and Phytopharmacology of *Bombax Ceiba* L. A Review. *International Journal of Pharmacognosy* 311 IJP [Internet]. 2020;7(11):311–5. Available from: <http://dx.doi.org/10.13040/IJPSR.0975-8232.IJP.7>
- [5] Chaudhary P, Khadabadi S. *Bombax ceiba* Linn.: Pharmacognosy, Ethnobotany and Phyto-pharmacology. *Pharmacognosy Communications*. 2012 Jun 25;2(3):02–9.
- [6] Jain V, Verma SK. Assessment of credibility of some folk medicinal claims on *Bombax ceiba* L. Vol. 13, *Indian Journal of Traditional Knowledge*. 2014.
- [7] Nikita S, Shweta S. Ethnomedicinal, Phytoconstituents and Phytopharmacology of *Bombax Ceiba* L. A Review. *International Journal of Pharmacognosy* 311 IJP [Internet]. 2020;7(11):311–5. Available from: <http://dx.doi.org/10.13040/IJPSR.0975-8232.IJP.7>
- [8] Gupta N, Sharma D, Rani R. *Bombax Ceiba* Linn: A Critical Review on Phytochemistry, Traditional Uses, Pharmacology, And Toxicity from Phytopharmaceutical Perspective. *Int J Pharm Pharm Sci*. 2023 Jan 1;8–15.
- [9] Faizia S, Zikr-Ur-Rehman S, Versiani MA. Shamiminol: a new aromatic glycoside from the stem bark of *Bombax ceiba*. *Nat Prod Commun*. 2011;6(12):1897-1900 Saleem R, Iqbal AHMAD S, Ahmed M, Faizi Z, Zikr-ur-rehman S,

- Ali M, et al. Hypotensive Activity and Toxicology of Constituents from *Bombax ceiba* Stem Bark. Vol. 26, Biol. Pharm. Bull. 2003.
- [10] Hait M, Goswami J. Physicochemical and phytochemical status on flower of *Bombax ceiba*. ~ 189 ~ Journal of Medicinal Plants Studies. 2017;5(3):189-92.
- [11] Maurya S, Verma NK, Verma DK. *Bombax ceiba* Linn.: a review of its phytochemistry and pharmacology. *Curr Res J Pharm Allied Sci*. 2018 Jul-Sep;2(3):14-23
- [12] Raut PN, Nayak SV, Gotmare SR. *Bombax ceiba*: Kalpataru, a tree of life. *Int J Adv Res (Indore)*. 2017;5(2):1211-4. doi:10.21474/IJAR01/3273.
- [13] Dar A, Faizi S, Naqvi S, Roome T, Zikr-ur-Rehman S, Ali M, et al. Analgesic and Antioxidant Activity of Mangiferin and Its Derivatives: the Structure Activity Relationship. *Biol Pharm Bull*. 2005 Jan 12;28(4):596-600.
- [14] K. Anandarajagopal, J. Anbu Jeba Sunilson, T. V. Ajaykumar, R. Ananth, S.Kamal. In-vitro Anti-Inflammatory Evaluation of Crude *Bombax ceiba* Extracts. *European J Med Plants*. 2013;3(1):99-104.
- [15] Huang SKH, Hsieh CY, Fu PW, Lee CJ, Domingo GC, Alimboyoguen AB, et al. Phytochemical Constituent Analysis, Antioxidative Effect, and Anti-inflammatory Activity of *Bombax ceiba* Flowers. *Biointerface Res Appl Chem*. 2023 Oct 15;13(5).
- [16] Khokra SL, Gogat S, Narang R, Devgun M. EX-VIVO: ANTHELMINTIC EVALUATION OF BOMBAX CEIBA STEM EXTRACTS. *International Journal of Pharmaceutical Sciences and Drug Research*. 2020 Sep 30;431-6.
- [17] Hossain E, Chandra G, Nandy AP, Mandal SC, Gupta JK. Anthelmintic effect of a methanol extract of *Bombax malabaricum* leaves on *Paramphistomum explanatum*. *Parasitol Res*. 2012 Mar;110(3):1097-102.
- [18] Rani P, Khullar N. Antimicrobial evaluation of some medicinal plants for their anti-enteric potential against multi-drug resistant *Salmonella typhi*. *Phytotherapy Research*. 2004 Aug;18(8):670-3.
- [19] Shah SS, Ahmed S, Khan WM, Shah S, Iqbal A, et al. Phytochemical screening and antimicrobial activities of red silk cotton tree (*Bombax ceiba* L.). *Pharm Sci Pj*. 2018;31.
- [20] Ravi V, Patel SS, Verma NK, Dutta D, Saleem TSM. Hepatoprotective activity of *Bombax ceiba* Linn against isoniazid and rifampicin-induced toxicity in experimental rats. *Int J Appl Res Nat Prod*. 2010 Sep-Oct;3(3):19-26.
- [21] Karole S, Gautam GK, Gupta S, Girendra C, Gautam K. Preparation and evaluation of phytosomes containing ethanolic extract of leaves of *Bombax ceiba* for hepatoprotective activity. ~ 22 ~ The Pharma Innovation Journal [Internet]. 2019;8(2):22-6. Available from: www.thepharmajournal.com
- [22] Gupta P, Goyal R, Chauhan Y, Sharma PL. Possible modulation of FAS and PTP-1B signaling in ameliorative potential of *Bombax ceiba* against high fat diet induced obesity. *BMC Complement Altern Med*. 2013 Oct 25;13.
- [23] S. S. Jalalpure and N. B. Gadge. Diuretic Effects of Young Fruit Extracts of *Bombax Ceiba* L. in Rats. *Indian J Pharm Sci*. 2011 May;306-11.
- [24] You YJ, Nam NH, Kim Y, Bae KH, Ahn BZ. Antiangiogenic activity of lupeol from *Bombax ceiba*. *Phytotherapy Research*. 2003 Apr;17(4):341-4.
- [25] Vieira TO, Said A, Aboutabl E, Azzam M, Creczynski-Pasa TB. Antioxidant activity of methanolic extract of *Bombax ceiba*. *Redox Report*. 2009;14(1):41-6.
- [26] Londonkar RL, Ramesh Londonkar CL, Beldal BS. Evaluation of methanolic extract of *Bombax ceiba* bark for in-vitro antioxidant and Anti-inflammatory activities. ~ 1504 ~ Journal of Pharmacognosy and Phytochemistry. 2019;8(1).
- [27] Kar B, Suresh Kumar RB, Karmakar I, Dola N, Bala A, Mazumder UK, et al. Antioxidant and in vitro anti-inflammatory activities of *Mimusops elengi* leaves *Asian Pacific Journal of Tropical Biomedicine* [Internet]. *Asian Pacific Journal of Tropical Biomedicine*. 2012. Available from: www.elsevier.com/locate/apjtb
- [28] Khadabadi S, Haribhau Chaudhary R Pote PP. Aphrodisiac Activity of *Bombax Ceiba* Linn. Extract in Male Mice [Internet]. 2011. Available from: <https://www.researchgate.net/publication/362348661>
- [29] Gupta M, Chaudhary PH, Tawar MG, Shrivastava B. Journal of Cardiovascular Disease Research Aphrodisiac Activity of *Bombax Ceiba* Linn. Extract in Male Mice. 12:2021.

- [30] Diab KA, El-Shenawy R, Helmy NM, El-Toumy SA. Polyphenol Content, Antioxidant, Cytotoxic, and Genotoxic Activities of *Bombax ceiba* Flowers in Liver Cancer Cells Huh7. *Asian Pacific Journal of Cancer Prevention*. 2022;23(4):1345–50.
- [31] Vieira TO, Said A, Aboutabl E, Azzam M, Creczynski-Pasa TB. Antioxidant activity of methanolic extract of *Bombax ceiba*. *Redox Report*. 2009;14(1):41–6.
- [32] Tundis R, Rashed K, Said A, Menichini F, Loizzo MR. In vitro Cancer Cell Growth Inhibition and Antioxidant Activity of *Bombax ceiba* (Bombacaceae) Flower Extracts.
- [33] Aly O, R. Elias T, N. Ashour Mervet H. Agaibyi M, I. Rasheed W, N. Yassen N, Diab Y. Antidiabetic and Hepatoprotective Activities of *Bombax Ceiba* Extract in Obese Rats with Metabolic Syndrome. *Plant Arch*. 2021 Jan 15;21(Suppliment-1):748–56.
- [34] Kriintong N, Katisart T. In vitro antioxidant and antidiabetic activities of leaf and flower extracts from *Bombax ceiba*. *Pharmacognosy Res*. 2020;12(2):194.
- [35] Hossain E, Mandal SC, Gupta JK. Phytochemical screening and in-vivo antipyretic activity of the methanol leaf-extract of *Bombax malabaricum* DC (Bombacaceae). *Trop J Pharm Res*. 2011;10(1):55–60
- [36] Hossain E, Rawani A, Chandra G, Mandal SC, Gupta JK. Larvicidal activity of *Dregea volubilis* and *Bombax malabaricum* leaf extracts against the filarial vector *Culex quinquefasciatus*. *Asian Pac J Trop Med*. 2011;4:436–41.