Anthelmintic plants in Guinea Conakry: A systematic review of challenges and perspectives for public health

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1 ABSTRACT

In the Republic of Guinea-Conakry, helminthiases remain the third leading cause of morbidity and medical consultations, despite widespread antiparasitic campaigns. In response to this challenge, numerous studies have documented natural plant-based solutions for treating helminth infections. Unfortunately, over the past three decades, little research has been conducted on the anthelmintic potential of plants in the country. This study compiles data on the prevalence of helminth infections, traditional medicinal plants, their chemical composition, and pharmacological properties from 1989 to 2024, with the aim of supporting the development of effective management strategies. The documents and articles were sourced from local libraries, PubMed, Scopus, Web of Science, and Google Scholar. The results show that 16 major helminths affect various groups, with children, pregnant women, and people living in poor sanitary conditions being the most vulnerable. The most common species are *Ascaris lumbricoides*, *Schistosoma mansoni*, and *Ancylostoma duodenale*, with prevalence rates reaching 82% in children in certain regions. Global ethnobotanical research has identified 38 anthelmintic plant species from 25 botanical families, with leaves being the most used part (56%). Phytochemical analyses reveal 19 bioactive compounds, such as flavonoids (20%), alkaloids, tannins, terpenes, and saponins, which contribute to the therapeutic efficacy of the plants. Pharmacological studies highlight the significant antiparasitic effects of plant extracts, including *Spondias mombin*, *Allium cepa*, and *Annona muricata*, against gastrointestinal nematodes such as *Haemonchus* spp. and *Strongyloides* spp. However, in Guinea, only three plants (*Azadirachta indica, Cucumis melo, Aframomum melegueta*) are documented and used for the treatment of helminths. These findings emphasize the vital role of medicinal plants in combating helminth infections and advocate for continued pharmacological research to enhance their therapeutic applications, particularly in Guinea-Conakry.

2 INTRODUCTION

Parasitic diseases remain a public health concern in many parts of the world, particularly among the poorest populations in sub-Saharan Africa (Gyapong and Boatin, 2016). Parasites with widespread geographic distribution that significantly contribute to global parasitic diseases include protozoa (*Plasmodium, Trypanosoma, Toxoplasma, Leishmania, Entamoeba*.) and helminths (*Taenia, Schistosoma*.). Due to their adaptability to a wide range of environments, parasites are more difficult to control than ectoparasites (mites, fleas, lice) (Galluzzo *et al.,* 2014). Their modes of transmission are highly diverse and complex, closely linked to factors such as individual sanitation and nutrition, infestation intensity, and the nature of parasite interactions (Cable *et al.,* 2017). Symptoms commonly include fever, malnutrition, anaemia, itching, and intestinal obstruction, affecting most infected populations. Prevalence varies from one region to another due to precarious climatic and hygienic conditions (Ashrafuzzaman *et al.,* 2023). Pregnant women and children are the most at-risk groups for morbidity caused by these infections (Sappenfield *et al.,* 2013). Approximately 1.5 billion children worldwide require treatment and preventive interventions (Sappenfield *et al.,* 2013). In the Republic of Guinea Conakry, despite numerous mass antiparasitic campaigns (Guilavogui *et al.,* 2023), helminthiases remain the third leading cause of morbidity and consultation in health facilities after malaria and respiratory diseases, with nearly 307,391 cases reported in hospitals, according to public health statistics. The main circulating helminths include efforts to reduce their prevalence focus on improving sanitation infrastructure, health education, and promoting good hygiene practices. Unfortunately, these efforts are insufficient as many rural regions lack access to potable water, adequate sanitation facilities, medications, and basic health education in the context of specific climatic and ecological conditions (the country's tropical zone). These conditions emphasize the importance of traditional medicine in Guinea Conakry. Indeed, the relevance of traditional medicine in Africa is explained largely by economic factors (low cost, ease of supply, tax exemptions) and cultural factors (heritage preservation) (Dassou *et al.,* 2015; Assou *et al.,* 2012). However, this traditional knowledge is at risk of disappearing as it is insufficiently documented. In the Republic of Guinea Conakry, several scientific studies have addressed traditional knowledge related to the use of plants for treating parasitic diseases (Traore *et al.,* 2013). However, the fundamental baseline information necessary for developing affordable and accessible phytomedicines is currently insufficient. Synthesizing existing knowledge is essential to provide a roadmap for future research to bridge knowledge gaps about antiparasitic plants, particularly helminths, distributed in Guinea Conakry. The objective of this analytical review is to present a comprehensive and updated overview of studies on the uses, phytochemistry, and pharmacology of plants traditionally used for the treatment of helminths in Guinea Conakry. We aim to provide synthesized information by region (Lower Guinea or Maritime Guinea, Middle Guinea, Upper Guinea, and Forest Guinea) to guide the development of phytomedicines for managing parasitic diseases.

3 METHODOLOGY

The work methodology included two main steps: *i)* article search and selection, *ii)* data treatment and analysis.

3.1 Article Search and Selection: Keywords as "intestinal parasites," "anthelmintic plants, "antiparasitic plants" were used in online public databases (PubMed, Scopus, Web of Science, and Google Scholar) to collect relevant publications. To narrow the scope of the research, these terms were specifically linked to Guinea Conakry, targeting four regions: Upper Guinea, Lower Guinea, Middle Guinea, and Forest Guinea. Additionally, the National Library, Central

University Library, Thurgood Marshall Library, Djibril Tamsir Niane Library, and the Library of Gamal Abdel Nasser University of Conakry in Guinea were explored to gather relevant information from theses and dissertations. In total, 517 publications from 1989 to 2025 were downloaded and imported into the Mendeley software. Duplicates and publications without full-text availability were excluded. Subsequently, 109 articles were selected for inclusion in this manuscript. The searches were conducted over a period of six months and ended in January 2025.

3.2 Data treatment and analysis: For each article and based on the available information, the following data were extracted: authors, publication title, publication year, field of study and region of the study, mentioned parasitic diseases, reported plant (s), part of the plant used, application, chemical compounds, and pharmacological aspects. This information was used to create a comprehensive database. The data were presented in narrative form and in tables. The data analysis consisted of calculating the relative frequency of reports/mentions of a given item.

4 RESULTS

4.1 Parasitic Infections Reported in Guinea-Conakry: In Guinea-Conakry, parasitic infections affect people of all ages, with significant variations in prevalence depending on the region, year and age groups. Note that the names of the zones are written in English with Basse Guinée, Guinée Forestière, Moyenne Guinée and Haute Guinée corresponding respectively to Lower Guinea, Forest Guinea, Middle Guinea, Upper Guinea.

4.1.1 Lower Guinea: The highest prevalence rates (80% and 66%) were observed respectively in children aged 0–5 years in 2007 and those aged 6–14 years in 2010 (Camara, 2010; Condé, 2013). This prevalence reached 82% among all children aged 1–17 years in 2012. Infections also affected half (50%) of pregnant women involved in the 2013 study. Most parasites included: *A. lumbricoides*, *A. duodenale*, *S. mansoni*, *Hymenolepis* spp., *T. trichiura*, *E. histolytica*, *S. stercoralis*, *E. vermicularis*, and *T. intestinalis*.

4.1.2 Forest Guinea: A prevalence rate of 80% was recorded among children aged 9–14 years (Kolié, 2012), with higher frequency among malnourished children (74%) (Koïvogui, 2014). Data also revealed that many pregnant women were affected by at least one helminth (Diabaté, 2015). The most recent study indicates that all individuals aged 6 years and above are infected by a parasite (Béavogui, 2020). The dominant helminths were *Strongyloides stercoralis*, *Ancylostoma duodenale*, *Ascaris lumbricoides*, *Schistosoma mansoni*, and *Hymenolepis* spp.

4.1.3 Middle Guinea: The highest prevalence rates (59% and 55%) were observed among pregnant women in 2011 (Hounsanou, 2012) and children aged 5–15 years in 2015 (Bah, 2016). The identified parasite species are like those found in Forest Guinea.

4.1.4 Upper Guinea: Apart from pregnant women (Camara, 2015), children aged 5–17 years were the most infected in 2017, by most species reported in Forest and Middle Guinea (Kolié, 2018). In Guinea-Conakry, parasitic infections affect a significant portion of the population, particularly children, pregnant women, and individuals living in poor sanitary conditions. Studies conducted in various regions of the country between 1989 and 2019 identified a total of 16 main helminths circulating within the population (Figure 1). These parasites are categorized into three prevalence groups:

(i) Very common species: *Ascaris lumbricoides* (Prevalence: 28%), *Schistosoma mansoni* (Prevalence: 19%) and *Ancylostoma duodenale* (Prevalence: 15%),

(ii) Less common species: *Hymenolepis spp.* (Prevalence: 8%), *Trichuris trichiura* (Prevalence: 6%) *Entamoeba histolytica* and *Strongyloides stercoralis* (Prevalence: 5% each)

(iii) Rare species (Prevalence < 2%): *Enterobius vermicularis*, *Trichomonas intestinalis*, *Hymenolepis nana*, *Cryptosporidium spp.*, *Fasciolopsis buski*, *Giardia intestinalis*, *Hymenolepis diminuta*, *Frenkelia belli* and *Isospora belli*.

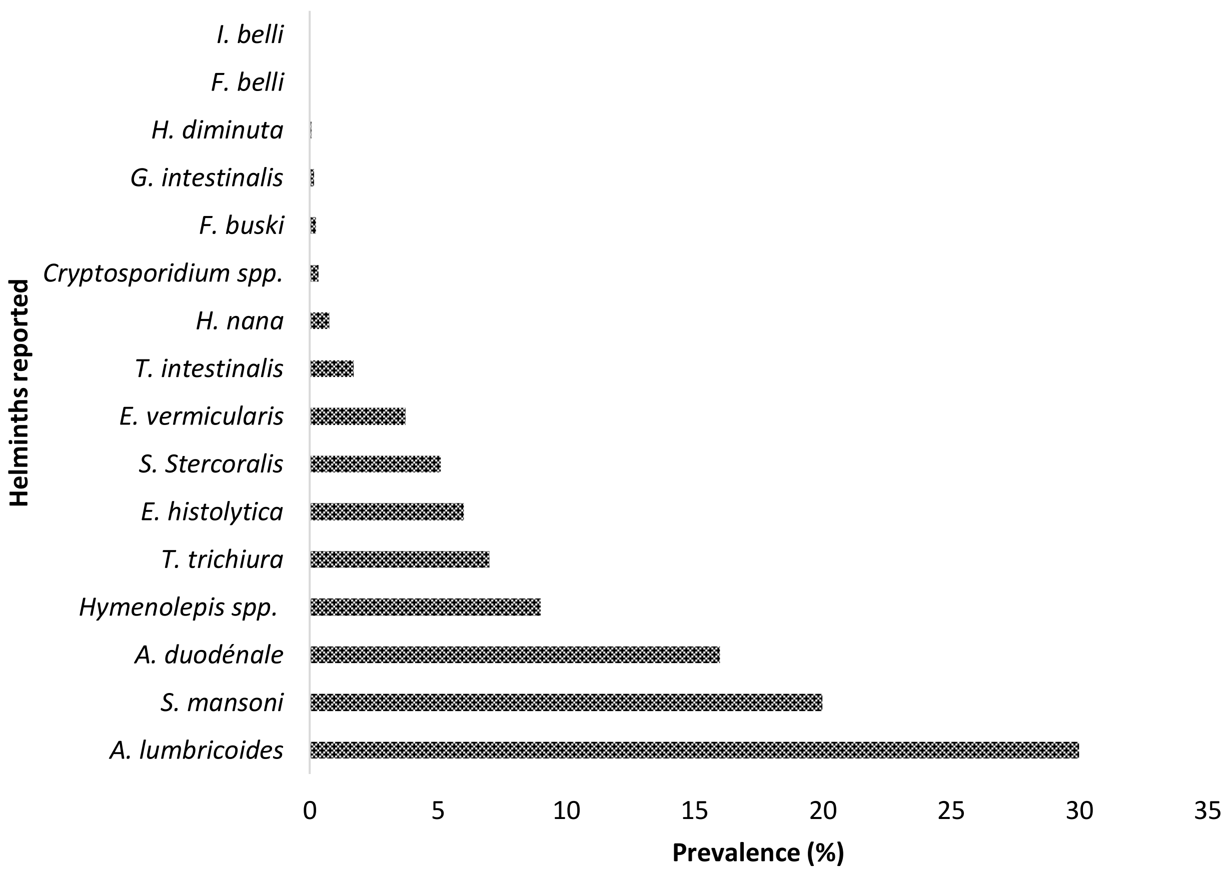

Figure 1: Main helminths identified along with their prevalence.

4.2 Commonly Used Anthelminthic Plants in Guinea Conakry: In Guinea Conakry, as in many other tropical regions, intestinal infections, particularly those caused by intestinal worms, are common. Several local medicinal plants are traditionally used to combat parasitic infections (helminthiasis). In 2007, a study showed that neem extract (*Azadirachta indica*) was effective against certain types of intestinal worms, such as Ascaris. In Guinea Conakry, the leaves and bark are used to prepare decoctions or infusions (Koul and Singh, 2007). Melon (*Cucumis melo*), especially its seeds, is also used in Guinea Conakry as a traditional remedy to eliminate intestinal worms. The seeds are often ground and consumed in the form of paste or decoction (Banso and Adeyemo, 2007). A recent ethnobotanical survey showed that *Afromomum melegueta* is the most used medicinal plant against intestinal parasitosis in greater Guinea. The authors highlighted that the leaves were the most used part, typically in the form of decoction (Traore *et al.,* 2024).

5 DISCUSSION

In Guinea Conakry, as in many other tropical regions, intestinal infections, particularly those caused by intestinal worms, are common. Several local medicinal plants are traditionally used to combat parasitic infections (helminthiasis) in African countries. The high prevalence of parasitic infections in Guinea-Conakry, particularly among vulnerable populations such as children, pregnant women, and individuals living in poor sanitary conditions, underscores the urgent need to strengthen public health interventions and research. Data collected across various regions of the country between 1989 and 2019 show a widespread distribution of helminths, with species such as *Ascaris lumbricoides*, *Schistosoma mansoni*, and *Ancylostoma duodenale* being the most frequently reported. Prevalence rates in specific regions, such as Lower Guinea, Forest Guinea, and Upper Guinea, vary, but overall, the extent of parasitic infections remains alarming. Indeed, parasitic infections have major public health implications due to their chronic nature and the long-term effects they can have on individuals' health. In children, these infections can lead to malnutrition, growth retardation, and cognitive development disorders, which may affect their future productivity and well-being (Tagajdid *et al.,* 2012; Garrison, 2021). Despite the efforts made by health authorities to combat parasitic infections through medication and control measures, several challenges remain. One of the main obstacles is the limited access to healthcare services in rural and remote areas, where sanitary conditions are often poor. In these areas, untreated water sources and inadequate waste management significantly contribute to the spread of parasites. Furthermore, the limited availability of medicines and adequate medical care makes it difficult to fully treat parasitic infections. This is supported by certain studies (Villessot and Bermond, 2002; Kamariza and Gashubije, 2002). This study identifies the medicinal plants traditionally used to treat parasitic infections in the four regions of Guinea (Lower Guinea, Upper Guinea, Middle Guinea, and Forest Guinea). Guinea-Conakry, like many regions of West Africa, faces a major public health challenge related to parasitic infections, particularly those caused by helminths (intestinal worms). While Guinean health authorities are implementing control strategies such as medication treatments, the traditional use of medicinal plants remains widespread. Traditional recipes are recognized as family secrets passed down through customs and oral tradition. This observation aligns with many African studies reporting that knowledge is primarily inherited (see Additional files 1 and 2). However, this study reveals a significant lack of in-depth research on local antiparasitic plants and their potential as alternative or complementary treatments to conventional drugs. In Guinea, many plants (*Azadirachta indica, Cucumis melo, Afromomum melegueta*) are used to treat helminths. However, knowledge about their actual effectiveness, mechanisms of action, and appropriate dosages remains limited. While some studies demonstrate the benefits of these plants in other parts of the world (Additional files 1 & 2), there is a lack of systematic research specifically conducted in Guinea.

Additional file 1. Overview of anthelmintic plants and their bioactive compounds against helminths in Africa and other parts of the world

Family	Species	Part Used	Class	Name of Compounds	Country	References
Alliaceae	*Allium sativum L.*	Leaves Bulbs	Alkaloids, reducing sugars, flavonoids, glycosides, cardiac glycosides, tannins phenolic compounds, saponins, amino acids, triterpenoids	-	India	(Singh and Singh, 2008)
			Triterpenes	Squalene	Indonesia	(Listiyani *et al.*, 2022)
			Organosulfur	1,4-dihydro-2,3-benzoxathiin 3-oxide		
			Esters	Methyl-11-hexadecenoate, 1,2,3-propanetriyl ester		
			Unsaturated fatty acids	Trans-13-octadecenoic acid		
			Sulfuric compounds	Allicin, diallyl disulfide, S-allyl cysteine	France	(Bourgoin *et al.*, 2017)
Anacardiaceae	*Spondias monbin* L.	Leaves	Carbohydrates alkaloids, flavonoids, glycosides, steroids Oil, terpenoids	Reducing sugar Carbohydrates Cyanogenic, glycosides, phenol	Nigeria	(Ugadu, 2014)
		Fruits	Carbohydrates, flavonoids, resins, oil	Cyanogenic, glycosides, phenol		
		Leaves	Steroidal glucoside	16-0-(3',4', 5'– trimethoxybenzoyl) -3-0-β-diglucopyranosyl cholest-15-ene		(Ogunro *et al.*, 2023)
		Leaves /Fruits	Hydrocarbons	2,4,10,15 tetrametilheptadecane, heptacosane, hexatriacontane, 1, 2, 3, 4, 4a, 5, 6, 8a-octahydro-4a, 8-dimethyl naphthalene		
			Sesquiterpenoids	Carryophyllene, α-cadinol, α-copaen, α-humulene, β-caryophellene, γ-cadinene, δ-cadiene, (E,E)-α-farnesene,		
		Fruits	Vitamin	Ascorbic acid		
			Benzenoid	Benzyl butyrate, Benzyl butanoate, Benzyl acetate, Benzoic acid phenyl-methyl ester, Benzoic acid ethyl ester		

		Stem bark	flavonoids	Ellagic acid, Flavonol 3-0-glycoside, Mombincone, Mombinoate, Mombinol, Mombinrin Coumarin		
		Seeds	Linoleic acids	(9Z, 12Z)-9,12-octadecadienoic acid		
Annonaceae	*Annona muricata* L.	Leaves	Phenolic compounds, Cardiac glycosides, Sugars	-	Vietnam	(Nga, 2018)
			Alkaloids, polyphenols tannins, triterpenes, flavonoids, steroids, anthraquinones	-	Cameroun	(Nguélé *et al.,* 2021)
	Annona senegalensis Pers.	Leaves	Flavonoids, saponins, tannins, alkaloids, phenolic Compounds, terpenes		Senegal	(Diallo *et al.,* 2024)
	Uvaria chamae P.Beauv. Pers.	Leaves and roots	Flavonoids, saponins, tannins, alkaloids, phenolic Compounds, terpenes, saponins, cardiac glycosides	Quercetin, kaempferol, berberine, columbamine Catechins, gallic acid, oleanolic acid, chlorogenic acid, ferulic acid, limonene, α-pinene, digoxin	Nigeria	(Nwakaego *et al.,* 2019)
		Root bark	Alkaloids, flavonoids, saponins, tannins, phenolic compounds, terpenes, steroids	Anonaine, liriodenine, quercetin, kaempferol, betulinic acid, ellagic acid, catechins, chlorogenic acid, gallic acid, α-pinene, limonene, β-sitosterol	Cote d'Ivoire	(Monon *et al.,* 2015)
	Xylopia aethiopica (Dunal) A.Rich.	Fruits	Alkaloids, flavonoids, saponins, tannins, phenolic compounds, terpenes, steroids	Anonaine, xylopicin, quercetin, kaempferol oleanolic acid, gallic acid, catechins, chlorogenic acid, ferulic acid, limonene, α-Pinene, β-Sitosterol	Nigeria	(John-Dewole and Arojojoye, 2012)
Apocynaceae	*Landolphia heudelotti* A. DC.	Bark	Alkaloids, flavonoids, saponins, tannins, phenolic compounds, terpenes, steroids	-	Angola	(Baumgärtel *et al.,* 2023)
		Roots	Phenylpropanoids sesquiterpenes	Dimers Lignans, neolignans, sesquilignans, coumarins, sesquiterpenes, aromadendrane	Ghana	(Mireku *et al.,* 2016)
Asteraceae	*Ageratum conyzoïdes* L.	Flowers, stem, roots, leaves	Alkaloids, flavonoids, saponins, tannins, phenolic compounds, terpenes, steroids, Chromenes, Sterols	-		(Yadav et al. 2019)

	Vernonia colorata (Willd.) Drake	Leaves	Flavonoids, saponins, tannins, steroids and triterpenes, cardiac glycosides, coumarins and derivatives, alkaloids, anthocyanosides, saponins, reducing compounds	-	Nigeria	(Idris *et al.*, 2016)
Bromeliaceae	*Ananas comosus* (L.) Merr.	Crown	Saponins, alkaloids, steroids, tannins, flavonoids, triterpenes, phenols (hydroquinone), amino acids, bromelain	Tyrosine, tryptophan	India	(Sharma *et al.*, 2024)
Celtidaceae	*Trema orientalis* (L.) Blume	Leaves	Saponins, phenols, alkaloids, steroids, tannins, flavonoids, triterpenes, Polyphenols		Côte d'Ivoire	(N'guessan *et al.*, 2014)
Caricaceae	*Carica papaya* L.	Leaves	Flavonoids, Saponins, Carpain	Quercetin,Caffeic Acid, p-Coumaric Acid, Gallic Acid, Ferulic Acid	Malaysia	(Kong *et al.*, 2021)
			Flavonoids	Quercetin, Kaempferol, Rutin, Isoquercetin, Myricetin, Apigenin, Luteolin	India	(Choudhary *et al.*, 2025)
			Phenols	Chlorogenic Acid, Caffeic Acid, Ferulic Acid, p-Coumaric Acid, Gallic Acid		
			Tannins	-		
			Alkaloids	Carpain		
			Saponins	-		
			Vitamins	Vitamin A, Vitamin C, Vitamin E		
Chrysobalanaceae	*Parinari curatellifolia* Planch. ex Benth.	Almond Seeds	Lipids	-	Burkina Faso	(Patrice *et al.*, 2024)
			Simple Sugars	α-D-Glucose, α-D-Galactose, and Aldehyde-L-Arabinose		
			Proteins	-		
			Minerals	Potassium, Phosphorus, Magnesium, and Calcium		
			Essential Amino Acids	-		
			Antinutritional Factors	phytates and polyphenols		
Clusiaceae	*Harungana madagascariensis* Lam.ex Poire	Stem bark	Alkaloids, flavonoids, saponins	-	Congo	(Cakupewa *et al.*, 2022)
		Fruits	Saturated fatty acids:	Palmitic acid, Stearic acid, Behenic acid	Nigeria	(Afieroho *et al.*, 2017)

			Esters	Methyl palmitate, Methyl linoleate, Methyl stearate, Methyl behenate		
			Unsaturated fatty acid	Linoleic acid, Linoleyl alcohol, Fatty acid methyl		
			Fatty acid ethyl esters	Ethyl linoleate		
Cochlospermaceae	*Cochlospermum planchoni* Hook.f.	Roots	Saponins, phenols, alkaloids, steroids, tannins, flavonoids, triterpenes, anthraquinones	-	Nigeria	(Nafiu *et al.*, 2011)
Combretaceae	*Combretum micranthum* G.Don	Leaves	Polyphenols, flavonoids, alkaloids, tannins	-	Senegal	(Tine *et al.*, 2024)
	Combretum paniculatum Vent	Leaves	Phenols, flavonoids, vitamins	Rutin, Kaempferol, Epicatechin, Ephedrine, Naringenin Resveratrol	Nigeria	Chukwuma *et al.*, 2024)
		Stem bark	Flavonoids, tannins, saponins, alkaloids, terpenoids, phytosterols, carbohydrates, amino acids, proteins	-	South Africa	(Samdumu, 2007)
Connaraceae	*Rourea minor* (Gaertn.) Alston	Stem	Flavonoid, phenolic acids, proanthocyanidins	Catechin and epicatechin Gallic acid	India	(Soren and Lalthanpuii, 2021)
		Seeds, pulp	Lipids, proteins, carbohydrates, ash, fiber	-	India	(Murthy *et al.*, 2023)
Cucurbitaceae	*Cucumis melo* L.	Fruits	flavonoids, polyphenols phenolic acids	Catechin, β-carotene, chlorogenic acid and caffeic acid	India	(Kapoor *et al.*, "2021)
		Seeds	Amino acids	Glutamic acid, Arginine, Tryptophan	Tunisia	(Mallek-Ayadi *et al.*, 2019)
			Flavonoids	Naringenin-7-O-glycoside		
			Phenolic compounds	Phenolic acids, Gallic acid		
			Volatile compounds	Esters, Terpenoids		
Euphorbiaceae	*Alchornea cordifolia* (Schumach. & Thonn.) Müll.Arg.	Leaves	Flavonoids	Flavones	Cameroun	(Nga EN *et al.*, 2017)
			Tannins	Gallic tannins		
			Flavonoids	-	Turkey	(Sinan *et al.*, "2021)
			Phenols	-		
			Volatile compounds	α-Cadinol, β-Caryophyllene, Germacrene D, Phytol		
Fabaceae	*Cassia sieberiana* D.C.	Root bark	Tannins	Flavan-3-ols	Togo	Kpabi *et al.*, "2022)

			Anthocyanosides, tannins, saponins, triterpenes, steroids, alkaloids, coumarins, flavonoids	-	Burkina-Faso	(Traore *et al.*, 2017)
	Daniellia oliveri (Rolfe) Clapier. &Dalziel	Leaves	Alkaloids, cardenolides, anthraquinones, tannins	-	Nigeria	(Ahmadu *et al.*, 2004)
	Tamarindus indica L.	Pulp	Flavonoids, tannins, polyphenols	-	Burkina-Faso	(Ouédraogo *et al.*, 2010)
		Leaves	Flavonoids	Quercetin, Apigenin, Luteolin	Thailand	(Sookying *et al.*, 2022)
			Phenolic Compounds	Gallic Acid, Protocatechuic Acid, Ferulic Acid		
			Tannins			
	Dichrostachys cinerea (L.) Wight & Arn.	Roots	Alkaloids, flavonoids, essential oils, phenols terpenes, tannins, unsaturated sterols, saponins	Caryophyllene Phthalates An unspecified phenol Fatty acids and their ester derivatives	Botswana	(Mazimba *et al.*, 2022)
	Parkia biglobosa Benth	Seeds, stem, leaves	Ascorbic acid (vitamin C), polyphenols, flavonoids, procyanidins, phenolic, acids, tannins	-	Nigeria	(Animashahun *et al.*, 2024)
		Seeds Fruit Pulp Leaves Bark Roots	Flavonoids	Quercetin, Kaempferol, Myricetin, Isorhamnetin	South Africa	(Musara *et al.*, 2020)
			Proteins	Albumin, Globulin		
			Sterols	β-Sitosterol, Stigmasterol		
			Saponins	Diosgenin, Hechoside		
			Alkaloids	Sparteine, Lupinine		
			Terpenoids	Lupeol, β-Amyrin		
			Fatty Acids	Palmitic Acid, Stearic Acid, Linoleic Acid		
			Flavonoid Glycosides	Isoquercitrin, Rutin		
			Phenolics acid	Ferulic Acid, Caffeic Acid, p-Coumaric Acid, Chlorogenic Acid		
			Tannins	Gallic Acid, Epicatechin, Catechin		
			Reducing Sugars	Glucose, Fructose		
	Senna siamea (Lam.) H.S.Irwin & Barneby	Leaves	Anthraquinones, triterpenes	Emodin, Lupeol	Nigeria	(Ajaiyeoba *et al.*, 2008)

Lamiaceae	*Ocimum gratissimum* L.	Leaves	Monoterpenes Sesquiterpenes	p-cymene, thymol, γ-terpinene, β-myrcene, α-thujene	Benin	(Kpoviessi *et al.*, 2014)
Meliaceae	*Carapa procera* D.C.	Bark	Steroids, tannins, saponins, terpenoids Flavonoids, glycosides, alkaloids	-	Thailand	(Owusu *et al.*, 2021)
		Pericarp, seeds	Primary metabolites	Lipids, Proteins, Carbohydrates	Mali	(Diakité *et al.*, 2022)
			Mineral elements	Magnesium, sodium, and potassium, iron, calcium, and copper		
			Secondary metabolites	Tannins, Alkaloids		
	Khaya senegalensis A.Juss	Bark Leaves Seeds	Alkaloids, terpenoids, steroids, Phenols	-	Nigeria	(Tyoapine *et al.*, 2022)
		Leaves	Phenols	-	Côte d'Ivoire	(Monon *et al.*, 2022)
			Flavonoids	-		
			Minerals	Calcium, phosphor, magnesium, fer		
Myrtaceae	*Psidium guajava* L.	Leaves Bark Fruits	Tannins, alkaloids, phenols, glycosides, flavonoids, steroids	Anthocyanins Ascorbic acid (vitamin C) Carotenoids	Congo	(Lufuluabo *et al.*, 2018)
	Piper capense L.f.	Fruits	Sesquiterpenes	δ-cadinene, β-bisabolene, bicyclogermacrene	Cameroun	(Wamba *et al.*, 2021)
			Monoterpenes	β-pinene, α-phellandrene		
			Arylpropanoids	-		
Poaceae	*Cymbopogon citratus Stapf.*	Leaves Stem	Flavonoids	Luteolin, Isoorientin 2'-O-rhamnoside, Quercetin, Kaempferol, Apigenin	India	(Shah *et al.*, 2011)
			Essential oils	Citral, Geraniol, Myrcene		
			Phenolic Compounds	Caffeic acid, Chlorogenic acid		
	Pavetta owariensis P.Beauv. (Rubiaceae)	Leaves and stem bark	-	linalool, p-cymene, limonene, β-caryophyllene, germacrene D, β-selene, β-farnesene, trans-β-bergamotene, caryophyllene oxide, trans-β-selenone and linalyl acetate.		(OOAS, 2020)
Rutaceae	*Citrus medica* L.	Fruits Bark (skin) Leaves	Alkaloids	-	India	(Panara *et al.*, 2012)
			Steroids	-		
			Phenols	-		

		Seeds	Flavonoids	Hesperidin, 3,5,6-trihydroxy-4,7-dimethoxy flavone, 3,5,6-trihydroxy-3',4',7-trimethoxy flavone		
			Carbohydrates	-		
			Mucilage	-		
			Leaf essential oil compounds	Citronellal, Citronellol, Limonene, Citronellyl acetate, Isopulegol, Linalool		
			Coumarins	Limettin, Scoparone, Scopoletin, Umbelliferone		
			Terpenoids	Limonin, Limonol, Nomilinic acid		
Scrophulariaceae	*Scoparia dulcis* L.	Leaves	Alkaloids, flavonoids, saponins, tannins, terpenoids	Scoparone, Dulcitol, Ferulic Acid, Quercetin, Kaempferol	Brazil	(Santos *et al.,* 2012)
Verbenaceae	*Clerodendrum splendens* G.Don	-	Fatty alcohols Sterols Steroidal glycosides	Triacontanol, (22E, 24S)-Stigmasta-5,22,25-triene-3β-ol (22E, 24S)-Stigmasta-5,22,25-trien-3β-ol 3-O-β-D-glucopyranoside	Pakistan	(Ajaib *et al.,* 2014)
Zingiberaceae	*Aframomum melegueta* (Roscoe) K.Schum	Seeds	Gingerols Shogaols Paradols	[6]-gingérol [6]-shogaol [6]-paradol	Côte d'Ivoire	(Ilic *et al.,* 2009)
			Flavonoids:	Techtochrysin		
			Essential oils	β-caryophyllene, humulene, α-pinene, β-pinene		

Additional file 2. List of some anthelmintic plants and their extracts effective against helminths

Family	Plant species	Part	Extracts	Test/Assay	Results	Strains	Country	References
Alliaceae	*Allium sativum* L.	Bulb	An aqueous extract (water based). methanol	*In vitro*: Egg hatching test, Larval development test, Larval paralysis test	better efficacy in egg hatching and larval development tests. The methanolic extract was more effective in the larval paralysis test.	*Gastrointestinal nematodes affecting sheep Haemonchus contortus*	India	(Kanojiya *et al.,* 2015)
			Ethanol	*In vitro*: incubation with different concentrations (0.312%, 0.625%, 1.25%, 2.5% and 5%) of alcoholic extracts of plants for 21 days	inhibition of embryonic development with an efficacy increasing proportionally to the concentration of the extract	*Ascaris suum*		(Băieş *et al.,* 2022)
			Polyphenols. Tocopherols. Flavonoids. Sterols. Sesquiterpene lactones. Sulfoxides.	*In vivo*: Infected pigs were treated with Allium sativum powder at 180 mg/kg body weight per day and administered for 10 consecutive days.	The treatment showed strong antiparasitic activity with notable antiprotozoal and anthelmintic effects.	*Eimeria spp., Cryptosporidium spp., Balantioides coli (syn. Balantidium coli). Ascaris suum ; Oesophagostomum spp. ; Strongyloides ransomi. Trichuris suis.*		(Băieş *et al.,* 2022)
Anacardiaceae	*Spondias monbin* L.	Leaves	Ethanol and methanol	*In vivo*, biological tests were performed on L3 larvae and adult worms of *Haemonchus contortus*	Significant inhibition of larval migration and decreased movement of mature worms.	*Haemonchus contortus*	Benin	(Akouedegni *et al.,* 2019)
			Ethanol and methanol	*In vivo* was carried out on Djallonké sheep, where the antiparasitic activity of *Spondias mombin* leaves,	Treatments with S. mombin powder showed positive effects on infected sheep	*Haemonchus contortus*		

				observed in vitro, was confirmed				
			Aqueous and ethanolic extracts	*In vivo* larval development assay (LDA) was used to evaluate the effect of the extracts on strongyle larvae	significant inhibition of larval development	*Gastrointestinal nematodes of sheep, including strongyle larvae (Haemonchus spp, trichostrongylus spp, oesophagostomum spp, strongyloides spp, trichuris spp)*	Nigeria	(Ademola *et al.*, 2005)
			Aqueous and ethanolic extracts	*In vitro*: measures the reduction in the number of nematode eggs in the faeces of treated animals.	significant reduction in the number of nematode eggs in faeces, indicating potential anthelmintic efficacy	*Gastrointestinal nematodes of sheep, including strongyle larvae*	Nigeria	
Annonaceae	*Annona muricata* L.	Leaves	Phenol	*In vitro* : Egg Hatch Test (EHT): This test measures the efficacy of the extract in inhibiting the hatching of *H. contortus* eggs. Larval Motility Test (LMT): This test evaluates the effect of the extract on the motility of infective larvae of the parasite. Adult Worm Motility Test (AWMT): This test examines the impact of the extract on the motility of adult *H. contortus* worms.	EHT: At high doses, the extract demonstrated 84.91% efficacy in inhibiting egg hatching. LMT: The extract demonstrated 89.08% efficacy in inhibiting larval motility. AWMT: Adult worms were completely immobilized within 6-8 hours of exposure to different dilutions of the extract.	*Haemonchus contortus*	Brazil	(Ferreira *et al.*, 2013)

				In vitro : Adult T. spiralis worms were isolated from infected mice and transferred to three culture media: Group I: Drug-free medium (control). Group II: Medium containing *Graviola* extract. Group III: Medium containing albendazole (reference antiparasitic drug)	Adult worms cultured in media containing Graviola extract or albendazole showed massive destruction of their cuticle. A significant reduction in the number of adults and larvae of T. spiralis was observed in the treated groups compared to the untreated control group.	*Trichinella spiralis*	Egypt	El-Wakil *et al.,* 2022)
	Annona senegalensis Pers.	Whole plant	Raw extracts	*In vitro*: Parasite eggs were incubated with different concentrations of the extracts.	A significant reduction in egg hatchability at a concentration of 7.1 mg/ml. In addition, the use of the whole ground plant in faecal culture showed a significant reduction in larval recovery with increasing concentrations from 1 to 10% (w/w).	*Haemonchus contortus*	Nigeria	(Alawa *et al.,* 2003)
	Xylopia aethiopica (Dunal) A.Rich.	Seeds	Aqueous, ethanolic and methanolic extracts	*In vitro*: The extracts were tested at concentrations of 10, 20, 50 and 100 mg/ml. Anthelmintic activity was determined by measuring the paralysis time and death time of the worms after exposure to the extracts	paralysis in 2.91 ± 0.10 minutes and death in 8.86 ± 0.66 minutes. In comparison, albendazole caused paralysis in 32.00 ± 0.87 minutes and death in 38.87 ± 0.65 minutes.	*Eudrilus eugeniae*	Nigeria	(Ekeanyanwu *et al.,* 2012)

Cochlospermaceae	*Cochlospermum planchoni* Hook.f.	Leaves	Aqueous extract	*In vivo*: Tests included: Castor oil-induced diarrhea model: Administration of castor oil to induce diarrhea, followed by administration of the extract to assess the antidiarrheal effect. Charcoal transit test: Assessment of the effect of the extract on intestinal motility by measuring the distance travelled by a charcoal meal. Enteroaccumulation model: Measurement of intestinal fluid accumulation to assess the secretory effect of the extract.	Castor oil-induced diarrhea: The extract significantly prolonged the time to onset of diarrhea, reduced wet stool frequency, stool weight and water content in a dose-dependent manner. Charcoal transit: The extract reduced the distance traveled by charcoal, indicating decreased intestinal motility. Enteroaccumulation: The extract decreased intestinal fluid volume, suggesting an antisecretory effect.	*Wistar female rats*	Nigeria	(Yakubu *et al.,* 2020)
Bromeliaceae	*Ananas comosus (L.) Merr.*	Fruit	Aqueous extract	*In vitro*: Tests were performed on eggs and larvae of *Haemonchus contortus* to evaluate the effect of pineapple aqueous extract and bromelain on their viability. Median lethal concentrations (LC_{50}) were calculated to measure anthelmintic efficacy.	Pineapple aqueous extract and bromelain inhibited the development of eggs and larvae of *Haemonchus contortus* . The LC_{50} was 1.7 mg/mL for the aqueous extract and 0.019 mg/mL for bromelain, indicating a strong inhibitory effect.	*Haemonchus contortus*	Brazil	(Domingues *et al.,* 2013)
				In vivo: Santa Inês sheeps naturally infested with *Haemonchus contortus*	The treatment efficacy compared with the control group was 22.6% for pineapple aqueous extract,	*Haemonchus contortus*	Brazil	

				were treated with pineapple aqueous extract, bromelain and an industrial pineapple residue.	42.2% for the industrial residue, 3.65% for bromelain, and 89% for the reference anthelmintic. The results showed that although pineapple aqueous extract and bromelain had some anthelmintic effect, they were still less effective than conventional treatments.			
			Pineapple fruit peel juice	Semi-autonomous native Philippine chickens naturally co-infected with *A. galli* and H. *gallinarum*	a significant reduction in EPGs for A. galli and H. gallinarum compared to the placebo group	*Ascaridia galli* et *Heterakis gallinarum*	Philippines	(Cormanes *et al.,* 2016)
Caricaceae	*Carica papaya* L.	Seeds	Aqueous extract	*In vivo* : A total of 60 infected children were divided into two groups of 30. The treatment group received a single dose of 20 ml of aqueous suspension containing 4 g of dried papaya seeds, while the control group received 20 ml of pure honey. Stool samples were analyzed before treatment and 7 days after to assess the presence of parasite eggs or cysts.	Seven days after treatment, the results showed: A complete parasite clearance in 23 of 30 children (76.7%) in the treated group. A significant reduction in the mean number of eggs/cysts per gram of stool in the remaining children in the treated group.	*Ascaris lumbricoides, Trichuris trichiura, Ancylostoma spp., Strongyloides stercoralis, Entamoeba histolytica, Giardia intestinalis*	Nigeria	(Okeniyi *et al.,* 2005)
		Latex	Latex in raw form	*In vivo* ; Five groups of mice were infected with 100 infective H. polygyrus larvae per mouse. After establishment of infection (day 22), four	Papaya latex showed antiparasitic efficacy of 55.5%, 60.3%, 67.9% and 84.5% for doses of 2, 4, 6 and 8 g/kg, respectively	*Heligmosomoides polygyrus*	Danemark	(Satrija *et al.,* 1995)

				groups received doses of papaya latex suspended in water at levels of 2, 4, 6, and 8 g/kg body weight. One group served as an untreated control. All mice were necropsied on day 25 for postmortem worm counts.				
Combretaceae	*Combretum micranthum* G.Don	Leaves	Aqueous extracts and hydroacetone	in vitro: The tests evaluated the inhibition of egg hatching and larval development of *H. contortus* in the presence of leaf extracts	Inhibition of egg hatching: Both aqueous and hydroacetone extracts inhibited egg hatching of H. contortus, with 50% inhibitory concentration (IC_{50}) values of 2.994 mg/ml and 2.189 mg/ml, respectively. Inhibition of larval development: The IC_{50} for inhibition of larval development were 2.761 mg/ml for the aqueous extract and 1.970 mg/ml for the hydroacetone extract.	*Haemonchus contortus*	Burkina Faso	(Fidèle *et al.*, 2024)
Fabaceae	*Cassia sieberiana* D.C.	Root bark	Ethyl acetate, butanol and water	*In vitro*: Anthelmintic activity was assessed using the larval migration inhibition (LMI) assay. Third-stage larvae (L3) of *H. contortus* were exposed to the different extracts and fractions	Cassia sieberiana root bark extracts demonstrated significant in vitro anthelmintic activity against *Haemonchus contortus*, with efficacy varying depending on the type of extract.	*Haemonchus contortus*	Benin	(Kpabi *et al.*, “2022)
		Leaves	Aqueous extract	*In vivo*: The acute toxicity of the extracts was evaluated in mice	Aqueous extracts of the studied plants demonstrated		Burkina Faso	(Traore *et al.*, 2014)

				by two routes of administration	in vitro anthelmintic activity against *Haemonchus contortus*			
				In vitro : Anthelmintic activity was evaluated by exposing adult *H. contortus* worms to different concentrations (0.1, 1, 3, 10 and 15 mg/mL) of the extracts for 24 hours. The results showed that all extracts induced death of the worms after 24 hours of contact.	Aqueous extracts of the studied plants demonstrated in vitro anthelmintic activity against *Haemonchus contortus*			
	Daniellia oliveri (Rolfe) Hutch. & Dalziel	stem bark	Hexane extract	*In vitro*: *O. ochengi* adults: Adult worms were incubated with the extracts at different concentrations. *O. ochengi* microfilariae: Microfilariae were cultured on a layer of monkey kidney cells (LLC-MK2) B. pahangi adults: Motility of adult worms was measured using the Worminator system after treatment with the extracts.	Chromatographic fractions from the extracts demonstrated activity against adults of B. pahangi, confirming the presence of bioactive principles.	*Onchocerca ochengi, Brugia pahangi*	Cameroon	(Abongwa *et al.*, 2021)
			Aqueous extract	*In vitro*: Egg hatching test: The extracts reduced the hatching rate of *H. contortus* eggs. Embryonated L1 larvae test: The extracts inhibited or killed L1 larvae.	The extracts showed anthelmintic activity *in vitro*, with greater efficacy for *Daniellia oliveri*		Burkina Faso	(Belem, 2009)

				Adult worm test: The extracts affected the viability of adult worms.				
				In vivo: Naturally infested Mossi sheeps were given traditional doses of the extracts. No significant reduction in the number of eggs excreted was observed.	*In vivo* tests have not confirmed these results, suggesting that traditional doses are insufficient for clinical efficacy			
	Tamarindus indica L.	Bark / leaves	Aqueous extract Ethanol	*In vitro*: *Pheretima posthuma* and *Tubifex tubifex* worms were exposed to different concentrations (5, 10 and 15 mg/ml) of the leaf and bark extracts. The parameters measured were Paralysis time, Death time. Comparison: The results obtained with the extracts were compared with those of piperazine citrate (10 mg/ml), a standard anthelmintic agent.	Alcoholic and aqueous bark extracts showed significant anthelmintic activity, reducing paralysis time and death time of worms.	*Pheretima posthuma* and *Tubifex tubifex*.	India	(Das *et al.*, 2011)
		Seeds	Aqueous extract	*In vitro*: Ascaris suum worms were exposed to different concentrations (40% and 80%) of tamarind seed extract for 36 hours. Mortality rates were observed at 12, 24 and 36 hours.	T2 (80% extract): Achieved 100% worm mortality within 12 hours of exposure. T1 (40% extract): Achieved 90% mortality at 24 hours. T+ (albendazole): Also showed high mortality, comparable to T2	*Ascaris suum*	Philippines	(Nicolas and Acero, 2019)

				T-: Held in Goodwin's solution without treatment. T+: Exposed to Goodwin's solution and albendazole (a standard anthelmintic). T1: Exposed to Goodwin's solution and 40% tamarind seed extract. T2: Exposed to Goodwin's solution and 80% tamarind seed extract.				
	Parkia biglobosa (Jacq.) R.Br. ex Benth.	Leaves and Seeds	Aqueous extracts Methanolic extracts	*In vitro*: Adult worms: Ten adult *H. contortus* worms were exposed to concentrations of 2, 4, 8, 16, and 32 mg/mL of plant extracts and albendazole (reference drug) in separate Petri dishes. Phosphate-buffered saline (PBS) was used as a negative control. Infective larvae (L3): Twenty L3 larvae were placed in 96-well plates and mixed with the same concentrations of extracts as for the adult worms.	Adult worms: All concentrations of plant extracts and albendazole at 32 mg/mL resulted in the death of all adult worms after 12 hours of exposure. No worms died in PBS up to 12 hours after exposure. L3 larvae: *P. biglobosa* leaf and seed extracts showed less anthelmintic activity compared to albendazole. At a concentration of 32 mg/mL, albendazole killed approximately 88.5% of L3 larvae after 12 hours, while less than 40% of larvae died with plant extracts at the same concentration. All larvae survived in PBS up to 12 hours after exposure.	*Haemonchus contortus*	Nigeria	(Josiah J*et al.*, 2018)
		Seeds	Powders	*In vivo*: Fifteen Djallonké sheeps aged 4 to 5 months were	Reduction in the number of adult worms: Both plants significantly reduced the number of adult worms	*Haemonchus contortus*	Congo	(Cakupewa *et al.*, 2022)

				divided into three experimental groups:	compared to the control group. Reduction in the number of eggs per female			
	Senna siamea (Lam.) H.S.Irwin & Barneby	Leaves	Aqueous extract	*In vitro*: Anthelmintic activity was assessed using the *Haemonchus contortus* infective larval (L3) migration inhibition assay. Larvae were exposed to increasing concentrations (25, 50, 100, and 200 mg/ml) of *Senna* spp. extracts. Larval migration was measured through a 20 µm pore diameter nylon filter.	The results showed that all Cassia extracts significantly inhibited *Haemonchus contortus* larval migration in a concentration-dependent manner ($p < 0.05$). The negative control exhibited the lowest inhibition, while extracts at higher concentrations showed greater inhibition.	*Haemonchus contortus*	Indonesia	(Wahyuni *et al.*, 2019)
		Leaves	Aqueous extracts Methanolic extracts	*In vitro*: The anthelmintic efficacy of the extracts was evaluated using the *C. elegans* infective larval (L3) migration inhibited assay. The larvae were exposed to increasing concentrations (25, 50, 100, and 200 mg/ml) of the extracts for 24 and 48 hours. Larval migration was measured through a 20 µm pore diameter nylon filter.	The results showed that both extracts (aqueous and methanolic) exhibited significant anthelmintic activity at all concentrations tested	*Caenorhabditis elegans*	Nigeria	(Gagman *et al.*, 2020)
Meliaceae	*Khaya senegalensis*	Bark	Aqueous and ethanolic	*In vitro*: A larval development test was	The results showed that the presence of the extracts	*Gastrointestinal strongyle larvae*	Nigeria	(Ademola *et al.*, 2004)

	(Desr.) A.Juss.			conducted to evaluate the effect of the extracts on strongyle larvae.	decreased larval viability in a concentration-dependent manner.			
			Aqueous and ethanolic	*In vivo*: Sheep naturally infected with gastrointestinal nematodes were orally administered the extracts at doses of 125, 250, and 500 mg/kg.	Treatment with 500 mg/kg of ethanolic extract resulted in an average 88.82% reduction in faecal egg counts.			
Myrtaceae	*Psidium guajava* L.	Leaves	Methanolic extract Aqueous extract Chloroformic extract	*In vitro*: The extracts were directly applied to specimens of *Pheretima posthuma* in the laboratory to observe their paralyzing and lethal effect	The extracts exhibited anthelmintic activity, but with variations depending on the type of extract and concentration: The methanolic extract demonstrated the most potent effect, causing paralysis and death of the worms more quickly than the other extracts. The aqueous extract also demonstrated significant activity, but less pronounced than the methanolic extract. The chloroform extract exhibited the weakest activity of the three.	*Pheretima posthuma*	India	(Pradhan D*et al.,* 2021)
			Methanolic extract Aqueous extract Ethyl acetate extract	*In vitro*: Anticoccidial activity was evaluated using oocyst sporulation inhibition and antisporozoidal activity assays. The extracts were applied to oocysts and sporozoites of Eimeria species to observe their inhibitory effect.	Anticoccidial activity: The methanolic extract at a concentration of 30 mg/ml demonstrated a maximum efficacy of 88.67 ± 2.52% against *E. intestinalis* after 24 hours. The extracts, including the aqueous extract, also demonstrated good antisporozoidal activity against sporozoites of the	*Eimeria flavescens, Eimeria stiedae, Eimeria intestinalis, Eimeria magna*	Saudi Arabia	(Mohammed *et al.,* 2021)

					four *Eimeria* species at a concentration of 1000 µg/ml, with a maximum inhibition of 97.00 ± 1.73% observed with the methanolic extract against *E. intestinalis*. Antioxidant Activity: The methanolic and ethyl acetate extracts demonstrated strong antioxidant activities, with IC50 values below 20 µg/ml, suggesting significant antioxidant capacity.			
Rubiaceae	*Pavetta owariensis* P.Beauv.	Stem bark	Ethanolic and acetone extracts	*In vivo*: Mice were infected with *Schistosoma mansoni* and treated with plant extracts. Parameters assessed included spleen weight, the number of adult worms and eggs, and the size of hepatic granulomas.	All *Pavetta owariensis* extracts containing proanthocyanins reduced the size of periovular granulomas in the liver.	*Schistosoma mansoni*	Guinea	(Balde *et al.*, 1989)
Rutaceae	*Citrus medica* L.	Seeds	-	No details of specific test protocols	The results of the study showed that 88.65% of the surveyed grasscutter farmers traditionally use lemon seeds to treat parasitic diseases.	*Thryonomys swinderianus*	Benin	(Sacramento *et al.*, 2022)

In summary, the literature reviewed reveals a total of 38 species of anthelmintic plants in other African countries and other parts of world. These plants are very diverse and belong to 25 botanical families (Figure 2). The most used part of the plant is the leaf, which accounts for 56% of declared use. This is followed by stem bark (34%), fruit (5%), bulbs and seeds (around 2% each).

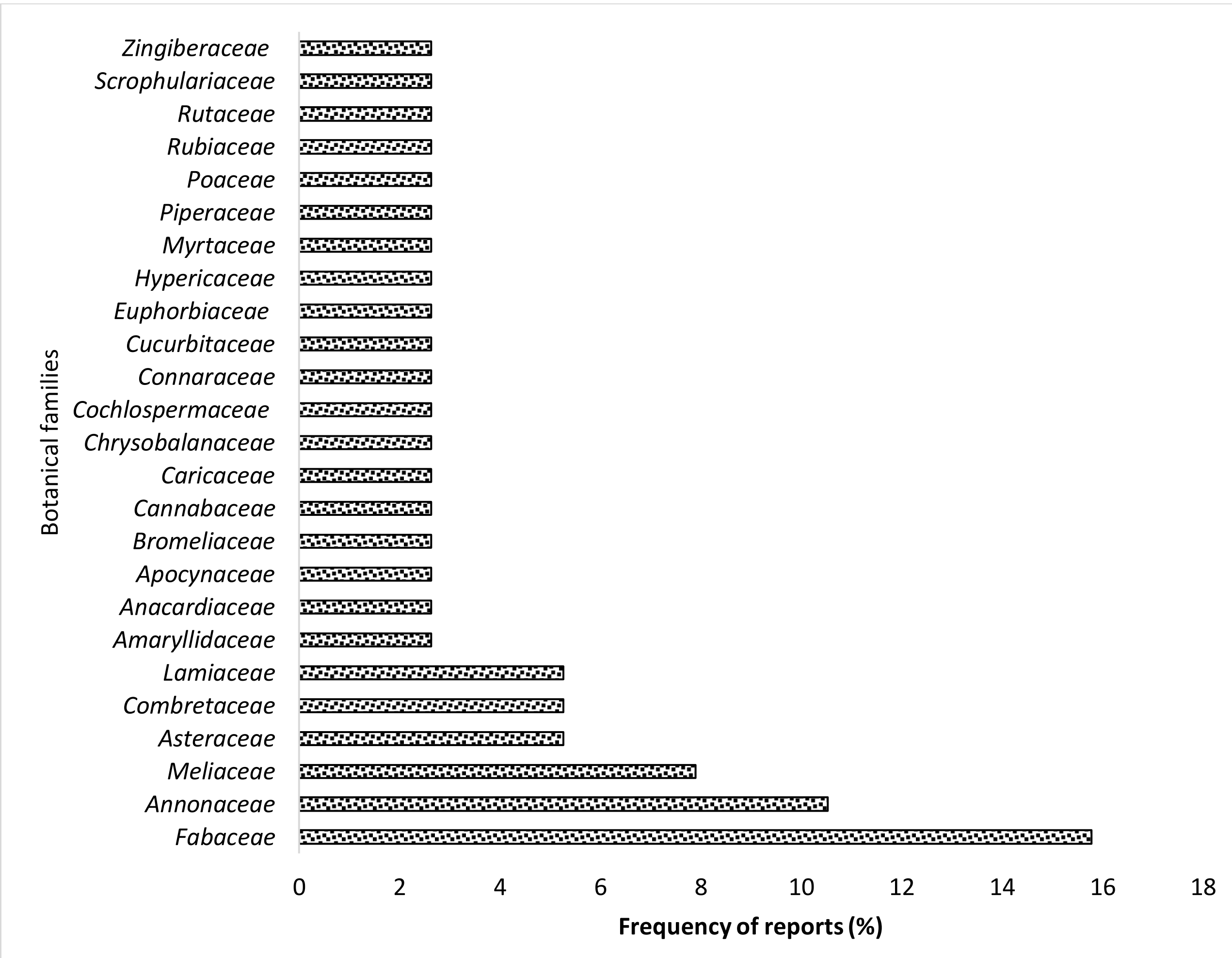

Figure 2: Botanical families of anthelminthic species identified along with their reported frequencies in reviewed document.

Pharmacological studies conducted *in vitro* and *in vivo* on different extracts of plants identified in other African countries are summarised in Additional file 2. Ethanolic, methanolic, or aqueous extracts of *Spondias mombin* leaves have shown significant effects on the larvae of gastrointestinal nematodes in sheep (Additional file 2). These nematodes include species such as *Haemonchus* spp., *Trichostrongylus* spp., *Oesophagostomum* spp., *Strongyloides* spp., and *Trichuris* spp. (Ademola *et al.,* 2005; Akouedegni *et al.,* 2019). Similar effects have been observed with other extracts, notably the aqueous extract of *Allium cepa* on *Cryptosporidium spp.*, and the extracts of *Annona muricata* and *Annona senegalensis* on *Haemonchus* spp. (Additional file 2). In Guinea Conakry, several factors contribute to the lack of research on these antiparasitic plants, including insufficient funding, the absence of adequate infrastructure for conducting rigorous studies on local medicinal plants, gaps in the training of Guinean researchers, and limited international cooperation. Additionally, a lack of collaboration between traditional communities and researchers fosters mutual mistrust between traditional practitioners and scientists.

To date, the lack of scientific research on antiparasitic plants in Guinea-Conakry has had several significant consequences, particularly:

(i) underutilization of local resources, as potentially effective medicinal plants against helminths remain largely unexplored or are used non-standardly. This limits public access to potentially more affordable alternative treatments;

(ii) public health risks, since without scientific validation, the use of medicinal plants could present risks in terms of dosage, toxicity, or interactions with other medicines. Furthermore, the absence of evidence-based data hinders the integration of these treatments into public health systems;

(iii) Biodiversity erosion, as the lack of research may lead to unsustainable exploitation of local plant resources. Certain plants risk being overharvested without proper management, threatening local biodiversity; (iv) Integrated research strategies, highlighting the need for a cohesive strategy involving academic researchers, traditional practitioners, health authorities, and local communities. This strategy should include systematic documentation of traditional knowledge, rigorous pharmacological and clinical studies to isolate active plant compounds, and assessment of their safety and efficacy through preclinical and clinical trials. Additionally, it would involve local capacity-building efforts to train Guinean researchers and practitioners in ethnobotany and pharmacology, thereby strengthening internal research capabilities and fostering the development of local health solutions.

6 CONCLUSION

This study highlights the importance of traditional medicinal plants in the management of helminths in Guinea. Despite their widespread use, the lack of in-depth research and scientific validation limits their potential as alternative or complementary treatments to conventional drugs. Contributing factors include insufficient funding, inadequate infrastructure, and limited collaboration between researchers and traditional practitioners. Therefore, it is crucial to adopt an integrated research strategy involving traditional communities, local researchers, health authorities, and international partners. Finally, increased support for training researchers and practitioners in ethnobotany and pharmacology is essential to strengthen local capacities and promote healthcare solutions adapted to Guinea's realities.

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