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Review Article

Exploring the Medicinal Properties of *Gossypium barbadense*: A Comprehensive Review of its Bioactive Compounds and Therapeutic Applications

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ABSTRACT

Gossypium barbadense is a tropical plant with traditional uses and medicinal qualities. Originating in Mexico and Peru, it is usually called "cotton." It is used to cure various ailments, such as ear, respiratory, reproductive, and neurological issues, as well as colds, diarrhea, gout, and skin conditions. Rutin, cinnamaldehyde, and cinnamon alcohol are found in the plant's methanolic extract, supporting its medicinal properties. Traditional folk medicine also uses the herb to treat inflammatory, viral, rheumatoid, and musculoskeletal conditions. The study examines the pharmacological properties of *Gossypium barbadense* L. (Malvaceae) leaves, including their antimalarial, antibacterial, antimicrobial, antihypertensive, respiratory, urinary, and antifungal properties. The extracts were tested against *Plasmodium berghei*, *Salmonella enterica*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *E. coli*. Bioactive substances such as flavonoids, phenols, saponins, polysaccharides, and glycosides are found in the ethanolic extract of *Gossypium barbadense*, according to phytochemical research, and these chemicals enhance the plant's potential for medicinal use. This review gathers pharmacological information for *G. barbadense* from sources such as Google Scholar, ScienceDirect, and PUBMED (1984–2024). The significance of *G. barbadense* in contemporary agricultural operations and traditional medicine is examined in this research. Increasing our understanding of *Gossypium barbadense*'s vast potential for pharmacological significance is the aim of this review.

INTRODUCTION

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According to the 2016 *Gossypium barbadense* Angiosperm Phylogeny Group, there are 4225 recognised species in the 243 genera that make up the Malvaceae family. This family is well-known worldwide and belongs to the primary angiosperm group, The Plant List (2013) states. This databank contains ratings for 14,539 scientific plant names and species for this family. This is because these 4465 are recognised species names that are part of 245 plant genera. The living form is typically a shrub, tree, herb, liana, fickle, creeper, or subshrub. It is found in terriculture, apiculture, aquatic, and hemiepiphyte substrates.¹ *Gossypium barbadense* has been utilised for its medicinal, textile, and culinary properties to help people. This plant, which belongs to the genus *Gossypium* and is commonly referred to as "cotton," was initially discovered in Mexico and Peru. Different parts of *G. barbadense* are used to treat colds, diarrhoea, gout, and skin disorders as well as neurological, ear, respiratory, and reproductive problems in Brazil, India, and Africa.² Along with its economic significance, the medicinal qualities of *Gossypium* species' leaves, roots, bark, and seeds have been the subject of much investigation.³ Upland cotton has shown genetic improvement and population divergence in several studies.⁴ There is very little evidence of the introduction of sea-island cotton to China. A tiny amount of sea-island cotton was planted at the start of the 20th century in Kaiyuan County, Yunnan Province, China, where the subtropical environment is ideal for year-round cotton growing.⁵ Another research separated sea-island cotton into four groups, each of which represented a Gb landrace, an obsoleting Gb cultivar, a contemporary Gb cultivar, and a Xinjiang Gb cultivar.^{6,7} Punjab, Rajasthan, and Haryana are the three Indian states that produce the most *G. barbadense*. According to Ayurveda, this plant can help alleviate diseases caused by the three main energies of pitta, kapha, and vata. The petals have the ability to boost a woman's breast

milk production, ether extracts identified 48 chemicals, of which were significant and accounted for 56.29% of the total peak areas. Determine the 16 main phenolic compounds from the methanolic extract using liquid chromatography, electrospray ionisation, and mass spectrometry.⁹

METHODOLOGY

Research on *G. barbadense*'s ethnobotany and pharmacology was gathered and examined. A literature search was performed from August to November 2024 using various sources, including PUBMED, PubChem, Science Direct, and Google Scholar, for articles published in the last 40 years (1984 to 2024). Include important words such as phytochemistry, pharmacological activity, and pharmacological content (such as antibacterial and antioxidant properties, etc.); many documents were selected to conduct species-target research only in English. The research literature for this article is limited to research articles that are accessible to the scientific community and described in the literature mentioned above.

Phytochemical Present In *Gossypium Barbadense*

The primary components of *G. barbadense* bolls, which may have contributed to their medicinal potential, include hydroxybenzoic acid, isorhamnetin-3-O-glucuronide, cinnamaldehyde, sulphate, and epigallocatechin gallate, according to the methanolic extract of the plant. However, the leaves methanolic extract show the presence of several key compounds, including kaempferol, quercetin-3-O-pentoside, kaempferol-3-sulphate, kaempferol-3-O-glucuronide, aspalathin, epigallocatechin allate, the kaempferol-3,7,4'-trimethylether, and protocathechuic acid-3-O-glucoside. In addition, *Gossypium barbadense* includes gallic acid, p-hydroxybenzoic acid,



hydroxybenzoic acids (HDBA), cyanogenic glycosides, alkaloids, flavonoids, phenols, and saponins.^{10,11}

Table 1. Preliminary phytochemical analysis of ethanolic extracts of *Gossypium barbadense*.^{12, 13}

Phytoconstituents	Test	Results
Flavonoids	Lead acetate	+
	Shinoda test	+
Alkaloids	Dragendroff's test	-
Phenols	Ferric Chloride test	+
Carbohydrates	Molisch's	+
	Benedict's	+
Saponins	Froth test	+
Glycosides	Keller- Kilani	-
	Antimony trichoride	-
Triterpenoids	Salkowski test	+

Plant Description

Sea Island cotton grows at heights of up to 1,500 meters in the dry to moist tropics and subtropics. The plant is a shrub that grows to a height of about three meters. They have terminal, solitary flowers; petiolate, ovate, and oblong leaves; and glabrous, oblong-ovoid capsules that are 3–7 cm long.²

Habitat

Another name for *Gossypium barbadense* is Gallini cotton. The plant has black seeds and yellow blooms, and it is a tropical perennial that is susceptible to cold. It produces cotton with exceptionally long, silky fibers and grows as a shrub or small tree. *Gossypium barbadense* is mostly farmed in the states of Gujarat, Maharashtra, Andhra Pradesh, Karnataka, Tamil Nadu, Madhya Pradesh, Punjab, and Haryana. It was first found in southwest Ecuador and northwest Peru.¹

Table No.2 Traditional uses of *Gossypium barbadense*

Plant part	Specific diseases	Traditional uses
Leaves	Colds	Leaves are used to treat common colds, maybe because of their calming and anti-inflammatory qualities. ¹⁵
	Diarrhea	They may contain astringent and anti-diarrheal qualities, which is why the leaves are used to treat diarrhoea. ¹⁶
	Gout	Leaves are used to lessen pain and inflammation, which helps with gout symptoms.
	Skin diseases	Leaves are used to cure eczema, boils, and rashes. ^{15,17}
	Respiratory diseases	The leaves may be used to treat bronchial issues. ¹⁷
	Urinary disorders	Traditionally used for urinary issues such as dysuria or infections, acting as a diuretic.
Roots	Gastrointestinal Disorder	The roots are thought to help with constipation, indigestion, and bloating, among other digestive problems. ¹⁷



	Typhoid Fever	Roots are used in folk medicine to help with symptoms of typhoid fever such as gastrointestinal distress.
	Acne	Roots may applied to the skin for acne treatment, possibly for their anti-inflammatory properties. ¹⁸
Bark	Ear pain	Used as a decoction or poultice to alleviate earaches and related infections. ¹⁸
	dysentery	The bark is believed to help manage dysentery by reducing intestinal inflammation and controlling diarrhea. ¹⁸
	Abdominal cramps	The bark extract is used to relieve abdominal pain and cramps.
	Postpartum care	The bark is traditionally used to aid recovery after childbirth, promoting healing and reducing postpartum discomfort.
Seeds	Rheumatism	Seeds are traditionally used to treat joint pain and inflammation associated with rheumatism and arthritis. ¹⁸
	Musculoskeletal Disorder	Used to alleviate pain and swelling in muscles and bones due to injury or chronic condition. ¹⁷
	Inflammatory Disorder	Seeds can be used to treat a variety of inflammatory disorders because of their anti-inflammatory qualities.
Flowers	Kidney disorder	The flowers are used in traditional remedies to treat kidney-related issues such as kidney stones or urinary infections.
	Conjunctivitis	Flowers are sometimes used in eyewashes or compresses to relieve eye infections like conjunctivitis. ¹⁸
	Malaria	Flowers are traditionally used for their potential antimalarial properties.
	Parasitic infection	The flowers are used to treat cutaneous and subcutaneous parasitic infection.
Whole plant	Venereal diseases	The whole plant is used in folk medicine for treating sexually transmitted infections like syphilis Gonorrhea.

Traditional Uses

Colds, gout, diarrhoea, gastrointestinal issues, typhoid fever, acne, earache, dysentery, stomach pains, postpartum care, and skin conditions are all treated using various portions of *Gossypium barbadense*.¹⁹ Rheumatism, musculoskeletal, inflammatory, and infectious conditions, kidneys, conjunctivitis, malaria, cutaneous and subcutaneous parasite infections, venereal illnesses, typhoid fever, and acne have all been treated with it in traditional folk medicine.²⁰

Pharmacological Actions

Pharmacological studies of plants offer a scientific account of their therapeutic qualities, as well as their advantages and disadvantages for the body. Support for the plant's continued formulation and application is also provided by this.

Antimalarial Activity

An albino mouse model was employed in this work for both therapeutic and suppressive objectives. Chloroquine (5 mg/kg) served as the positive control. *G. barbadense* leaf aqueous extract (250, 500 mg/kg, and 1000 mg/kg) was tested for its antimalarial properties against



Plasmodium berghei. When compared to 100% chloroquine, the results showed that the water-based extract (1000 mg/kg) significantly demonstrated modest inhibitory effects against *P. berghei* in mice. Additionally, compared to chloroquine, extracts at 500 and 1000 mg/kg increased the curative effects till day 17 by 12.10 ± 27.0 and 16.09 ± 32.1 , respectively.²¹

Antibacterial activity

The Nigerian plant *Gossypium barbadense* L. (Malvaceae) produces essential oil. According to GC and GC/MS tests, this oil's chemical composition consists of 19 components, which together make up the oil fraction's 92.6%. The main components were bornyl acetate (18.6%), tricyclene (29.6%), isoleucine (6.0%), terpinene (11.1%), and pinene (12.8%). There were notably fewer sesquiterpenoid molecules that included oxygen. It was observed that the sample under study was devoid of the distinctive indicators of the essential oil of some *Gossypium* species, specifically copaene, bisabolol, bisabolene oxide, and caryophyllene oxide. The oil had little antibacterial qualities, according to several species studied.²²

Cytotoxic and antimicrobial activities

In keeping with the global desire and necessity to discover sustainable methods of generating cytotoxic and antibacterial properties, our research emphasises the distinct chemical composition of *G. barbadense* stem. Utilising headspace gas chromatography/mass spectrometry to assess petroleum ether extracts, 48 compounds were identified, 13 of which were significant and accounted for 56.29% of the total peak areas. From the methanolic extract, 16 main phenolic components were separated using liquid chromatography-electrospray ionisation-mass spectrometry. The antibacterial properties of

petroleum ether and methanolic extracts were evaluated using the disc diffusion technique against four pathogenic bacterial strains: *Escherichia coli* ATCC 10536, *Salmonella enterica* ATCC 14028, *Pseudomonas aeruginosa* ATCC 9027, and *Staphylococcus aureus* ATCC 6538. Two fungus strains, *Aspergillus niger*, and *Aspergillus fumigatus*, were tested for their antifungal properties.²³

Antihypertensive effect

In traditional medicine, *Gossypium barbadense* L. is used to treat hypertension. In an attempt to provide a scientific justification for this application, the decoction of the leaves was shown to have a blood pressure-lowering effect. In rats under anaesthesia, fraction II of the *G. barbadense* crude extract exhibited a dose-dependent hypotensive effect. The effect of fraction II on decreasing blood pressure was nearly eliminated in rats treated with hexamethonium. Blood pressure increased after the benefit of reducing blood pressure slightly diminished. Rats given hexamethonium saw a decrease in blood pressure when phentolamine was administered. Atropine at high doses (4 mg/rat) inhibited the effects of depressants as well as cardiac effects. Atropine did not impede the rat's ileum from contracting, according to in vitro tests.²⁴

Antiulcer

Plants in the genus *Gossypium* have been used for thousands of years to treat a variety of illnesses, including ulcers. In this study, indomethacin-induced oxidative gastric ulcers in Wistar rats were used to assess the membrane-stabilising and detoxifying properties of the aqueous extract of *Gossypium barbadense* L. (Malvaceae) leaves. The extract and esomeprazole were orally administered to the ulcer-bearing rats as pretreatment for 4 weeks. The evaluation of

stomach function and antioxidant measures followed. In mice administered the extract, the indomethacin-induced rise in ulcer index, stomach volume, pepsin activity, and mucosal malondialdehyde levels was significantly reduced in a dose-dependent manner. Furthermore, in ulcerated rats, the extract changed and markedly increased the levels of glutathione (reduction), pH, mucin content, and stomach catalase and superoxide dismutase activities.²⁵

***Gossypium barbadense* hormone alterations associated with leaf senescence**

By analysing the sequential changes in gibberellins, indoleacetic acid, and abscisic acid in the cotyledons from the completion of expansion through senescence (days 12–24 after sowing), the hormonal regulation of foliar senescence in cotton (*Gossypium barbadense* L, cv., Giza 68, long staple) was investigated. Senescence began to appear on day 20 when the accumulation of leaf metabolites was at its highest. Free GAs now rapidly discard almost 40% of their original activity. The senescent leaves thereafter showed a marked further decline in free GAs. The senescence system may be influenced by both hormones, as evidenced by the notable rise in free IAA and free ABA between days 18 and 20, which is promptly followed by food deficiency.²⁶

Acute oral toxicity test of *Gossypium barbadense*

The test was carried out utilising the limit dose test of the up-and-down. method with a limit dosage of 5000 mg/kg body weight/oral route in accordance with OECD Test Guideline 425 on Acute Oral Toxicity (OECD, 2006). Finally, out of 10 female rats (6–8 weeks old), three were chosen at random. The population sample's weight disparities were selected to remain within $\pm 10\%$ of the sample population's initial mean weight. Each time, the

animals were given a dosage after fasting all night. Weighing and administering a single oral dose of the extract at a rate of 5000 mg/kg body weight (b.w.) was done on one rat at a time.²⁷

Genetic improvement of Egyptian cotton (*Gossypium barbadense* L.)

In 2016, predetermined criteria were used to select the top 5% of plants. from the F2 population. The superior families from the F3 generation were chosen to become the F4 families in 2017. These were cultivated in bulk trials and single-plant progeny rows using a randomised full-block design with three replications over the summer of 2018. The majority of characteristics exhibited rising population mean values with time, with the F2 generation exhibiting larger genotypic variance and phenotypic coefficient of variation values for the traits under study than the subsequent generations. In the F3 and F4 generations, the magnitudes of GCV and PCV were comparable, suggesting that genotype had been more important than environment.²⁸ Additionally, the mean values of heritability in the broadest sense increased from generation to generation. The majority of yield and its component traits were improved by selection criteria I2, I4, and I5, whereas earliness attributes were improved by selection criterion I1. The majority of the yield and its constituent characteristics exhibited a strong and positive relationship with one another, underscoring their significance in cotton production. This implies that choosing to enhance one of these characteristics would enhance the others. The best genotypes for important yield characters were found in families 9, 13, 19, 20, and 21, outperforming the superior parent and check varieties and providing the greatest values for the majority of the characters. In order to create varieties with high yields and their constituent parts, the breeder might thus keep

using these families as breeding genotypes in subsequent generations.^{29,30}

Table No.3 Using LC-ESI-Mass, bioactive phenolic components were discovered in the extract of *G. barbadense* leaves.^{9,31}

Peak No.	Rt(min)	Conc. (%)	Base Peak m/z	Exact Mass (g/mol)	Chemical formula	Identification Compounds
1	2.52	11.7	285.10	286.23	C ₁₅ H ₁₀ O ₆	Kaempferol
2	7.83	8.9	433.10	434.08490	C ₂₀ H ₁₈ O ₁₁	Quercetin -3-O-Pentoside
3	8.31	14.9	365.10	366.17053	C ₁₅ H ₁₀ O ₉ S	Kaempferol- 3-Sulfate
4	9.04	8.4	463.15	464.37900	C ₂₁ H ₂₀ O ₁₂	Quercetin-3-O-β-glucoside
5	9.49	7.5	505.10	506.10605	C ₂₃ H ₂₂ O ₁₃	Quercetin-3-O - (6-acetyl-β glucoside)
6	10.42	5.9	461.30	462.07983	C ₂₁ H ₁₈ O ₁₂	Kaempferol-3-O-glucuronide
7	11.77	6.6	457.25	458.08490	C ₂₂ H ₁₈ O ₁₁	Epigallocatechin gallate
8	12.73	9.7	451.20	452.13190	C ₂₁ H ₂₄ O ₁₁	Aspalathin
9	13.89	5.6	327.30	328.09470	C ₁₈ H ₁₆ O ₆	Kaempferol-3,7,4'-trimethyl ether
10	15.78	7.7	491.20	492.38901	C ₂₂ H ₂₀ O ₁₃	Isorhamnetin-3-O-glucuronide
11	19.80	10.2	315.15	316.26501	C ₁₃ H ₁₆ O ₉	Protocatechuic acid-3-O glucoside

DISCUSSION

Numerous research studies have thoroughly established *Gossypium barbadense*'s medicinal qualities. Also referred to as cotton, underscoring its wide range of therapeutic potential. Native to Mexico and Peru, the plant has been used for millennia in traditional medicine to cure a wide range of conditions, from skin conditions to respiratory problems. The bioactive chemicals present in its leaves, roots, seeds, bark, and flowers all contribute to its medicinal effectiveness. The ethanolic and methanolic extracts of the *Gossypium barbadense* plants contain flavonoids, alkaloids, saponins, phenols, and other

phytochemicals that promote therapeutic characteristics. The *Gossypium barbadense* has anti-inflammatory, antibacterial, and antidiarrheal qualities. The leaf extract of *Gossypium barbadense* has strong antibacterial properties against a range of harmful bacterial strains, including *S. aureus*, *P. aeruginosa*, and *E. coli*. Additionally, this plant's anti-inflammatory, anti-ulcer, and antihypertensive qualities have been investigated. The traditional use of *Gossypium barbadense* leaf extracts to treat hypertension is supported by studies showing that they can decrease blood pressure in animal models of hypertension. Additionally, the plant's capacity to lessen oxidative gastrointestinal ulceration in rats



has shown its antiulcer action, indicating that it may offer protection against gastric injuries. The traditional applications of *Gossypium barbadense* include treating colds, diarrhoea, and more complicated conditions like rheumatism, musculoskeletal disorders, and venereal illnesses. These medicinal uses are explained by the plant's bioactive chemicals, some of which target different physiological systems.

CONCLUSION

It concludes that *Gossypium barbadense* has antimicrobial, anti-inflammatory, antidiarrheal, antimalarial, antihypertensive, and antiulcer properties that are well supported by both scientific research and its long-standing use in folk medicine. The G. barbadense of ethanolic and methanolic extracts of chemical composition, particularly its flavonoids, phenols, and alkaloids, have therapeutic effects. *Gossypium barbadense* could be essential to the creation of innovative therapies. To maximise its advantages, future studies should examine its complete therapeutic potential in both the pharmaceutical sector and sustainable farming methods.

REFERENCES

1. De Lima LF, de Oliveira JO, Carneiro JN, Lima CN, Coutinho HD, Morais-Braga MF. Ethnobotanical and antimicrobial activities of the *Gossypium* (Cotton) genus: A review. *Journal of Ethnopharmacology*. 2021 Oct 28;279:114363
2. Balakrishnan A, Chauhan M, Srivastava D, Kaushik P, Arya V. A Review on Ethnobotanical and Pharmacological Aspects of *Gossypium barbadense* L.(Cotton)-A Multidimensional Plant.
3. Ade-Ademilua O E, Okpoma M O. (2018). *Gossypium hirsutum* L. and *Gossypium barbadense* L.: Differences in phytochemical contents, antioxidant and antimicrobial properties. *Ife Journal of Science*. 2018; 20(1): 77-88.
4. Khaleequr R, Arshiya S, Shafeequr R. *Gossypium herbaceum* Linn: An ethnopharmacological review. *Journal of Pharmaceutical and Scientific Innovation (JPSI)*. 2012; 1(5): 1-5.
5. Fang L, Gong H, Hu Y, Liu C, Zhou B, Huang T, Wang Y, Chen S, Fang DD, Du X, Chen H. Genomic insights into divergence and dual domestication of cultivated allotetraploid cottons. *Genome Biology*. 2017 Dec;18:1-3.
6. Wang M, Tu L, Lin M, Lin Z, Wang P, Yang Q, Ye Z, Shen C, Li J, Zhang L, Zhou X. Asymmetric subgenome selection and cis-regulatory divergence during cotton domestication. *Nature genetics*. 2017 Apr;49(4):579-87.
7. Ma Z, He S, Wang X, Sun J, Zhang Y, Zhang G, Wu L, Li Z, Liu Z, Sun G, Yan Y. Resequencing a core collection of upland cotton identifies genomic variation and loci influencing fiber quality and yield. *Nature genetics*. 2018 Jun;50(6):803-13.
8. Ade-Ademilua O E, Okpoma M O. (2018). *Gossypium hirsutum* L. and *Gossypium barbadense* L.: Differences in phytochemical contents, antioxidant and antimicrobial properties. *Ife Journal of Science*. 2018; 20(1): 77-88.
9. Ma Z, Zhang Y, Wu L, Zhang G, Sun Z, Li Z, Jiang Y, Ke H, Chen B, Liu Z, Gu Q. High-quality genome assembly and resequencing of modern cotton cultivars provide resources for crop improvement. *Nature Genetics*. 2021 Sep;53(9):1385-91.
9. El-Mesallamy AM, El-Zaidy MI, El-Telbany M, Younes ME, Hussein SA. Headspace GC/MS and LC/MS analysis of bioactive compounds from *Gossypium barbadense* L. stem and assessment of their antimicrobial and cytotoxic activities. *Bulletin of the Chemical*



- Society of Ethiopia. 2023 May 12;37(4):1021-32.
10. Essien EE, Aboaba SO, Ogunwande IA. Constituents and antimicrobial properties of the leaf essential oil of *Gossypium barbadense* (Linn.). *J Med Plant Res.* 2011; 5:702-5.
11. Wendel JF, Brubaker CL, Seelanan T. The origin and evolution of *Gossypium*. In *Physiology of cotton 2010* (pp. 1-18). Dordrecht: Springer Netherlands
12. Sofowara A. (1993). In "Medicinal plants and Traditional medicine in Africa". Spectrum Books Ltd, Ibadan, Nigeria. p. 289
13. El-mousalamy AM, El-zaidy M, Zaki MJ, Hussan SA. Demonstration of Phenolics Content from Different Parts of *Gossypium barbadense* L. Plant and Evaluation of Their Antimicrobial Activity. *Bulletin of Faculty of Science, Zagazig University.* 2023 Mar 1;2023(1):169-75.
14. Pathak KM, Chhabra MB. Medicinal plants as an alternative to anthelmintics for livestock: An overview with particular reference to Indian subcontinent. *Indian J Anim Sci.* 2014 Apr 1;84(4):335-49.
15. De Lima LF, de Oliveira JO, Carneiro JN, Lima CN, Coutinho HD, Morais-Braga MF. Ethnobotanical and antimicrobial activities of the *Gossypium* (Cotton) genus: A review. *Journal of Ethnopharmacology.* 2021 Oct 28;279:114363.
16. Gupta AK, Tandon N. Reviews on Indian medicinal plants.
17. Jokotagba OA, Onasanya SS, Siyanbola TO. Phytochemical and GCMS analyses of medicinal properties of ethanol extract of *Gossypium barbadense* LEAVES. *Int J Sci Soc Yabatech.* 2016;4(1):47-52.
18. De Lima LF, de Oliveira JO, Carneiro JN, Lima CN, Coutinho HD, Morais-Braga MF. Ethnobotanical and antimicrobial activities of the *Gossypium* (Cotton) genus: A review. *Journal of Ethnopharmacology.* 2021;279:114363.
19. Longman O,' *Indian Medicinal Plants: A Compendium of 500 Species - Vol.1 Hardcover - 2007.*
20. 21.Salako OA, Awodele O. Evaluation of the antimalarial activity of the aqueous leaf extract of *Gossypium barbadense* (Malvaceae) in mice. *Drugs and Therapy Studies.* 2012 Mar 29;2(1):e2-.
21. Essien EE, Aboaba SO, Ogunwande IA. Constituents and antimicrobial properties of the leaf essential oil of *Gossypium barbadense* (Linn.). *J Med Plant Res.* 2011 Mar 4;5:702-5.11
22. El-Mesallamy AM, El-Zaidy MI, El-Telbany M, Younes ME, Hussein SA. Headspace GC/MS and LC/MS analysis of bioactive compounds from *Gossypium barbadense* L. stem and assessment of their antimicrobial and cytotoxic activities. *Bulletin of the Chemical Society of Ethiopia.* 2023 May 12;37(4):1021-32
23. Hasrat JA, Pieters L, Vlietinck AJ. Medicinal plants in Suriname: hypotensive effect of *Gossypium barbadense*. *Journal of pharmacy and Pharmacology.* 2004 Mar;56(3):381-7.
24. Sabiu S, Ajani EO, Ajao AA, Sunmonu TO, Ibraheem AS, Ibrahim R, Mustapha H, Adekeye AO. Biomembrane stabilization and antiulcerogenic properties of aqueous leaf extract of *Gossypium barbadense* L.(Malvaceae). *Beni-Suef University journal of basic and applied sciences.* 2017 Dec 1;6(4):301-9.
25. Elkinawy M. Hormonal changes associated with leaf senescence in cotton (*Gossypium barbadense*). *Physiologia Plantarum.* 1984 Dec;62(4):593-8.
26. Sabiu S, Ajani EO, Ajao AA, Sunmonu TO, Ibraheem AS, Ibrahim R, Mustapha H, Adekeye AO. Biomembrane stabilization and

- antiulcerogenic properties of aqueous leaf extract of *Gossypium barbadense* L.(Malvaceae). Beni-Suef University journal of basic and applied sciences. 2017 Dec 1;6(4):301-9.
27. Lamloom SF, Yehia WM, Kotb HM, Abdelghany AM, Shah AN, Salama EA, Abdelhamid MM, Abdelsalam NR. Genetic improvement of Egyptian cotton (*Gossypium barbadense* L.) for high yield and fiber quality properties under semi arid conditions. Scientific Reports. 2024 Apr 2;14(1):7723.
28. Preetha S, Raveendren TS. Genetic appraisal of yield and fiber quality traits in cotton using interspecific F2, F3 and F4 populations.
29. Balkrishnan A, Chauhan M, Srivastava D, Kaushik P, Arya V. A Review on Ethnobotanical and Pharmacological Aspects of *Gossypium barbadense* L.(Cotton)-A Multidimensional Plant.
30. El-Bary A. Improving Egyptian cotton using f2 trial crosses. Journal of Plant Production. 2013 Jun 1;4(6):943-56.
31. Hussein SA, El-Mesallamy A, El-zaidy M, Younes M, Soliman AM. Bioactive Compounds From Leaves and Bolls Extracts Of *Gossypium Barbadense* L. And Assessment of Their Antioxidants & Cytotoxic Activities. Egyptian Journal of Chemistry. 2023 Dec 1;66(13):1117-24.

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