

Medicinal uses and ethnopharmacological properties of *Terminalia brachystemma* Welw. ex Hiern: A narrative review.**Alfred Maroyi***Department of Biotechnology and Biological Sciences, University of Fort Hare, Private Bag X1314, Alice 5700, South Africa.*

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Abstract

Terminalia brachystemma Welw. ex Hiern, which belongs to the Combretaceae family, is a slender, Semi-deciduous shrub or small tree. It has been recorded in bushveld and swamp forests of east and southern Africa in Angola, Botswana, Democratic Republic of Congo, Malawi, Mozambique, Namibia, South Africa, Tanzania, Zambia and Zimbabwe. The study is aimed at summarizing medicinal uses and chemical and biological properties of *T. brachystemma* based on information in the literature. The ethnobotany and ethnopharmacological review of *T. brachystemma* was done through a literature review of several online databases such as ScienceDirect®, PubMed®, Web of Science, SpringerLink®, Google Scholar, Scopus® and SciELO, as well as pre-electronic literature sources such as book chapters, books and other scientific publications obtained from the university library. The following keywords were applied during the literature search: “biological activities”, “ethnobotany”, “medicinal uses”, “pharmacological properties”, “phytochemistry” and “traditional uses of *T. brachystemma*”. The research findings highlight the use of the bark, leaves and roots of *T. brachystemma* as an antidote for nephralgia, and traditional medicine for allergies, toothache, bilious vomiting, sexually transmitted infections, respiratory infections, bilharzia and gastrointestinal disorders. Chemical compounds identified from *T. brachystemma* include betulinic acid, catechin, chebulanin, isoorientin, isovitexin, orientin, punicalagin, and ursolic acid. The phytochemical compounds isolated from *T. brachystemma* and its crude extracts exhibited anthelmintic, antibacterial, antifungal, and antioxidant activities. Future research on *T. brachystemma* should focus on detailed phytochemical, pharmacological, and toxicological evaluations, as well as *in vivo* and clinical studies.

Keywords: Bush willow family, Combretaceae, Kalahari cluster-leaf, materia medica, *Terminalia brachystemma***Submitted:** July 22, 2026 **Accepted:** July 27, 2026 **Published:** September 30, 2026**Corresponding Author:** Alfred Maroyi**Email:** amaroyi@ufh.ac.za*Department of Biotechnology and Biological Sciences, University of Fort Hare, Private Bag X1314, Alice 5700, South Africa.***Introduction**

Terminalia brachystemma Welw. ex Hiern (Figure 1) is a member of the Combretaceae family, commonly known as the white mangrove, Indian almond, or bush willow family. The Combretaceae family consists of approximately 10 genera and 568 species, which are mainly trees, shrubs, shrublets, or lianas and rarely subherbaceous (Jordaan et al., 2011; Christenhusz and Byng, 2016; Raj et al., 2022; Maurin et al., 2023). Members of this family exhibit pantropical distribution with a few species extending to warm temperate regions, recorded in coastal scrub, savanna, grassland, rainforest, woodland, littoral, and mangrove vegetation (Gere et al., 2015; Turner, 2020). The genus *Terminalia* consists of about 200 species and is fairly cosmopolitan in distribution, recorded across the tropical and subtropical areas of Asia, Africa, America, and extending into the Pacific Islands and Australia (Leistner, 2000; Stace, 2002, 2007; Waly et al., 2020; Taia et al., 2024; Kumar and Kataria, 2026). The genus *Terminalia* comprises trees,

shrubs and lianas, characterized by leaves which are simple, without scales, that are alternate, spirally arranged or sometimes opposite or nearly opposite, and are usually terminal or crowded towards the ends of the branches and sometimes on short shoots (Palmer and Pitman, 1972; Stace, 2002). The leaves of some *Terminalia* species are petiolate or subsessile, usually entire but occasionally subcrenate, often with some pellucid dots or glands on either side of the leaf near the base or on the petiole (Schmidt et al., 2017). The flowers are bisexual or male or female on the same or different trees, usually borne in lax spikes (Palmer and Pitman, 1972). The flowers are small, lacking petals, and the fruit is one-seeded with two wings which are joined at the top and bottom (Palmer and Pitman, 1972). The bark, leaf, and fruit characters of the genus are widely used to differentiate and identify the *Terminalia* species (Chakrabarty et al., 2019; Rayane et al., 2022; Taia et al., 2024). Several researchers attributed the medicinal properties of *Terminalia* species to various phytochemical

compounds that are associated with the species which include lignans, triterpenes, tannins, glycosides, anthraquinones, phenols, polyols, steroids, esters, styrenes,

saponins and flavonoids (Van Wyk and Wink, 2012; Cock, 2015; Fahmy et al., 2015; Zhang et al., 2019; Das et al., 2020).



Figure 1: *Terminalia brachystemma*: A: entire plant and B: branch showing leaves and fruits (photos: A Pieter)

The genus name *Terminalia* is derived from the Latin word “*terminus*,” which means “end”, in reference to the leaves that are borne in whorls close to the ends of the shoots, branchlets and branches (Palmer and Pitman, 1972; Quattrocchi, 2012). The species name “*brachystemma*” means literally “short garland” in reference to the flower spikes (Palmer and Pitman, 1972). The English common names of *T. brachystemma* include “green cluster-leaf”, “Kalahari cluster-leaf”, “Kalahari sand cluster-leaf”, “Kalahari sand terminalia” and “Kalahari terminalia” (Palmer and Pitman, 1972; Palgrave, 2002; Van Wyk and Van Wyk, 2013). The synonyms associated with *T. brachystemma* include *T. baumii* Engl. & Gilg and *T. sessilifolia* R.E.Fries (Schmidt et al., 2017). *Terminalia brachystemma* has been incorporated into the traditional *materia medica* of East and southern Africa (Neuwinger, 2000; Arnold et al., 2002; Quattrocchi, 2012). The bark and roots of *T. brachystemma* are sold in informal herbal medicine markets in East and southern Africa as sources of traditional medicines (Neuwinger, 2000). It is therefore, against this background that the current study was undertaken, aimed at reviewing the importance of *T. brachystemma* in traditional medicine and evaluating its phytochemical and pharmacological properties.

Materials and methods

The literature search for medicinal uses, phytochemistry and pharmacological properties of *T. brachystemma* was conducted from January to May 2026 using online search databases, which included Web of Science, Scopus®, SpringerLink®, Google Scholar, SciELO, PubMed® and ScienceDirect®. The pre-electronic sources used in this study included books, book chapters, journal articles, dissertations, and theses, which were obtained from the University library. The keywords used in the search included “*Terminalia brachystemma*” and English common names “green cluster-leaf”, “Kalahari cluster-leaf”, “Kalahari sand cluster-leaf”, “Kalahari sand terminalia” and “Kalahari terminalia”. An additional search was also conducted using the keywords “biological activities of *Terminalia brachystemma*”, “pharmacological properties of *Terminalia brachystemma*”, “ethnobotany of *Terminalia brachystemma*”, “medicinal uses of *Terminalia brachystemma*”, “phytochemistry of *Terminalia brachystemma*” and “traditional uses of *Terminalia brachystemma*”. The search covered publications from 1961 to 2026, a long period to capture literature on the medicinal uses, phytochemical and pharmacological properties of *T. brachystemma*.

Results and discussion

Botanical description of *Terminalia brachystemma*

Terminalia brachystemma is a slender, semi-deciduous shrub or small tree with a rounded and spreading crown (Figure 1A) reaching a height of ten metres (Palgrave, 2002; Germishuizen and Meyer, 2003). The branches of *T. brachystemma* are often horizontal and conspicuously layered; the branchlets are plum-coloured, shiny, with peeling bark, marked with leaf scars, often zigzag between lateral branching points and in the vertical plane. The leaves of *T. brachystemma* are clustered near the end of branches, are sessile or shortly stalked, elliptic to obovate in shape. The leaves are leathery, green above, bluish green below, with or without sparse hairs, with entire margins, apex broadly tapering to rounded and base narrowly tapering and often overrunning the petiole. *Terminalia brachystemma* flowers appear in October and November, and these flowers occur in axillary spikes, are small in size, and are cream to pale yellow in colour. The fruits appear from December to May and are elliptic to oblong in shape (Figure 1B), have almost circular wings, are bright crimson when mature, drying to reddish or purplish brown in colour, and are indehiscent. *Terminalia brachystemma* has been recorded at low altitudes in bushveld, rocky hillsides, rocky

watercourses, swamp forest usually on Kalahari sand, around vleis, water-logged depressions, deep sandy soils and in places with a shallow water table on granite rocks in Angola, Botswana, Democratic Republic of Congo (DRC), Malawi, Mozambique, Namibia, South Africa, Tanzania, Zambia and Zimbabwe (Figure 2) at an altitude ranging from 560 m to 1950 m above sea level (Palmer and Pitman, 1972; Shorrocks and Bates, 2015; Schmidt et al., 2017). Two infraspecific taxa are recognized, namely *T. brachystemma* subsp. *brachystemma* and *T. brachystemma* subsp. *sessilifolia* (R.E.Fr.) Wickens (Schmidt et al., 2017). The subspecies *brachystemma* has hairless leaves, receptacle and peduncle, round or elliptic leaf scars, and has been recorded in Angola, Botswana, DRC, Mozambique, Namibia, South Africa, Zambia and Zimbabwe (Palgrave et al., 2002; Schmidt et al., 2017). The subspecies *sessilifolia* has velvety leaves, receptacle and peduncle, and deltate leaf scars, and has been recorded in Tanzania and Zambia (Van Wyk and Van Wyk, 2013; Schmidt et al., 2017). The differences between *T. brachystemma* and *T. sericea* DC. are rather slight, and therefore, hybridization takes place in nature (Palgrave, 2002). *Terminalia brachystemma* is distinguished from *T. sericea* by having larger leaves, which are dark green on the upper side, bluish-green on the underside, and almost devoid of any hairs (Van Wyk and Van Wyk, 2013).



Figure 2: Distribution of *Terminalia brachystemma* in east and southern Africa (drawn by the author using mapchart.net)

Ethnobotanical uses of *Terminalia brachystemma*

Terminalia brachystemma is an important fodder species in east and southern Africa, with its leaves and shoots being palatable and browsed by livestock and game, particularly during the dry periods (Lautenschläger et al., 2018; Neo-Mahupeleng et al., 2025). The bark, leaves and roots of *T. brachystemma* are also considered to be a valuable source of tannin and black dye used for leather tanning and dyeing (Schmidt et al., 2017). The root bark of *T. brachystemma* is made into cordage used for fencing, hut construction, and tying firewood bundles (Van Wyk and Van Wyk, 2013). *Terminalia brachystemma* is an attractive tree which has potential as an ornamental and/or shade plant in private gardens, tolerating frost and moderate drought, and can also be cultivated to fill large open spaces (Palmer and Pitman, 1972). The wood of *T. brachystemma* is considered to be one of the most important and best quality firewoods in east and southern Africa, as it burns slowly with intense heat, little smoke, and makes good charcoal (Sichore et al., 2019). The

wood of *T. brachystemma* is yellow, hard, heavy, strong, compact and termite- and borer-proof, and makes a useful general-purpose timber (Palgrave, 2002; Van Wyk and Van Wyk, 2013; Sichore et al., 2019). Therefore, *T. brachystemma* is used throughout its distributional range as a source of building materials for houses, livestock enclosures, fencing posts and handles of agricultural implements (Palgrave, 2002; Van Wyk and Van Wyk, 2013; Sichore et al., 2019).

Medicinal uses of *Terminalia brachystemma*

Terminalia brachystemma is used as a source of traditional medicines in Angola, Mozambique, Zambia and Zimbabwe, that is, 40.0% of the countries where the species is indigenous (Table 1). The importance of *T. brachystemma* and other *Terminalia* species such as *T. brownii* Fresen., *T. kaiserana* F.Hoffm., *T. mollis* M.A.Lawson, *T. myrtifolia* (M.A.Lawson) Gere & Boatwr., *T. phanerophlebia* Engl. & Diels, *T. prunioides* M.A. Lawson, *T. sambesiaca* Engl. &

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Diels, *T. spinosa* Engl. and *T. stenostachya* Engl. & Diels in tropical Africa have been reviewed recently (Maroyi, 2025a-i). The medicinal applications of crude extracts and/or active ingredients of these *Terminalia* species play an important role in the therapy of local communities in the tropics (Cock, 2015; Zhang et al., 2019; Das et al., 2020). In East and southern Africa, the bark, leaves, roots, and stem bark of *T. brachystemma* are sold in informal herbal medicine markets throughout the region as sources of traditional medicines (Quattrocchi, 2012). Similarly, in South Africa, *T. brachystemma* is listed as a valuable medicinal plant species in the monograph “Medicinal and magical plants of Southern Africa: An annotated checklist” written by Arnold et al. (2002). The traditional medicines prepared from the bark, leaves, roots, and root powder decoction or infusion of *T. brachystemma* are used to treat and manage 29 human diseases and ailments (Table 1). The main ailments and

diseases treated by *T. brachystemma* extracts (Figure 3) include its use as an antidote and for nephralgia, and traditional medicine for allergies, toothache, bilious vomiting, sexually transmitted infections, respiratory infections, bilharzia, and gastrointestinal disorders. The crude extracts of *T. brachystemma* are also used for colic, and traditional medicine for general body weakness, gallstones, gastric ulcers, heart diseases, menstrual problems, nosebleeds, painful labour, and wounds (Dzoyem and Kuete, 2013; Novotna et al., 2020). In Zimbabwe, the leaves of *T. brachystemma* are mixed with those of *Ormocarpum trichocarpum* (Taub.) Engl. (Meliaceae family) as traditional medicine for allergies (Harvey and Armitage, 1961; Maroyi, 2025j). Similarly, the bark of *T. brachystemma* is mixed with leaves of *Dichrostachys cinerea* (L.) Wight & Arn. as traditional medicine for body pains and influenza (Harvey and Armitage, 1961).

Table 1: Medicinal uses of Terminalia brachystemma

Medicinal uses	Parts used	Country	Reference
Mono-therapeutic applications			
Antidote (poisoning, scorpion and snake bites)	Root decoction applied topically	Angola and Zimbabwe	Neuwinger, 2000; Novotna et al., 2020
Bilharzia	Root decoction taken orally	Zimbabwe	Harvey and Armitage, 1961; Ndamba et al., 1994; Mølgaard et al., 2001; Ojewole, 2004; Liu et al., 2007; Mwangi et al., 2017; Maroyi, 2019; Zhang et al., 2019; Nyagumbo et al., 2024a
Bilious vomiting	Root infusion taken orally	Zimbabwe	Gelfand et al., 1985; Rogers and Verota, 1996
Colic	Not specified	Zimbabwe	Novotna et al., 2020
Dilate birth canal	Leaf or root maceration applied topically	Angola	Barroso et al., 2026
Fever	Fruit decoction taken orally	Angola	Lautenschläger et al., 2018
Gall stones	Not specified	Not specified	Dzoyem and Kuete, 2013
Gastric ulcer	Not specified	Not specified	Dzoyem and Kuete, 2013
Gastro-intestinal disorders (abdominal pains, constipation, diarrhoea, dysentery and stomach ache)	Bark, leaf, root or root powder infusion, decoction or maceration taken orally	Angola, Mozambique, Zambia and Zimbabwe	Harvey and Armitage, 1961; Chinemana et al., 1985; Gelfand et al., 1985; Rogers and Verota, 1996; Neuwinger, 2000; Palgrave, 2002; Dzoyem and Kuete, 2013; Lautenschläger et al., 2018; Zhang et al., 2019; Aparicio et al., 2021; Nyagumbo et al., 2024b; Razão et al., 2024; Sitoe and Van Wyk, 2024; ; Barroso et al., 2026
General weakness	Not specified	Not specified	Dzoyem and Kuete, 2013
Heart diseases	Not specified	Not specified	Dzoyem and Kuete, 2013
Dilate birth canal	Leaf or root maceration applied topically	Angola	Barroso et al., 2026
Menstrual problems	Root decoction taken orally	Angola	Novotna et al., 2020

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Nephralgia	Not specified	Angola	Dzoyem and Kuete, 2013; Novotna et al., 2020
Nose-bleeds	Not specified	Not specified	Dzoyem and Kuete, 2013
Painful labour	Not specified	Angola	Novotna et al., 2020
Respiratory infections (cough, influenza, pneumonia, sore throat and tuberculosis)	Fruit or root decoction or infusion taken orally	Angola and Zimbabwe	Neuwinger, 2000; Dzoyem and Kuete, 2013; Lautenschläger et al., 2018; Novotna et al., 2020
Sexually transmitted infections (syphilis and venereal diseases)	Root infusion taken orally	Zimbabwe	Neuwinger, 2000; Dzoyem and Kuete, 2013; Novotna et al., 2020
Toothache	Root decoction applied topically	Not specified	Dzoyem and Kuete, 2013
Wounds	Not specified	Angola	Novotna et al., 2020
Used in combination with other species			
Allergies	Leaves mixed with those of <i>Ormocarpum trichocarpum</i> (Taub.) Engl. (Meliaceae family)	Zimbabwe	Harvey and Armitage, 1961; Maroyi, 2025j
Body pains	Bark mixed with leaves of <i>Dichrostachys cinerea</i> (L.) Wight & Arn. (Fabaceae family)	Zimbabwe	Harvey and Armitage, 1961
Influenza	Bark mixed with leaves of <i>D. cinerea</i>	Zimbabwe	Harvey and Armitage, 1961

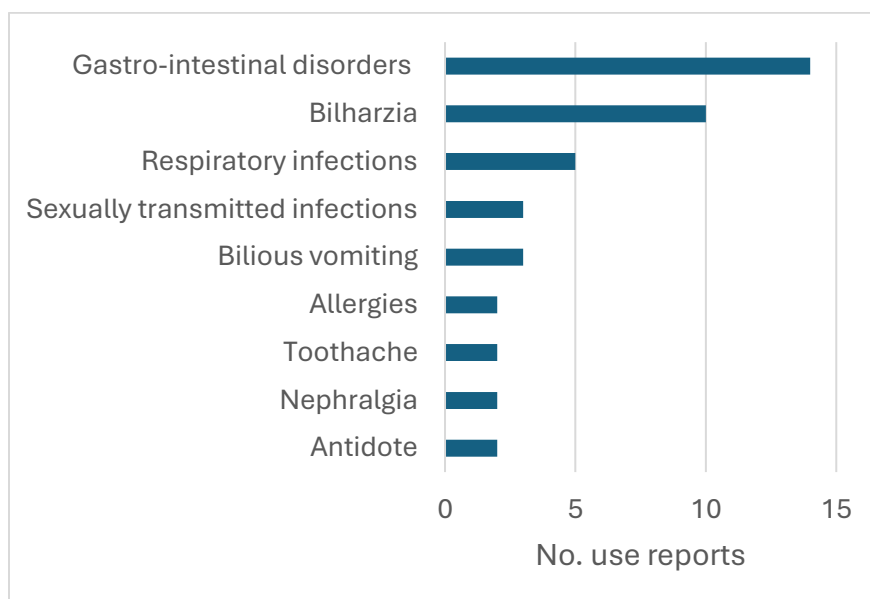


Figure 3: Main ethnomedicinal uses of Terminalia brachystemma in east and southern Africa

Phytochemical and pharmacological properties of Terminalia brachystemma

Liu et al. (2009) isolated a flavonoid, polyphenol, ellagitannin, pentacyclic triterpenoid, flavan-3-ol, phenolic

acid, flavone, and flavonoid C-glycoside from the leaves of *T. brachystemma* (Table 2; Figure 4). Some of the phytochemical compounds isolated from *T. brachystemma* and its crude extracts exhibited anthelmintic, antibacterial, antifungal, and antioxidant activities.

Table 2: Phytochemical compounds isolated from the leaves of *Terminalia brachystemma* (after Liu et al., 2009)

Phytochemical compound	Formula
Betulinic acid	$C_{30}H_{48}O_3$
Catechin	$C_{15}H_{14}O_6$
Chebulanin	$C_{27}H_{24}O_{19}$
Isoorientin	$C_{21}H_{20}O_{11}$
Isovitexin	$C_{21}H_{20}O_{10}$
Orientin	$C_{21}H_{20}O_{11}$
Punicalagin	$C_{48}H_{28}O_{30}$
Ursolic acid	$C_{30}H_{48}O_3$

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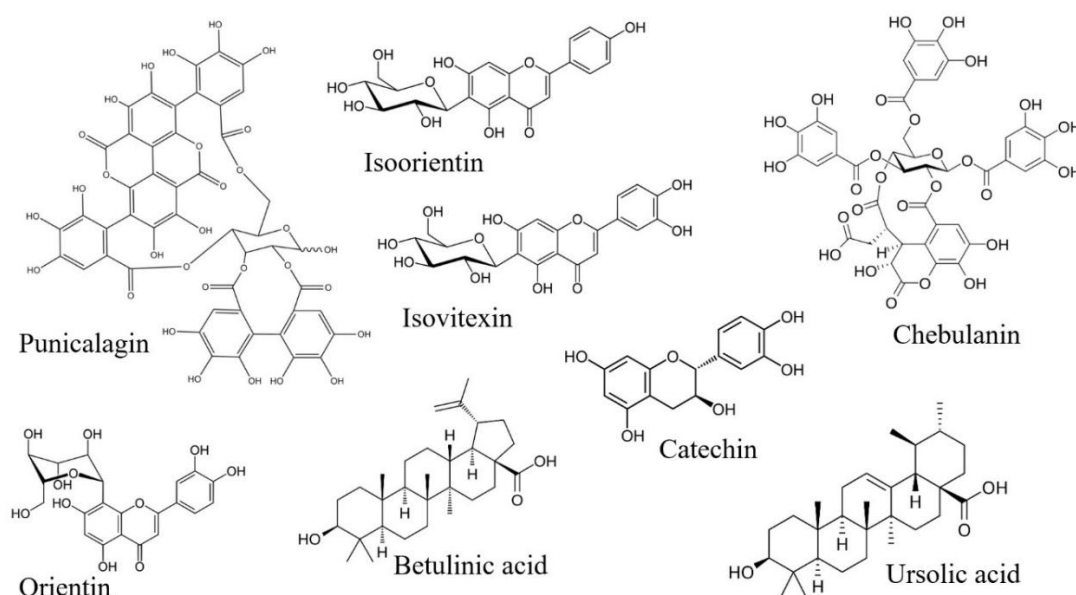


Figure 4: Chemical structures of phytochemical compounds isolated from *Terminalia brachystemma*

Anthelmintic activities

Mølgaard et al. (2001) evaluated the anthelmintic activities of crude extracts of *T. brachystemma* fruits, leaves, and roots against schistosomules of the trematode *Schistosoma mansoni* and cysticercoids of the cestode *Hymenolepis diminuta* with praziquantel as a positive control. The extracts killed the newly excysted cysticercoids within an hour when incubated in a culture medium, and the median lethal concentrations (LC₅₀) of the extracts ranged between 0.5 mg/ml and 8.3 mg/ml after 24 hours (Mølgaard et al., 2001). These anthelmintic assessments are important since

T. brachystemma is traditionally used as remedy for bilharzia in Zimbabwe (Harvey and Armitage, 1961; Ndamba et al., 1994; Mølgaard et al., 2001; Ojewole, 2004; Liu et al., 2007; Mwangi et al., 2017; Maroyi, 2019; Zhang et al., 2019; Nyagumbo et al., 2024a) and such baseline information is required for future research focusing on management and control of schistosomiasis.

Antibacterial activities

Eloff (1999) evaluated the antibacterial activities of acetone extracts of *T. brachystemma* leaves against *Escherichia coli*,

Staphylococcus aureus, *Enterococcus faecalis* and *Pseudomonas aeruginosa* using the twofold serial dilution with gentamycin as a positive control. The extracts exhibited activities against the tested pathogens with minimum inhibitory concentration (MIC) values ranging from 0.2 mg/ml to 6.0 mg/ml (Eloff, 1999). Anokwuru et al. (2021, 2022) evaluated the antibacterial activities of methanol extracts of *T. brachystemma* leaves against *Staphylococcus aureus*, *Bacillus cereus*, *Staphylococcus epidermidis*, *Klebsiella pneumoniae*, *Enterococcus faecalis*, *Pseudomonas aeruginosa*, *Escherichia coli*, *Salmonella typhimurium* and *Shigella sonnei* using the microdilution assay with ciprofloxacin as a positive control. The extracts demonstrated activities against the tested pathogens, exhibiting MIC values ranging from 0.25 mg/ml to 3.0 mg/ml (Anokwuru et al., 2021, 2022). These preliminary findings somehow confirm the potential of *T. brachystemma* as antibacterial agent since the species has been used as traditional medicine against microbial infections such as gastro-intestinal disorders (Harvey and Armitage, 1961; Chinemana et al., 1985; Gelfand et al., 1985; Rogers and Verota, 1996; Neuwinger, 2000; Palgrave, 2002; Dzoyem and Kuete, 2013; Lautenschläger et al., 2018; Zhang et al., 2019; Aparicio et al., 2021; Nyagumbo et al., 2024b; Razão et al., 2024; Siteo and Van Wyk, 2024; Barroso et al., 2026), respiratory infections (Neuwinger, 2000; Dzoyem and Kuete, 2013; Lautenschläger et al., 2018; Novotna et al., 2020), sexually transmitted infections (Neuwinger, 2000; Dzoyem and Kuete, 2013; Novotna et al., 2020), toothache (Dzoyem and Kuete, 2013) and wounds (Novotna et al., 2020).

Antifungal activities

Masoko and Eloff (2005) and Masoko et al. (2005) evaluated the antifungal activities of acetone, hexane, dichloromethane and methanol extracts of *T. brachystemma* leaves against *Candida albicans*, *Cryptococcus neoformans*, *Aspergillus fumigatus*, *Microsporium canis* and *Sporothrix schenckii* using the microdilution assay with amphotericin B as a positive control. The extracts demonstrated activities against the tested pathogens, exhibiting MIC values ranging from 0.02 mg/ml to 2.5 mg/ml (Masoko and Eloff, 2005; Masoko et al., 2005). Liu et al. (2007) evaluated the antifungal activities of ethanol and methanol extracts of *T. brachystemma* leaves against *Candida albicans*, *Candida krusei* and *Candida parapsilosis* using the colorimetric broth microdilution method with itraconazole as a positive control. The extracts exhibited activities against the tested pathogens with MIC values ranging from 8.0 mg/l to 125.0 mg/l (Liu et al., 2007). Liu et al. (2009) evaluated the

antifungal activities of the phytochemical compounds α -punicalagin and β -punicalagin isolated from *T. brachystemma* leaves against *Candida krusei*, *Candida albicans*, and *Candida parapsilosis* using the colorimetric broth microdilution assay with itraconazole as a positive control. The phytochemical compounds demonstrated activities against the tested pathogens, exhibiting MIC values ranging from 6.3 μ g/ml to 12.5 μ g/ml (Liu et al., 2009). These pharmacological evaluations are of importance in the traditional uses of *T. brachystemma* and future research focusing on management and control of fungal as well as microbial infections since the bark, leaves and roots of the species have been used as herbal medicines for microbial infections for several generations and seem to have potential as antifungal agents.

Antioxidant activities

Masoko and Eloff (2007) evaluated the antioxidant activities of methanol and acetone extracts of *T. brachystemma* leaves using the 2,2-diphenyl-1-picryl hydrazyl (DPPH) free radical scavenging assay. The methanol and acetone extracts exhibited weak and strong antioxidant activities, respectively (Masoko and Eloff, 2007). These preliminary *in vitro* antioxidant evaluation findings could imply that *T. brachystemma* extracts have the potential to protect human body cells from harmful damage caused by free radicals.

Conclusion

The present study contributes to the existing traditional ecological knowledge about *T. brachystemma* and medicinal applications of its extracts or active ingredients in traditional medicine. Such documentation is particularly important in tropical Africa where the majority of the population relies on medicinal plants for primary health care needs. The documented information about medicinal applications and ethnopharmacological properties of *T. brachystemma* could be useful in bio-prospecting for new health-promoting and pharmaceutical products. The present study with detailed information about medicinal uses, plant parts used, dose, route of administration, and phytochemical and pharmacological properties of *T. brachystemma* is an essential step towards the identification of knowledge gaps required in the formulation, preparation, and development of pharmaceutical, drug, or health-promoting products. The growing interest in medicinal plants such as *T. brachystemma* as sources of traditional medicines and complementary treatments throughout the distributional range of the species underscores the importance of ethnopharmacological research. Therefore, future research on *T. brachystemma* should focus on conducting detailed

phytochemical and pharmacological studies aimed at evaluating the toxicological properties, *in vivo*, pre-clinical, and clinical studies involving the species.

Limitations

Access and identification of literature sources focusing on medicinal uses, traditional ecological knowledge, and ethnopharmacological properties of *T. brachystemma* were a major challenge. Information provided in this study is based on available scientific sources identified through a systematic literature review, which is often susceptible to publication, analysis, and interpretation bias. In order to minimize these forms of bias and subjective decisions, credible literature sources associated with quality ethnobotanical studies and experimental techniques focusing on ethnopharmacological evaluations of the species were selected and used in this study.

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Author contributions

I am solely responsible for the conception and design of the research work, data collection, analysis, interpretation of the data, and writing of the manuscript.

Registration and protocol

The review was not registered, and a protocol was not prepared.

Competing interests

The author declares that there is no conflict of interest associated with this research.

List of abbreviations

DPPH - 2,2-diphenyl-1-picryl hydrazyl

DRC - Democratic Republic of Congo

LC50 - Median Lethal Concentration

MIC - Minimum Inhibitory Concentration

Availability of data, code, and other materials

All data generated or analyzed during this study are included in this article.

Author biography

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