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乌干达传统兽医植物药的综述：其植物化学、生物活性与毒性

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文章信息

关键词：民族兽医学 畜牧病害 游牧民 土著传统知识

摘要

民族药理学相关性：在乌干达，民间兽医药的使用仍然是传统医学的重要方面。许多乡村农民过去以及现在都依赖它来管理他们的牲畜。本综述全面概述了1999年至2024年间乌干达的民间兽医药研究。

研究目的：本研究的目的是概述乌干达的民族兽医药，包括使用的不同实践和药用植物种类、它们的生物活性、植物化学成分以及安全性/毒性。

材料与方法：使用可用的数据库进行了文献检索，包括ScienceDirect、PubMed、Scopus和Google Scholar。还检索了论文、学位论文、书籍和技术报告。检索重点包括疾病/民族兽医学用途及被治疗的动物、使用植物的制备方法、所用植物部位、植物在所述传统用途中的生物活性、其植物化学成分及毒性。

结果：在乌干达，尤其是在牧民社区，民族兽医学的实践非常普遍和常见。我们记录了来自71科的245种植物，用于对抗多种动物疾病和病症。使用的植物大多数来自豆科（38种）、菊科（16种）和大戟科（13种）。大多数植物是草本植物（48%），其次是灌木（26%）和树木（25.4%）。在民族兽医学中最常用的植物部位是叶（34.2%）、根（21.0%）和树皮（14.1%）。其中，有171种（68.9%）在以往的体外研究中已有报道支持一种或多种上述传统用途。大多数植物（207种，84.5%）已有一些关于其化学成分的信息，而只有104种（41.9%）在以往研究中有关于其安全性或毒性的报道。

结论：乌干达在传统兽医药中用于治疗各种动物疾病的药用植物种类繁多。然而，大多数使用的植物种类尚未经过科学评估其疗效、生物活性和毒性。我们建议对乌干达传统兽医药中使用的药用植物种类和实践进行系统研究。

1. 介绍

民族兽医药（EVM）在低收入国家的人群中是一种流行的实践，结合了用于管理动物疾病的传统信仰、知识、技能和实践（Caudell 等，2017）。世界各地的社区使用各种民族兽医药(EVM)来预防、诊断和治疗影响其牲畜和伴侣动物的疾病（Kohler-Rollefson 等，2008）。这些实践提供了关于人类、动物与环境之间相互作用的特别见解（Batool 等，2025）。民族兽医药已经

缩写：ECF，东海岸热；NCD，新城病；FMD，口蹄疫；CNS，中枢神经系统；GLA，伽马亚麻酸；THC，四氢大麻酚；CBD，大麻二酚；AST，天冬氨酸氨基转移酶；ALT，丙氨酸氨基转移酶。本文为《民族药理学杂志》刊登的专题文章《ISE-APSS 2024大会》的一部分。* 通讯作者：乌干达坎帕拉，梅克雷雷大学植物科学、微生物学与生物技术系，邮政信箱7062，电子邮箱：godwinanywar@gmail.com (G. Anywar)。

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A review of ethnoveterinary botanical medicines used in Uganda: Their phytochemistry, bioactivity and toxicity

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ABSTRACT

Ethnopharmacological relevance: The use of ethnoveterinary medicine remains a prominent aspect traditional medicine in Uganda. Many rural farmers have and still depend on it for managing their livestock. This review gives a comprehensive over view of ethnoveterinary research in Uganda over a period of quarter a century from 1999 to 2024.
Aim of the study: The aim of this study is to give an over view of the ethnoveterinary medicine in Uganda, entailing the different practices and medicinal plant species used, their bioactivity, phytochemistry and safety/toxicity.
Materials and methods: A literature search was conducted using available databases including ScienceDirect, PubMed, Scopus and Google Scholar. Dissertations, theses, books and technical reports were also searched. The search focused on diseases/ethnoveterinary uses and the animals treated, the method of preparation using the plants, the plant parts used, the bioactivity of the plants in relation to the mentioned traditional uses, their phytochemical composition and toxicity.
Results: The practice of ethnoveterinary medicine is widespread and commonplace in Uganda, especially among the pastoral communities. We recorded the use of 245 plant species from 71 families used against several animal diseases and conditions. Most of the plant species used were from the Fabaceae (38), Asteraceae (16) and Euphorbiaceaae (13) families. Most of the plant species were herbs (48 %), followed by shrubs (26 %) and trees (25.4 %) and the most commonly used plant parts used in ethnoveterinary medicine were the leaves (34.2 %), roots (21.0 %) and bark (14.1 %) Of these, 171 (68.9 %) had previous reports supporting one or more of the mentioned traditional uses in different studies *in vitro*. Most of the plant species (207, 84.5 %) had some information on their phytochemical composition known while only 104 (41.9 %), had some information on their safety or toxicity reported in previous studies.
Conclusions: Uganda has a rich repertoire of medicinal plant species used in ethnoveterinary medicine to treat a variety of animal diseases. Most of the plant species used have however not been scientifically evaluated for their efficacy, bioactivity and toxicity. We recommend a systematic study of the medicinal plants species and practices used in ethnoveterinary medicine in Uganda.

1. Introduction

Ethnoveterinary medicine (EVM) is a popular practice among people in low-income nations, incorporating traditional beliefs, knowledge, skills, and practices for managing animal disease (Caudell et al., 2017). Communities throughout the world use a wide range of EVM to prevent, diagnose, and treat illnesses that affect their livestock and companion animals (Köhler-Rollefson et al., 2008). These practices provide special insights into the interactions that exist between people, animals, and the environment (Batool et al., 2025). Ethnoveterinary medicine has been

Abbreviations: ECF, East Coast Fever; NCD, Nwecastle disease; FMD, Foot and Mouth Disease; CNS, Central Nervous System; GLA, Gamma-linolenic acid; THC, Tetrahydrocannabinol; CBD, Cannabidiol; AST, Aspartate Amino Transferase; ALT, Alanine Amino Transferase.
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对于跨越国界和文明的许多动物物种的健康和福祉至关重要。例如，东非的马赛人长期依赖像Vachellia tortilis（Forssk.）这样的植物的治疗特性来治疗他们的牛的疾病，包括肺炎和腹泻（K¨ohler-Rollefson等，2008）。

尽管具有历史和文化价值，民族兽医学仍然具有相关性，因为它为当前动物医疗问题提供了可行的解决方案。随着对民族兽医技术有效性研究的兴趣增加，并尝试将其纳入主流兽医护理中，这是由于传统兽医疗法面临成本、可及性和抗微生物药物抗性等障碍（Mathias, 2004）。然而，尽管可能带来益处，民族兽医学常常被忽视或忽略，而偏向传统生物医学治疗。这种忽视不仅危及依赖传统兽医知识的社区和生态系统的韧性，同时也忽略了数百年来积累的智慧（McCorkle and Mathias-Mundy, 1992）。

世界各地的许多家庭依赖其家畜获取食物、衣物、劳动力、肥料和金钱。动物也作为财富储存和交易媒介，为全球数百万人提供服务（Raikwar 和 Maurya，2015）。在撒哈拉以南非洲，畜牧业显著推动了各国的国民经济（Eiki 等，2021）。在乌干达，养殖业在2009年占该国国内生产总值的7.5%，使其成为主要经济活动（Grad´e 等，2009）。畜牧业可能帮助减贫的最明显方式是为贫困者提供生计手段（Ahuja 和 Redmond，2004；Perry 和 Grace，2009）。尽管作为国内生产总值的重要贡献者，畜牧业仍面临许多限制其发展的挑战（Eiki 等，2021）。一些常见的挑战包括多种降低农场生产力的动物疾病、缺乏市场准入以及缺乏适当的医疗条件。

畜牧业面临的挑战并不限于单一国家。在乌干达，公共兽医部门面临严重的资源短缺，包括缺乏受过充分培训的助理专业人员和不足的兽医服务（Nabatanzi 等，2025）。这些差距对动物健康构成了严重风险。然而，助理专业人员在协助有限公共兽医服务的小规模农户方面发挥着关键作用（Arvidsson 等，2022）。研究表明，近90%的药品零售商和兽医从业人员缺乏兽医学专业培训，这增加了抗生素误用的风险，并促成了抗菌素耐药性（AMR）（Dione 等，2021）。民族兽医药中也广泛使用药用植物。然而，几乎所有植物都来自野外采集（Grad´e 等，2009），使农民完全依赖自然。乌干达的农民还面临气候的威胁

因此，本研究的目的是通过回答有关乌干达使用哪些民族兽医实践和药用植物物种，以及关于它们的生物活性、植物化学成分和安全性/毒性的知识的问题，来审查乌干达民族兽医药的现状。

2. 材料与方法

信息是从科学数据库中检索的，如 Web of Science、Science Direct、Google Scholar、Scopus、PubMed 和 Chemical Abstracts Services。书籍、学位论文、论文以及技术报告来自马凯雷雷大学图书馆。用于搜索引擎的关键词为“Uganda”或“Ugandan”，与……结合使用。在过去25年（从1999年到2024年）中，“民族兽医学”、“牲畜”、“传统动物医学”和“民族兽医药学”。虽然一些被引用的论文使用了某些植物种类的同义词，但我们仅使用这些植物种类的公认名称。

所选研究文章的纳入标准如下：(i) 关注乌干达民族兽医植物药的研究；(ii) 发表在同行评审期刊上的研究论文；(iii) 具有已识别的植物化学成分和生物活性研究的文章；(iv) 关于毒性和安全性评估的报告；(v) 以英语发表的论文。排除的研究包括涉及人类民族医药的研究、未进行植物学鉴定的文章、缺乏科学验证或植物化学分析的论文以及非同行评审的来源（如报纸文章、博客）。

为了被纳入评审，出版物应包括特定兽医用途或适应症的详细信息，例如用于控制蜱虫或驱除动物肠道寄生虫的植物。植物种的学名应被包含，同时制备和给药的方法最好也被记录。动物或“家畜种类”被分为牛、山羊、绵羊、马、狗、家禽和驴。

搜索分为两个阶段：第一阶段涉及识别报告在乌干达民族兽医药中使用植物的研究文章。共确定了来自9项研究的245种植物。这可能是因为在乌干达专门针对民族兽医药的研究很少。第二阶段，我们系统地查找了关于各个植物物种的文献，以获取其植物化学、活性和毒性的信息。只有报告与疾病或传统用途直接相关的生物活性研究论文才被纳入研究。例如，如果某种植物物种传统上用于治疗新城疫（这是一种病毒性疾病），我们会特别搜索关于该植物对新城病毒的抗病毒特性的科学研究；如果该植物传统上用于治疗寄生虫感染或伤口

3. 乌干达的民族兽医药物使用

我们记录了乌干达用于民族兽医药的245种植物（表1）。其中，有170种（69.48%）在文献中有相关信息支持在不同研究中提到的一种或多种传统用途，尤其是在体外研究中。验证传统民族兽医用途的体内研究不足，这削弱了其疗效的主张。大多数植物（202种，占82.4%）的化学成分已有一定了解，尽管在大多数情况下，负责特定作用的具体化学成分尚不清楚。尽管本综述中记录的一些植物如普通百里香并非乌干达本土，但它们已被引入该国并进入本地药材使用。关于所用植物的安全性或毒性的信息最少。所有记录的植物中，只有104种（40.9%）在以前的研究中报告了其安全性或毒性相关信息。

essential to preserving the health and welfare of many animal species across borders and civilizations. For instance, the Maasai people of East Africa have long relied on the therapeutic qualities of plants like *Vachellia tortilis* (Forssk.) to treat illnesses in their cattle, including pneumonia and diarrhoea (Köhler-Rollefson et al., 2008).

Despite its historical and cultural value, ethnoveterinary medicine is relevant because it presents viable answers to current problems in animal healthcare. There is increased interest in investigating the effectiveness of ethnoveterinary techniques and incorporating them into mainstream veterinary care as traditional veterinary therapies encounter obstacles such cost, accessibility, and antimicrobial resistance (Mathias, 2004). However, ethnoveterinary medicine is frequently disregarded or ignored in favour of traditional biomedical treatments, despite its potential benefits. This neglect jeopardizes the resilience of communities and ecosystems that depend on traditional veterinary knowledge, in addition to ignoring centuries' worth of accumulated wisdom (McCorkle and Mathias-Mundy, 1992).

Many households around the world depend on their livestock for food, clothing, labour, fertilizer, and money. Animals also serve as a store of wealth and a medium of trade for millions of people around the world (Raikwar and Maurya, 2015). In sub-Saharan Africa, the livestock industry significantly contributes the national economies of various countries (Eiki et al., 2021). In Uganda, rearing livestock accounted for 7.5 % of the country's GDP in 2009, making it a major economic activity (Gradé et al., 2009). The most evident way that livestock might help reduce poverty is by serving as a means of subsistence for the impoverished (Ahuja and Redmond, 2004; Perry and Grace, 2009). Despite its significance as a mjor contributor to GDP, the livestock industry is plagued by many challenges which limit its development (Eiki et al., 2021). Some of the common challenges include several animal illnesses that lower farm productivity, lack of acces to markets and proper medication.

The livestock industry's challenges are not confined to a single country. In Uganda, the public veterinary sector struggles with significant resource shortages, including a lack of adequately trained paraprofessionals and insufficient veterinary services (Nabatanzi et al., 2025). These gaps pose serious risks to animal health. However, paraprofessionals play a crucial role in assisting small-scale farmers who have limited access to public veterinary services (Arvidsson et al., 2022). Research indicates that nearly 90 % of drug retailers and veterinary practitioners lack specialized training in veterinary medicine, which heightens the risk of antibiotic misuse and contributes to antimicrobial resistance (AMR) (Dione et al., 2021). There is also wide spread use of medicinal plants in ethnoveterinary medicine. However, almost all plants are collected from the wild (Gradé et al., 2009), leaving the farmers to the mercies of nature. Farmers in Uganda are also threatened by climate change but have been found to maintain resilience such challenges through local interconnections and agroecology (Le Goff et al., 2022). Challenges of implementing sustainable organic practices in the Ugandan livestock sector threaten its future development. Some of the most pressing challenges include vectors and vector-borne diseases, and limited education, research, and support to organic livestock production (Nalubwama et al., 2011).

The aim of this study was therefore to examine the current state of ethnoveterinary medicine in Uganda, by answering questions about which ethnoveterinary practices and medicinal plant species used in Uganda, what is known about their bioactivity, phytochemistry and safety/toxicity.

2. Materials and methods

Information was retrieved from scientific databases such as Web of Science, ScienceDirect, Google Scholar, Scopus, PubMed and Chemical Abstracts Services. Books, dissertations, theses and technical reports contained from the Makerere University library. Keywords used for the search engines were "Uganda" or "Ugandan" in conjunction with "ethnoveterinary", "livestock", "traditional animal medicine" and "ethnoveterinary medicine", over the last 25 years from from 1999 to 2024. Whereas some of the papers er cited used synonyms of some of the plant species, we have used only the accepted names of the plant species.

The inclusion criteria for the research articles selected were: (i) studies focusing on ethnoveterinary botanical medicines in Uganda, (ii) research papers published in peer-reviewed journals (iii) articles with identified phytochemicals and bioactivity studies, (iv) reports on toxicity and safety assessments (v) papers published in English. Studies on human ethnomedicine, articles without botanical authentication, papers lacking scientific validation or phytochemical analysis and non-peer-reviewed sources (e.g., newspaper articles, blogs) were excluded.

To be included in the review, a publication was expected to include details of a specific veterinary use or indication, for example, a plant used for tick control or to expel intestinal parasites in animals. The scientific name of the plant species should have been included as well as the method of preparation and administration should preferably have been recorded. The animal species or "livestock species" was grouped into cattle, goats, sheep, horses, dogs, poultry and donkeys.

The search was done in two phases: The first phase involved identifying research articles reporting the used of plants in ethnoveterimnary medicine in Uganda. A total of 245 plant species from 9 studies were identified. This could be due to the fact that only a few studies specifically focusing on ethnoveterinary medicine have been done in Uganda. In the second phase, we systematically searched the literature on the individual plant species for information on their phytochemistry, bioactivity and toxicity. Only research papers that reported bioactivity that was directly relevant to the disease or traditional use were included in the study. For instance, if a plant species was traditionally used for treating Newcastle disease which is a viral disease, we specifically searched for any supporting scientific studies on the antiviral properties of this same plant against Newcastle virus, and if the plant was specifically traditionally used for treating parasitic infestations or wounds, we looked supporting literature on the bioactivity of the said plant species against helmiths or bacteria, and so on. However, the information of the phytochemistry and toxicity of the plant species was recorded irrespective of any bioactivity. The scientific names of the plant species in the study were re-checked and named according to the kew data base http://powo.science.kew.org and the plant familes were verified using the Angiosperm phylogeny group IV https://www.gbif.org/dataset/fa8ab13c-52ed-4754-b838-aeff74c79718.

3. Ethnoveterinary medicine use in Uganda

We recorded 245 plant species as being used in ethnoveterinary medicine in Uganda (Table 1). Of these, 170 (69.48 %) had some information reported in the literature supporting one or more of the mentioned traditional uses in different studies, especially *in vitro*. The shortage of *in vivo* studies to validate traditional ethnoveteriary uses undermines claims of efficacy. Most of the plant species (202, 82.4 %) had some information on their phytochemical composition known, eventhough in most cases, the specific phytocgemicals responsible for specific activity were not know. Even though some of the plant species recorded in this review are not native to ganda, such as *Thymus vulgaris*, they have been introduced into the country and have found their way into the local materia medica. The least available information was on the safety or toxicity of the used plant species. Only 104 (40.9 %), of all the plant species recorded had some information on their safety or toxicity reported in previous studies. However, even this information was scanty and incomplete, therefore not very useful. The information was either available on the crude extracts of the plant species, and seldom on any specific compound(s) from the plant species. Much of the literature on the toxicity also does not specify the exact toxic doses or ranges while other studies do not even report the animal models used. In other instances, reports on toxicity are based on observations in both animals and humans. This makes it difficult to give an objective and

Toxicity
Methanolic extract was highly toxic to mice (>2000 mg/kg). Leaf ethanolic extract not toxic in rats at 5000 mg/kg.

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etin, 3-ol noids							
							Leaf extracts are non-toxic in ICR mice in acute and long-term toxicity studies up to 18.4 g/kg bw (Zhang et al., 2014)
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, s (							Non cytotoxic at 100 μg/ml (Mutuku et al., 2020)
ins (							
rissic acid, sfaw							Low toxicity inon mice and rats (Smyth and Sheridan, 2022).
nolic Sawi e.g., al.,							
and 4).							

(*continued on next page*)

Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
10. *Lannea humilis* (Oliv.) Engl.	Calf diarrhoea, switches in cattle, sheep, goats, carmels (Gradé et al., 2009)	Water extract applied orally (Gradé et al., 2009)	T	B, L	Antimicrobial against *K. pneumoniae*, *E. coli*, *S. pyogenes*, *S. aureus*, *Bacillus subtilis*, *Proteus mirabilis*, andSalmonella typh (Achika et al., 2020)	Phenolics, flavonoids e.g., quercetin, catechin, and epicatechin flavan-3-ol derivatives, tannins and triterpenoids (Malú et al., 2024)	
11. *Mangifera indica* L.	Newcastele disease	Decoction (Bukenya-Ziraba and Kamoga, 2007)	T	B	Antiviral effects against symptoms of Newcastle disease (Boakye et al., 2024)	Protocatechic acid, catechin, mangiferin, alanine, glycine, γ–aminobutyric acid (Scartezzini and Speroni, 2000), triterpenoid and flavonoids (Scartezzini and Speroni, 2000; Singh et al., 2015)	Leaf extracts are non-toxic in ICR mice in acute and long-term toxicity studies up to 18.4 g/kg bw (Zhang et al., 2014)
12. *Ozoroa insignis* Delile	Diarrhoea, painful red yes	Water extract	T	B, R	Antibacterial, antifungal, anti-inflammatory (Dube et al., 2021).	Flavonoids, tannins, saponins, terpenoids, and phenolsic.	
13. *Searsia natalensis* (Bernh. ex C.Krauss) F.A. Barkley	Retained placenta	Fresh fruits and leaves crushed with water, for drenching (Nabukenya et al., 2014).	H	L, Fr			
14. *Searsia pyroides* (Burch.) Moffett	Diarrhoea, fever, lumpy skin disease	Water extract/fodder	T	R	Anti-bacterial (Mutuku et al., 2020).	Glycosides, alkaloids, flavonoids, terpenoids, tannins, and saponins (Mutuku et al., 2020).	Non cytotoxic at 100 μg/ml (Mutuku et al., 2020)
Annonaceae							
15. *Annona muricata* L.	Bacterial infections in chicken (Zirintunda et al., 2024)	Crushing	T	L and F	Antimicrobial, anti-inflammatory, anti-protozoan (Coria-Téllez et al., 2018)	Alkaloids, phenols and acetogenins (Coria-Téllez et al., 2018)	
Apocynaceae							
16. *Carissa spinarum* L	Anaplasmosis, contagious bovine/ pleuropneumonia, chicken pox, diarrhoea, East Coast fever (ECF), general body pains, heartwater, lumpy skin disease, rinderpest, skin disease with intestinal adhesions in cattle, poultry, goats and sheep (Gradé et al., 2009; Tabuti et al., 2003a).	Water extract which is orally applied/infusion with *Zanthoxylum chalybeum* roots, (Gradé et al., 2009), (1) Mix in warm banana beer and give calf. (2) Infusion prepared after adding *Vachellia seyal* roots (Tabuti et al., 2003a).	Sh	R	Anti-inflammatory, analgesic, antipyretic, antibacterial, antimalarial, antihelminthic, anticancer, antioxidant, wound healing (Sharma et al., 2023).	Carissone, carindone, carinol, carissic acid, lupeol, β-sitosterol, ursolic acid, oleanolic acid, and quercetin (Asfaw et al., 2022).	Low toxicity inon mice and rats (Smyth and Sheridan, 2022).
17. *Cascabela thevetia* (L.) Lippold	Cough in chicken (Zirintunda et al., 2024)	Crushing (Zirintunda et al., 2024)	Sh	L		Flavonoids mainly rutin and phenolic acids mainly rosmarinic acid (El-Sawi et al., 2020), cardiac glycosides e.g., thevetin 7 peruvoside (Misra et al., 2009).	
18. *Orbea dummeri* (N.E.Br.) Bruyns	Wounds (Gradé et al., 2009).	Juice spread topically on the animal (Gradé et al., 2009).	H	Fl	Anti-microbial against *S. aureus*, *E. coli*, *P. aeruginosa* and *C. albicans*.	Pregnane glycosides, flavonoids, and phenolic acids (Adnan et al., 2014).	
19. *Desmidorchis retrospiciens* Ehrenb.	Helminthosis, ticks in livestock (Byaruhanga et al., 2015)	Fresh roots are crushed, mixed with water and liquid extract used for drenching. Fresh leaves and stem crushed and liquid used for washing the animals (Byaruhanga et al., 2015).	Sh	R, L			
20. *Saba comorensis* (Bojer ex A.DC.) Pichon	Back pain	Juice and fruit flesh	T	Fr			

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							Large amounts/long term use can harm, livestock.Thiarubrines, can cause liver

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
21. *Stephanotis rubicunda* (K. Schum.) S.Reuss, Liede and Meve	Sore mouth in kids	Gently crush leaves and apply orally	T	Lv		Lupeol, sitosterol, stigmasterol, gallic acid, caffeic acid, quercetin, and kaempferol.	
22. *Secamone africana* (Oliv.) Bullock	Gastro-intestinal parasites in livestock (Nalule et al., 2013)	Maceration (Nalule et al., 2013)	Sh	Wp	Anthelmintic (Nalule et al., 2013)	Tannins, alkaloids, saponins, flavonoids, steroids, glycosides, triterpenes, coumarin derivatives, anthocyanocides, anthracenocides (Nalule et al., 2013)	
Araceae							
23. *Pistia stratiotes* L.	ECF in cattle (Tabuti et al., 2003a)	Infusion made after adding roots or leaves of *Oncoba spinosa* (Tabuti et al., 2003a).	H	Wh		Alkaloids, flavonoids, glycosides and phlobatannins (Lourenção et al., 2021; Ma et al., 2019)	
Asparagaceae							
24. *Agave sisalana* Perrine	Fowl typhoid (Bukenya-Ziraba and Kamoga, 2007), Newcastle disease in chicken (Zirintunda et al., 2024)	Warm to extract juice (Bukenya-Ziraba and Kamoga, 2007), crush leaves in water (Zirintunda et al., 2024)	Sh	L	Anti-inflammatory activity (Costa et al., 2023).	Steroidal saponins, dongnosides C-E (Yi et al., 1989), kaempferol (Costa et al., 2023).	The hydrolyzed extract was not toxic in rats orally in a single dose, up to 1000 mg/kg *in vivo* (Costa et al., 2023).
25. *Asparagus racemosus* Willd.	Induce follicle growth and estrus in cows (Sarswat and Purohit, 2020), genital diseases, hydrocoel, swollen testis, anaplasmoasis (Gradé et al., 2009), ECF in cattle (Tabuti et al., 2003a)	Water extract, oral and topical administration (Gradé et al., 2009), infusion with a little salt (Tabuti et al., 2003a).	H	R		Steroidal saponins, flavonoids, phenolics, tannins, alkaloids, and terpenoids, asparagusic acid, asparanin A, asparoside A, rutin, quercetin, kaempferol, and protodioscin (Alok et al., 2013).	Delayed effects of toxicity in rodents via relative organ weights of the liver, spleen, kidney and heart at a 700 mg/kg and damage to vital organs (Soren and Yadav, 2022)
26. *Dracaena dawei* (Stapf) Byng & Christenh	Singamus (worms) (Bukenya-Ziraba and Kamoga, 2007)	Cold water extract (Bukenya-Ziraba and Kamoga, 2007)	H	L			
27. *Dracaena nilotica* (Baker) Byng & Christenh.	Coccidiosis (Bukenya-Ziraba and Kamoga, 2007)	Cold water extract (Bukenya-Ziraba and Kamoga, 2007)	Sh	L			
Asteraceae							
28. *Acmella caulirhiza* Delile	Tooth and stomache issues in animals (Bussmann et al., 2020a)	Crush and mix with water and administering orally	H	L, R	Antioxidant, antiinflammatory, analgesic, antibacterial and antifungal against *S. aureus, E. coli, P. aeruginosa* and *C. albicans* (Noubissi et al., 2021; Sharma et al., 2022), antiinflamatory and anticancer (Tienoue Fotso et al., 2024).	Flavonoids, phenolics, tannins, saponins, alkaloids and terpenoids (quercetin, kaempferol, caffeic acid, chlorogenic acid and spilanthol) (Tienoue et al., 2023).	Could have deleterious effects at 500 mg/kg Bw, causing an increase in the relative weight of the brain, uterus, ovaries and a change in some haematological parameters (Tienoue et al., 2023).
29. *Ageratum conyzoides* L.	Fowl typhoid	Decoction (Bukenya-Ziraba and Kamoga, 2007)	H	L	Antiinflammatory in rats (Moura et al., 2005), the flavonoids showed antiprotozoal activity (Nour et al., 2010)	Alkaloids, flavonoids, terpenes, chromenes, and sterols (Yadav et al., 2019), chromenes, benzofurans and terpenoids (Okunade, 2002)	No apparent hepatotoxicity in rats at 500 mg/kg Bw (Moura et al., 2005). No mutagenicity, clastogenicity/genotoxicity (Palmer et al., 2019)
30. *Aspilia africana* (Pers.) C.D. Adams	Influence growth, carcass yield, egg and meat quality, anaemia, gastrointestinal tract infections, wound healing, stimulate lactation (Gradé et al., 2009), cattle helminthosis (Matovu et al., 2020)	Decoction, infusions administered orally/topically (Gradé et al., 2009), maceration, drench 0.5L to adult animals and 300 ml to calves (Matovu et al., 2020)	H	L	Antibacterial, Antioxidant, boosts immunity, enhance metabolism (Etim et al., 2021).	Saponins, tannins, alkaloids, flavonoids, terpenoids, phenols, (Adaekwu et al., 2024).	Low toxicity in mice. Acute toxicity and lethality (LD_{50} = 6.6 mg/kg Bw) (Taziebou et al., 2007).
31. *Aspilia mossambicensis* (Oliv.) Wild	Anaplasmosis, East coast fever (Gradé et al., 2009)	Water extract with Solanum spp. Fruits given topically in sheep, goats, cattle and dogs	H	Fl, R	Anti-inflammatory and antiparasitic against nematodes,	Diterpenes e.g., daurenoic and grandiflorenic acids (McMillen,	Large amounts/long term use can harm, livestock.Thiarubrines, can cause liver

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							Toxicity
							damage, bleeding, anaemia, and death (Norton et al., 1993).
							Well-tolerated (Idris et al., 2023).
							Safe in rats (Sudi et al., 2021).
						The ethanol extract is relatively safe at ≥ 100 mg/kg. Prolonged use of chlorogenic acid derivatives and sesquiterpene lactones damages liver and kidneys (Passoni et al., 2013), with both haematological and acute toxic effects on the kidney and liver (LD_{50} > 1600 mg/kg/day) in rats	
							Considered safe, but its oil & extracts can cause photo-toxicity (Coenraads, 2016)

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
					protozoa, and ticks (McMillen, 2012).	2012), thiarubrines, sulfur compounds (Norton et al., 1993).	damage, bleeding, anaemia, and death (Norton et al., 1993).
32. *Bidens pilosa* L.	Eyes painful red rats, mice, dogs, and chicken (Gradé et al., 2009), Newcastle disease and Ectoparasites in chicken (Zirintunda et al., 2024)	Paste in eye (Gradé et al., 2009), crush leaves in water Zirintunda et al. (2024)	H	R	Antimicrobial, antiparasitic, anti-inflammatory, analgesic (Woldeamanuel et al., 2022).	Quercetin, kaempferol, caffeic acid, chlorogenic acid, luteolin, centaureidin, okanin, and aurantiamide (Idris et al., 2023).	Well-tolerated (Idris et al., 2023).
33. *Gutenbergia cordifolia* Benth. ex Oliv.	Pneumonia in sheep and goats (Gradé et al., 2009)	Directly as fodder (Gradé et al., 2009)	H	L	Wound healing, analgesic, antidiarrhoeal, antifungal, anti-inflammatory, antipyretic, anthelmintic	Tannins, saponins, flavonoids, glycosides, phenols, steroids, and alkaloids, cordifolin, cordifolone, cordifolioside, cordifolide etc	
34. *Gnaphalium purpureum* L.	Eyes painful red	Paste in eye	H	L	Anti-inflammatory, analgesic, antipyretic, antispasmodic, antifungal, antibacterial, and antiviral (Bruschi et al., 2017)	Flavonoids (e.g., luteolin, kaempferol, apigenin, and quercetin), terpenoids, phenolic acids (Bruschi et al., 2017).	
35. *Kleinia odora* (Forssk.) DC.	Strengthen sick calf	Water extract which is orally applied	H	St	Anti-oxidant (Awuchi and Morya, 2023)	Glycosides, alkaloids, tannins, flavonoids, and terpenoids (Awuchi and Morya, 2023).	
36. *Schkuhria pinnata* (Lam.) Kuntze ex Thell.	Body weakness in chicken (Zirintunda et al., 2024)	Pounding (Zirintunda et al., 2024)	H	Wp		Flavonoids e.g., pectolinarigenin, eudesmanolide (Kimani et al., 2018), sesquiterpene lactones e.g., schkuhripinnatolides (Ganzer and Jakupovic, 1990)	
37. *Sphaeranthus suaveolens* (Forssk.) DC.	Fleas and lice	Water extract, topically	H	Wp	Anti-pest and antiinfective, insecticidal (Laizer and Mbwambo, 2022).	Phenols, terpenoids, steroids, flavonoids, and saponins (Laizer and Mbwambo, 2022).	Safe in rats (Sudi et al., 2021).
38. *Sphaeranthus ukambensis* Vatke & O.Huffm.	Bloat	Water extract	H	Wp		Carvotanacetone derivatives (*1*–*6*) (Pouny et al., 2011).	
39. *Tithonia diversifolia* (Hemsl.) A.Grey	Fowl typhoid	Decoction (Bukenya-Ziraba and Kamoga, 2007)	H	L	Antibacterial (Dlamini et al., 2020).	Alkaloids, tannins, flavonoids (e.g., luteolin and nepetin), saponins, terpenoids e.g., diversifolide, phenols (Ambrósio et al., 2008; Kuo and Lin, 1999; Olayinka et al., 2015), essential oils with α- and β- pinene, β-caryophyllene, isocaryophyllene, nerolidol, α-copaene, α-gurjunene, cyclodecene (Agboola et al., 2016; Moronkola et al., 2007; Wanzala et al., 2016). sesquiterpene lactones (Passoni et al., 2013).	The ethanol extract is relatively safe at ≥ 100 mg/kg. Prolonged use of chlorogenic acid derivatives and sesquiterpene lactones damages liver and kidneys (Passoni et al., 2013), with both haematological and acute toxic effects on the kidney and liver (LD_{50} > 1600 mg/kg/day) in rats
40. *Tagetes minuta* L.	Lumpy skin disease, lice, poultry respiratory infection (Gradé et al., 2009)	Water extract poultrice (Gradé et al., 2009)	H	Wp	Antibacterial and antioxidant (Igwaran et al., 2017).	Monoterpenes and sesquiterpenes, e. g., tagetone, dihydrotagetone, ocimenone, limonene, β-caryophyllene and zingiberene (Igwaran et al., 2017).	Considered safe, but its oil & extracts can cause photo-toxicity (Coenraads, 2016)
41. *Gymnanthemum amygdalinum* (Delile) Sch.Bip.	Parasitic infections, diarrhoea, wound healing andinflammatory conditions in cattle, goats and sheep (Gradé et al., 2009), Newcastle disease, coccidiosis, Fowl typhoid (Bukenya-Ziraba and Kamoga, 2007), Foot and Mouth Disease (FMD), Fever, cough and diarrhoea in cattle (	Water extracts applied orally/ topically (Gradé et al., 2009), decoction (Bukenya-Ziraba and Kamoga, 2007). Maceration/decoction anddrench (Matovu et al., 2020), infusion with leaves of *C. opulifolium & S. occidentalis* (Tabuti et al., 2003a).	Sh	L	Anntihelmintic (Degu et al., 2024), antibacterial, antifungal, antiparasite, antihelmintic, antiviral (Wang et al., 2018)	Flavonoids, alkaloids, saponins, tannins, triterpenoids, sesquiterpene lactones, steroids, cardiac and cyanogenic glycosides, oxalates, phytates, andphenols (Adiukwu et al., 2011).	

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							Toxicity
							t al., de,
							No clinical signs of toxicity in BALB/c mice but pure oxylipin isolated from *T. procumbens* showed signs of toxicity and death in mice (Burgos-Pino et al., 2023).
							oids,
							Highly toxic. Can cause cardiac arrhythmias, respiratory depression, liver and kidney impairment, and death when ingested in high doses/over a long period of time (Muyiwa et al., 2019).
							, nin,
							Toxic nature to livestock & humans, and has caused deaths in cattle, sheep & poultry(Van Wyk et al., 1997).
							riya, 026)
							yde s (
							Aqueous extracts are non-toxic in acute and sub- chronic toxicity on Wistar rats (Joseph et al., 2015).
							ls ( )
							Toxic to sheep (Jackson and Shone, 1958), Poisoning from *S. viminale* resulted in beak patting, muscular tremors and head flopping, and death in ostriches (Cooper, 2007).
							, , lide d B,
							Dichloromethane extracts were, generally more toxic than methanol and ethanol extracts to Vero cells ≥1 μg/ml cytotoxic (Beuscher et al., 1994).
							5).
							nd Wu
							Aristolochic acids (Wu et al., 2001) responsible for the nephrotoxic and genotoxic effects (Kumar et al., 2003)
							, and gare,
							Safe for animals but excessive amounts may cause vomiting, diarrhoea, dehydration, and liver impairment (Jambwa and Nyahangare, 2020).
							s, 22)
							Aloe spp are generally safe for animals, but can cause diarrhoea, vomiting,

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
	Matovu et al., 2020; Tabuti et al., 2003a)						
42. *Tridax procumbens* L.	Cough and diarrhoea in chicken (Zirintunda et al., 2024)	Crushing	H	L	Anti-inflammatory and anti-microbial (Gubbiveeranna et al., 2024)	Procumbenase (Gubbiveeranna et al., 2024), octadecanoic acid, icaricide, loliolide, neoxanthin, antheraxanthene (Abubakar and Haque, 2020). Has phytotoxic compounds that are probably flavonoids (Mecina et al., 2016).	No clinical signs of toxicity in BALB/c mice but pure oxylipin isolated from *T. procumbens* showed signs of toxicity and death in mice (Burgos-Pino et al., 2023).
Apocynaceae							
43. *Adenium obesum* (Forssk.) Roem. & Schult.	Mange (Gradé et al., 2009), ticks in livestock (Byaruhanga et al., 2015)	Poultice (Gradé et al., 2009), a piece of fresh root tuber is cut, crushed, and mixed with water to obtain a solution which is used. Wash animal body with the solution (Byaruhanga et al., 2015).	Sh	B	Antibacterial, antiinflammatory, analgesic (Suleiman and Brima, 2021).	Cardiac glycosides, flavonoids, terpenoids, pregnanes, and alkaloids, oleadrin, neridienone, adenin, adenobetin (Sornalakshmi et al., 2021).	Highly toxic. Can cause cardiac arrhythmias, respiratory depression, liver and kidney impairment, and death when ingested in high doses/over a long period of time (Muyiwa et al., 2019).
44. *Gomphocarpus fruticosus* (L.) W. T.Aito	Back pain Diarrhoea (Gradé et al., 2009)	Water extract which is orally applied (Gradé et al., 2009)	H	R	Hepatoprotective, wound healing, anti-inflammatory, analgesic, antipyretic, antidiarrheal, antispasmodic, antifungal, antibacterial, & antiviral (Mphahlele and Viljoen, 2026).	Lupeol, ursolic acid, caffeic acid, chlorogenic acid, luteolin, apigenin, kaempferol, ferulic acid, and gomphoside, coumarin glycoside gomphoflorosides and gomphofruticosine (Dushimemariya, 2019; Mphahlele and Viljoen, 2026)	Toxic nature to livestock & humans, and has caused deaths in cattle, sheep & poultry(Van Wyk et al., 1997).
45. *Mondia whitei* (Hook.f.) Skeels	Body weakness in chicken (Zirintunda et al., 2024)	Pounding	H	R		2-hydroxy-4- methoxybenzaldehyde phenolics, flavonoids and tannins (Aremu et al., 2011; Bouba et al., 2010).	Aqueous extracts are non-toxic in acute and sub- chronic toxicity on Wistar rats (Joseph et al., 2015).
46. *Cynanchum viminale* (L.) L.	Bloat (Gradé et al., 2009)	Water extract (Gradé et al., 2009)	H	Wp		Alkaloids, flavonoids, phenols, saponins, steroids, and terpenoids (Arora and Meena, 2018), sarcovimiside A-C, pregnane glycosides (Vleggaar et al., 1993)	Toxic to sheep (Jackson and Shone, 1958), Poisoning from *S. viminale* resulted in beak patting, muscular tremors and head flopping, and death in ostriches (Cooper, 2007).
Araliaceae							
47. *Steganotaenia araliacea* Hochst.	Lumpy skin disease, snake bite, snake spit in cattle, sheep, goats, chicken and pigs (Gradé et al., 2009) coccidiosis (Bukenya-Ziraba and Kamoga, 2007), ECF (Tabuti et al., 2003a)	Water extract, decoction (Gradé et al., 2009; Bukenya-Ziraba and Kamoga, 2007), infusion (Tabuti et al., 2003a)	T	B, L, R	Antibacterial, antimalarial, antidiabetic, antileukemic, and antitubulin (Capistrano et al., 2015).	Alkaloids, flavonoids, terpenoids, saponins, tannins, and phenolics, steganacin, steganangin, steganolide A, steganol, steganone, episteganangin, steganoate A and B, cumene, xylene, citronellol, cadinanol, arcurcumene, and α-guaiene (Capistrano et al., 2015).	Dichloromethane extracts were, generally more toxic than methanol and ethanol extracts to Vero cells ≥1 μg/ml cytotoxic (Beuscher et al., 1994).
Aristolochiaceae							
48. *Aristolochia littoralis* Parodi	East coast fever (ECF) in cattle (Tabuti et al., 2003a)	Infusion (Tabuti et al., 2003a).	H	L	Abortive activity of the genus in mice (Pakrashi and Shaha, 1977)	Alkaloids, steroid, tannins (NK and MP, 2022), aristolochic acids 1 (Wu et al., 2001).	Aristolochic acids (Wu et al., 2001) responsible for the nephrotoxic and genotoxic effects (Kumar et al., 2003)
Asphodelaceae							
49. *Aloe dawei* A. Berger	Anaplasmosis, fly repellent, skin infections, pneumonia, in sheep cattle and goats bloody calf diarrhoea, trypanosomiasis and retained placenta (Gradé et al., 2009).	Water extract, administered orally Poultice applied topically (Jambwa and Nyahangare, 2020).	H	L, Ex	Anti-inflammatory and wound-healing (Jambwa and Nyahangare, 2020).	Polysaccharides, anthraquinones, and flavonoids (Jambwa and Nyahangare, 2020).	Safe for animals but excessive amounts may cause vomiting, diarrhoea, dehydration, and liver impairment (Jambwa and Nyahangare, 2020).
50. *Aloe* sp	ECF, infections, wounds, skin dieases, gastrointestinal disorders,	Water extract given orally	H	L	Anti-inflammatory, antimicrobial, antiparasitic and	Anthraquinones, polysaccharides, phenolics (Aremu and Lawal, 2022)	Aloe spp are generally safe for animals, but can cause diarrhoea, vomiting,

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Toxicity
electrolyte imbalances and loss of appetite (Aremu and Lawal, 2022).
Reproductive toxicity in Sprague Dawley rats (Shah et al., 1989), carcinogenic activity in F344/N rats (National Program Toxicology, 2015)
Sedation, lethargy and drowsiness in sprague dawley rats at 2000 mg/kg and 4000 mg/kg (Shah et al., 2016).

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
	and internal parasites in livestock and poultry (Gradé et al., 2009).				wound-healing properties (Aremu and Lawal, 2022)		electrolyte imbalances and loss of appetite (Aremu and Lawal, 2022).
51. *Aloe secundiflora* var. *tweedieae* (Christian) Wabuyele	Anaplasmosis (Gradé et al., 2009).	H	H	Ex			
52. *Aloe vera* (L.) Burm.f.	Helminthosis in all livestock and poultry (Nabukenya et al., 2014), coccidiosis, NCD, cough and fowl cholera, histomoniasis, infectious bronchitis in chicken, pullorum/salmonellosis in chicken (Zirintunda et al., 2024)	Slice and boil the leaves and give to drink/add to feeds (Nabukenya et al., 2014), crushing (Zirintunda et al., 2024)	H	L	Antiseptic activity, antifungal, antbacterial andantiviral (Sharrif Moghaddasi and Res, 2011)	Salicylic acid, prostaglandin precursors, lignins, saponins, sterols (Atherton, 1998), anthraquinone glycosides: aloin, aloe-emodin, barbaloin (Sharrif Moghaddasi and Res, 2011), lupeol, cinnamonic acid, phenols (Sharrif Moghaddasi and Res, 2011)	Reproductive toxicity in Sprague Dawley rats (Shah et al., 1989), carcinogenic activity in F344/N rats (National Program Toxicology, 2015)
53. *Aloe peglerae* Schönland	Chronic respiratory disease and pullorum/salmonellosis in chicken (Zirintunda et al., 2024)	Crushing	H	L			
Asparagaceae							
54. *Chlorophytum comosum* (Thunb.) Jacques	Lactation in cattle (Tabuti et al., 2003a)	Infusion. Add salt.	H	B			
55. *Dracaena fragrans* (L.) Ker Gawl.	Diarrhoea, brucellosis (Gradé et al., 2009).	Water extract which is orally applied. Boiling and drenching all cows in the morning (Gradé et al., 2009),	Sh	R			
Bignoniaceae							
56. *Kigelia africana* (Lam.) Benth.	Bloody calf diarrhoea, contagious, bovine/caprine pleuropneumonia, eye infection, heartwater, pink eye (Gradé et al., 2009), coccidiosis and NCD (Zirintunda et al., 2024)	Water extract and applied orally, paste from ashes, Paste with leaf ash and animal butter, in the eye (Gradé et al., 2009), pound fruit (Zirintunda et al., 2024)	T	L, B, R	Anti-inflammatory, antibacterial, antifungal, antiviral, antihelminthic, and antiprotozoal (Nabatanzi et al., 2020).	Triterpenoids, flavonoids, phenylpropanoids, euscaphic acid (Bussmann et al., 2021), iridoids, isocoumarins, naphthoquinones, phenylpropanoids, furanone derivatives, flavonoids and sterols (Osman et al., 2017)	
Brassicaceae							
57. *Brassica oleracea* L.	Diarrhoea in chicken (Zirintunda et al., 2024)	Crushing	H	L	Anti diarrheal activity (Shakar et al., 2012).	Alkaloids, flavonoids, glucos-inolates, steroids, terpenoids, benzenoids (Kabouw et al., 2010; Nielsen et al., 1993; Park et al., 2014; Thangam et al., 2013)	Sedation, lethargy and drowsiness in sprague dawley rats at 2000 mg/kg and 4000 mg/kg (Shah et al., 2016).
Bromeliaceae							
58. *Ananas comosus* (L.) Merr.	ECF in cattle (Tabuti et al., 2003a), cough in chicken (Zirintunda et al., 2024)	Crushing, Infusion (Tabuti et al., 2003a)	H	Fr, L			
Burseraceae							
59. *Commiphora africana* (A. Rich) Engl.	Fly and maggot control, fresh wounds (Gradé et al., 2009), ticks in livestock (Byaruhanga et al., 2015)	Exudate and powdered sap and topically applied (Gradé et al., 2009), Fresh roots crushed, mixed with water, and used for washing the animals (Byaruhanga et al., 2015)	T	L ex.	Analgesic, antimalarial, antibacterial, and anthelmintic actions (Paraskeva, 2008).	Alkaloids, flavonoids, coumarins, and phenolics (Okwute et al., 2022).	
60. *Commiphora kua* (R.Br. ex Royle) Vollesen	Eyes painful red (Gradé et al., 2009)	Exudate Powdered sap, in eye (Gradé et al., 2009)	T	Ex		B-elemene, α-selinene, cadina-1,4-diene, germacrene B, α-copaene, t-muurolol, caryophyllene oxide, and α-cadinol (Ali et al., 2009)	

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Toxicity
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024),
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Highly cytotoxic to U87 cells (Anywar, 2020; Anywar et al., 2022), cytotoxic to intestinal epithelial cells IEC-6, with IC_{50} values < 50 μg/ml (Mwitari et al., 2013).
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ne (20;
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Safe and well-tolerated use in humans and animals (Lim et al., 2021).
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Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
Cactaceae							
61. *Opuntia cochenillifera* (L.) Mill.	Compaction, low milk production, retained placenta (Gradé et al., 2009)	Water extract/decoction (Gradé et al., 2009)	H	Fr, St		Alkaloids, phenolic compounds, terpenoids, flavonoids, and saponins (da Cruz Filho et al., 2019).	
Cannabaceae							
62. *Cannabis sativa* L	Heartwater, pneumonia, diarrhoea, trypanosomiasis, ECF (Gradé et al., 2009), coccidiosis, worms, infectious bronchitis, bacillary white diarrhoea, FMD, fever, cough in cattle and chicken and fowl typhoid (Matovu et al., 2020; Tabuti et al., 2003a), NCD (Bukenya-Ziraba and Kamoga, 2007; Zirintunda et al., 2024).	Vaporizing/smoking dried buds, drinking/eating extracts, and taking capsules. Crush fresh leaves/add dried powder and mix with water (Bukenya-Ziraba and Kamoga, 2007),/maceration, decoction and drenching (Matovu et al., 2020), decoction/infusion with *S. longipedunculata* roots.	H	L, R, Sd	Antibacterial (Shah et al., 2020), analgesic (Bonini et al., 2018).	Cannabinoids, e.g., tetrahydrocannabinol (THC) and cannabidiol (CBD)(Malú et al., 2024), terpenophenolic compounds (cannabinoids), terpenoids, flavonoids, alkaloids, nitrogen compounds (Bonini et al., 2018).	
Canellaceae							
63. *Warburgia ugandensis* Sprague	Cough and diarrhoea in chicken (Zirintunda et al., 2024)	Water extract (Zirintunda et al., 2024)	T	B	Antimicrobial activity (Olila and Opuda-Asibo, 2001)	Drimane sesquiterpenes e.g., ugandensidial, polygodial, warburganal and isopolygodial (Were et al., 2015)	Highly cytotoxic to U87 cells (Anywar, 2020; Anywar et al., 2022), cytotoxic to intestinal epithelial cells IEC-6, with IC_{50} values < 50 μg/ml (Mwitari et al., 2013).
Capparaceae							
64. *Capparis fascicularis* DC. var.	Heartwater, Lumpy skin disease, snakebite (Gradé et al., 2009).	Water extract with *Carissa edulis* and *S. araliacea* leaves and root, topically given (Gradé et al., 2009).	Sh	B, R			
65. *Capparis tomentosa* Lam.	Heartwater, anaplasmosis (Gradé et al., 2009).	Water extract	Sh	B, R	Anti-inflammatory, analgesic, antipyretic, antimicrobial (Tekulu et al., 2020)	Capparilosides, tomentosin, tomentocardin, and tomentodione (Gebrehiwot and Chaithanya, 2020; Tlili et al., 2011).	.
66. *Capparis spp.*	Anaplasmosis, Black quarter, contagious bovine/ caprine pleuropneumonia, ECF, swollen lymph nodes, pain killer, sudden death, fever (Gradé et al., 2009).		Sh	B, R			
67. *Maerua edulis* (Gilg & Gilg-Ben.) DeWolf	Abscess, dysentery, intestinal worms in goats, cattle, sheep(Gradé et al., 2009).	Water extract	H	R		Flavonoids, alkaloids, saponins, tannins, and lignans (Lagu et al., 2025).	
68. *Maerua gilgii* Schinz	Ticks in livestock (Byaruhanga et al., 2015)	Crushed with water use for washing animal (Byaruhanga et al., 2015).	H	R			
69. *Maerua parvifolia* Pax	Acute eye syndrome, painful red eyes, pinkeye in sheep, goats, cattle (Gradé et al., 2009).	Paste in eye/masticate leaves and spit in eye/decocotion (Gradé et al., 2009).	Sh	L, R	Antibacterial *s*, antipyretic, and anthelmintic (Abdalla and McGaw, 2020).	Alkaloids, flavonoids, glycosides (Abdalla and McGaw, 2020).	
Caricaceae							
70. *Carica papaya* L	Intestinal parasites in livestock (Gradé et al., 2009). Retained placenta (Matovu et al., 2020), coccidiosis, fowl typhoid in chicken (Zirintunda et al., 2024)	Seeds fed to animals (Gradé et al., 2009), chop young fruits/grind 100g of seed, pound and mix with feed/put in the mouth (Matovu et al., 2020)/pound leaves, friuts, seeds, flowers leaves and administer (Zirintunda et al., 2024).	T	Sd	Antibacterial and anti-inflammatory (Lim et al., 2021).	Carpaine, pseudocarpaine, benzyl isothiocyanate, benzyl glucosinolate, papain, chymopapain, and lycopene (Singh et al., 2020).	Safe and well-tolerated use in humans and animals (Lim et al., 2021).

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	Toxicity
ryya	Toxic in zebra fish-visible developmental defects, e.g., heartbeat rate, less pigmentation, oedema, spinal curvature, immature yolk sac and reduced hatching rate and a slow growth (Patra et al., 2023).
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	Oxalic acid, may crystallize as oxalate stones in the urinary tract in some people (Faboya et al., 1983)
and,	

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
Caryophyllaceae							
71. *Drymaria cordata* (L.) Willd. ex Schult.	Coccidiosis (Bukenya-Ziraba and Kamoga, 2007)	Cold water extract	H	Wp	Antimicrobial activity (Antonyan et al., 2016)	Alkaloids, flavonoids, phenols, tannins and saponins (Bhattacharyya et al., 2019)	Toxic in zebra fish-visible developmental defects, e.g., heartbeat rate, less pigmentation, oedema, spinal curvature, immature yolk sac and reduced hatching rate and a slow growth (Patra et al., 2023).
Celastraceae							
72. *Elaeodendron buchananii* (Loes.) Loes.	Trypanosomiasis in cattle, sheep, goats, and camels, stimulant (Gradé et al., 2009)	Decoction (Gradé et al., 2009)	T	L	Antiplasmodial, antibacterial & anti-inflammatory properties (Jennifer et al., 2022).	Flavonoids, terpenoids, alkaloids, and phenolics e.g., quercetin, kaempferol, lupeol, elaeodendrine and elaeodendroside (Odak et al., 2018).	
73. *Gymnosporia senegalensis* (Lam.) Loes.	ECF in cattle (Tabuti et al., 2003a)	Infusion; 125 ml given to calf twice a day (Tabuti et al., 2003a)	Sh	R	Antimicrobial activity (Makgatho et al., 2018)	Maytenoic acid, pristimerin, lupenone, β-amyrin and β-sitosterol (Makgatho et al., 2018)	
Cleomaceae							
74. *Cleome gynandra* L	Trachoma (Gradé et al., 2009), cough in chicken (Zirintunda et al., 2024)	Water extract which is orally applied (Gradé et al., 2009), pound (Zirintunda et al., 2024)	H	Fl	Anti-microbial activity (Khan et al., 2015)	Clausamine H, murrayamine-A, imperatorin, phellopterin, clausenin, clausenidin, and 1-O-methylclause-nolide (Houdegbe et al., 2022).	
Clusiaceae							
75. *Garcinia buchananii* Baker	Dysentery, diarrhoea, gastriintestinal issues, in cattle, sheep, goats (Gradé et al., 2009)	Water extract	T	F, L Sd	Antimicrobial (Omujal et al., 2021).	Palmitic, stearic, oleic, and linoleic acids, phenolic compounds (Boakye et al., 2012).	
76. *Mammea africana* Sabine	Diarrhoea, cattle, sheep, goats, pigs, dogs, and poultry (Gradé et al., 2009).	Water extract	T	B	Antibacterial, antifungal, antimalarial, anti-inflammatory, analgesic, antipyretic, and antidiarrheal (Canning et al., 2013).	Coumarins derivatives e.g., mammea A/AA, Mammea B/BB, A/AB sterol (friedelone) and xanthones (Ouahouo et al., 2004).	
77. *Psorospermum febrifugum* Spach	Mange (Gradé et al., 2009).	Juice topically administered (Gradé et al., 2009)	Sh	Fl	Antibacterial, antifungal, antimalarial, anti-inflammatory, analgesic, antipyretic, and antidiarrheal properties (Epifano et al., 2013).	Flavonoids, sterols (Epifano et al., 2013).	
Combretaceae							
78. *Combretum collinum* Fresen.	Diarrhoea	Water extract administered orally/ topically	T	L and B	Antimicrobial, antioxidant and wound healing properties (Marquardt et al., 2020).	Triterpenes, flavonoids, lignans, and non-protein amino acids (Marquardt et al., 2020).	
79. *Terminalia brownii* Fresen.	Pink-eye in livestock	Paste	T	B	Antiviral, antioxidant, antibacterial, antifungal, anti-inflammatory, and antiparasitic (Cock, 2015).	Triterpenes, alkaloids, flavonoids, tannins, and polyphenols (Das et al., 2020).	
Commelinaceae							
80. *Commelina africana* subsp. *africana*	Body weakness in chicken (Zirintunda et al., 2024)	Pound	H	L and St	Anti-diarrheal activity (Ghosh et al., 2019)	Polyphenols, salicylic acid, p-coumaric, tannic caffeic and chlorogenic acids, 8-hydroxyquinoline, quinolones, catechol, resorcinol, flavonoids, saponins (Ghosh et al., 2019).	
81. *Ipomoea batatas* (L.) Lam.	Parturition failure	Give animal the vines to eat Crush leaves without water and smear on the vulva (Nabukenya et al., 2014).	H	L		Triterpenes/steroids, alkaloids, anthraquinones, coumarins, flavonoids, saponins, tannins, phenolic (Pochapski et al., 2011) and, oxalic acid (Faboya et al., 1983).	Oxalic acid, may crystallize as oxalate stones in the urinary tract in some people (Faboya et al., 1983)

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Toxicity
Induces diarrhoea and intestinal damage in treated animals (Faraj, 1995).
Cucurbitacins are cytotoxic (Abebe, 2022).
Hepatotoxicity by some of its compounds (Kommidi et al., 2024)
No pronounced toxicity against human hepatocellular & human urinary bladder carcinoma cells (Froelich et al., 2007)

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
82. *Ipomoea longituba* Hallier f.	Low milk production	Water extract which is orally applied, yoghurt paste	H	R			
Crassulaceae							
83. *Kalanchoe densiflora* Rolfe	Coccidiosis	Decoction (Bukenya-Ziraba and Kamoga, 2007)	H	Rt			
84. *Kalanchoe citrina* Schweinf.	Wounds, inflammation, in cattle, sheep, and goats, but also to dogs, chickens, and pigs (Gradé et al., 2009).	Water extract which is topically applied	H	L	Antioxidant, anti-inflammatory, and antimicrobial potential (de Andrade et al., 2023)	Glycosides, alkaloids, tannins, flavonoids, and terpenoids (de Andrade et al., 2023).	
Cucurbitaceae							
85. *Citrullus colocynthis* (L.) Schrad.	Cattle helminthosis (Matovu et al., 2020)	Grind, mix with water/macerate and drench (Matovu et al., 2020).	H	L	Antiparasitic activity (Al-Snafi, 2016)	Tannins, saponins, phenolic, flavanoids, terpenoids, alkaloids, anthranol, steroids, Cucurbitacin A, B, C, D, E (α-elaterin), caffeic acid, cardic glycoloids (Talole et al., 2013)	Induces diarrhoea and intestinal damage in treated animals (Faraj, 1995).
86. *Coccinia adoensis* (Hochst. ex A.Rich.) Cogn.	Anaplasmosis	Squeeze liquid from flower and feed the animal	H	R	Antibacterial, anthelmintic, analgesic, antimalarial (de Boer et al., 2005).	Cucurbitacins, flavonoids, phenolic acids, saponins, tannins, and alkaloids (de Boer et al., 2005).	
87. *Cucumis* sp.	Bloat, ECF, fodder, rinder pest wounds in donkeys, cattle (Gradé et al., 2009).	Water extract with *Warburgia Warburgia spp* and sediment rock ($CaCO_3$)/and *Momordica foetida* fruit juice and salt, topically (Gradé et al., 2009).	H	Fl, L	Ant-inflammatory, antifungal, antibacterial, anthelmintic, antipyretic, and wound healing (Abebe, 2022).	Alkaloids, flavonoids, glycosides, phenols, saponins, steroids, tannins, terpenoids, and cucurbitacins (Feyisa et al., 2021).	Cucurbitacins are cytotoxic (Abebe, 2022).
88. *Cucumis aculeatus* Cogn.	Ticks in livestock (Byaruhanga et al., 2015)	Fruits are crushed, mixed with water used to wash (Byaruhanga et al., 2015)	H	F		Terpenoids, anthraquinones and alkaloids (Ogutu et al., 2012).	
89. *Cucurbita maxima* Duchesne	Acute eye syndrome, dogs, horses, chickens, sheep, goats, pigs, & cattle (Gradé et al., 2009).	Paste in eye	H	St	Anti-inflammatory, antihyperlipidemic, antioxidant, and wound-healing effects (Kaźmińska et al., 2020).	Flavonoids, phenolics, carotenoids, cucurbitacins, triterpenoids, sterols, & fatty acids (Hussain et al., 2021).	
90. *Cucurbita moschata* Duchesne	Diarrhoea in chicken (Zirintunda et al., 2024)	Crushing	H	L & Sd			
91. *Kedrostis foetidissima* (Jacq.) Cogn.	Fowl typhoid	Cold water extract (Bukenya-Ziraba and Kamoga, 2007).	H	L	Antibacterial activity (Priyavardhini et al., 2008)	Phenols, alkaloids, flavonoids, tannins, terpenoids, steroids (Pavithra and Saravanan, 2020).	Hepatotoxicity by some of its compounds (Kommidi et al., 2024)
92. *Lagenaria sphaerica* (Sond.) Naudin	Constipation (Nabukenya et al., 2014), Bacillary white diarrhoea (Bukenya-Ziraba and Kamoga, 2007).	Decoction with a little rock salt and cow ghee and drench (Nabukenya et al., 2014)	H	L	Anribacterial activity (Niyonzima et al., 2024)	Tannins, phenols, saponins resins, alkaloids (Niyonzima et al., 2024)	
93. *Momordica foetida* Schumach.	Bloat, lice maggots, pinkeye, wounds, arthritits (Gradé et al., 2009), fleas, mites, mange, wounds (Nabukenya et al., 2014), fowl typhoid (Bukenya-Ziraba and Kamoga, 2007), Cattle helminthiasis (Matovu et al., 2020)	Water extract topically applied/ urine extract with juice topically smeared Juice in eye (Gradé et al., 2009; Nabukenya et al., 2014), macerate and drench 1 (Matovu et al., 2020).	T	Fl, St	Antimicrobial, anti-inflammatory, analgesic, antipyretic and antidiarrhoeal properties (Muronga et al., 2021).	Sitosteryl glucoside, 5,25-stigmastadien-3β-yl glucoside, and 1β-hydroxyfriedel-6-en-3-one, and cucurbitane-type triterpenoid derivatives (Muronga et al., 2021).	No pronounced toxicity against human hepatocellular & human urinary bladder carcinoma cells (Froelich et al., 2007)
Cyperaceae							
94. *Cyperus fischerianus* A. Rich.	Snake bite in donkeys, pigs, dogs, camels, and chickens	Water extract topically applied	H	R	Anthelmintic, anti-inflammatory & antibacterial (Zhang et al., 2022).	Cyperolone, cyperone, cyperotundone, quercetin, kaempferol, gallic acid, sitosterol, & linoleic acid (Babiaka et al., 2025).	
Ebenaceae							

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							Toxicity

							Toxicity
							The aqueous and ethanolic leaf extracts had LD_{50} values ≤ 2000 mg/kg bw in rats (Valdez-Ramirez et al., 2023), antifertility activity, vomiting and diarrhoea (Abdelgadir and Van Staden, 2013)
							Non toxic to 4 human cancer cell lines (SK-MEL, KB, BT- 549, SK-OV-3) (Fawzy et al., 2017).
							Ricin causes cell death and ricinine causes poisoning (Bozza et al., 2015)
							Toxic protein abrins which inhibit protein synthesis (Kaula et al., 2022).
							Low acute toxicity in mice: oral LD_{50} = 3.9 g/kg (Batiha et al., 2022).
							Low acute toxicity in mice, with an oral LD_{50} of 3.9 g/kg (Batiha et al., 2022).

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Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
105. *Jatropha curcas* L.	Inflammation, wounds (Gradé et al., 2009), cattle helminthosis (Matovu et al., 2020), ECF (Tabuti et al., 2003a), NCD (Zirintunda et al., 2024), protein supplement for animal feed (Abdelgadir and Van Staden, 2013).	Apply juice topically (Gradé et al., 2009)/dry whole seeds/powder extract (Matovu et al., 2020), cut or burn swollen area and then have some sap dropped there (Tabuti et al., 2003a)	Sh	L, Fl	Antioxidant anti-inflammatory, antibacterial and antifungal (Calabrone et al., 2019), anti-inflammatory, antioxidant, antimicrobial, antiviral, analgesic, hepatoprotective, wound healing (Abdelgadir and Van Staden, 2013).	Euscaphic acid, oppositin, hoslunddiol, 5-O-methylhoslundin, hosloppin, hoslundal, tectochrysin, hoslundin, hoslunfuranine and ursolic acid (Valdez-Ramirez et al., 2023), terpenes, phorbol esters, cyclic peptides, alkaloids, lignans, coumarins and phytosterols (Abdelgadir and Van Staden, 2013).	The aqueous and ethanolic leaf extracts had LD_{50} values ≤ 2000 mg/kg bw in rats (Valdez-Ramirez et al., 2023), antifertility activity, vomiting and diarrhoea (Abdelgadir and Van Staden, 2013)
106. *Acalypha fruticosa* Forssk	Pneumonia in cattle, goats (Gradé et al., 2009),	Water extract given orally in goats and cattle (Gradé et al., 2009),	Sh	R, L	Antimutagenic, antiinflammatory, antimalarial, anthelmintic, and antimicrobial (Zafar et al., 2025).	Phenolics e.g., caffeic, ferulic acid, and gallic acid, and quercetin, flavonoids, saponins, alkaloids, tannins, terpenoids, and steroids (Fawzy et al., 2017).	Non toxic to 4 human cancer cell lines (SK-MEL, KB, BT- 549, SK-OV-3) (Fawzy et al., 2017).
107. *Tragia brevipes* Pax	Diarrhoea, mastitis, skin infections, and eye diseases (Rahman et al., 2023), Cattle helminthosis (Matovu et al., 2020).	Powdered and given orally or topically (Rahman et al., 2023),/ maceration and given to cattle	H	L, R	Anti-microbial activity (Migabo et al., 2023).	Flavonoids, saponins, glycosides, phenols, tannin, and resins (Migabo et al., 2023).	
108. *Ricinus communis* L.	Skin infections, gastrointestinal issues, and inflammation Helminthosis in all livestock and poultry (Matovu et al., 2020), NCD (Zirintunda et al., 2024).	Water extracts administered orally and topically. Pound seeds (powdered extract) and put into the mouth (Matovu et al., 2020).	H	L, St and Sd	Antimicrobial, (Abbas et al., 2018), insecticidal, antinociceptive, anti-inflammatory, analgesic, and anticonvulsant activity (Abdul et al., 2018)	Alkaloids, flavonoids, terpenes, saponins, phenolic compounds such as kaempferol, gallic acid, ricin, rutin, lupeol, ricinoleic acid, pinene, thujoneand gentisic acid (Abdul et al., 2018)	Ricin causes cell death and ricinine causes poisoning (Bozza et al., 2015)
Fabaceae							
109. *Abrus precatorius* L	Earache in cattle, rabies diarrhoea in goats and, NCD (Gradé et al., 2009). Cattle helminthosis (Matovu et al., 2020), cataract in cattle (Tabuti et al., 2003a).	Powder in ears, decoction, (Gradé et al., 2009), maceration and or drench (Matovu et al., 2020),	H	St, Sd, R, L	Antimicrobial, antiinflammatory and anti-oxidant (Okhale and EM, 2016).	Alkaloids, terpenoids, andflavonoids, e.g.,luteolin, abrectorin, orientin, isoorientin, glycyrrhizin, abrusoside, abrusogenin, and abruquinones (Okhale and EM, 2016).	Toxic protein abrins which inhibit protein synthesis (Kaula et al., 2022).
110. *Vachellia tortuosa* (L.) Seigler & Ebinger	Dewormer, rinderpest, lumpy skin disease in cattle (Gradé et al., 2009), diarrhoea in chicken (Zirintunda et al., 2024)	Directly fed to animals as fodder (Gradé et al., 2009)	Sh	Fl	Antimicrobial, anti-parasitic, antiinflammatory antidiabetic (Batiha et al., 2022).	Phenols, steroids, terpenoids, flavonoids, saponins, glycosides, quercetin, rutin, ferulic, betulinic and caffeic acid (Batiha et al., 2022; León De Pinto et al., 1998).	
111. *Vachellia abyssinica* (Hochst. ex Benth.) Kyal. & Boatwr.	Lumpy skin disease and snake bite in sheep, cattle and goats (Gradé et al., 2009)	Water extract administered topically in sheep, goats and cattle (Gradé et al., 2009)	T	B	Antiinflammatory, anti-microbial, & antivenom and antiviral (Adhikari and Rangra, 2023).	Tannins, steroids, saponins (Adhikari and Rangra, 2023).	
112. *Senegalia brevispica* (Harm) Seigler & Ebinger	Deworming in sheep, goats and cattle (Gradé et al., 2009)	Direct as fodder (Gradé et al., 2009).	Sh	Wp	Antiinflammatory, antipyretic, antidiarrhoeal, antimicrobial, antifungal, antihelminthic (Batiha et al., 2022).	Flavonoids, tannins, saponins, alkaloids, and terpenoids (Batiha et al., 2022).	
113. *Vachellia drepanolobium* (Harms ex Y. Sjöstedt) P.J.H. Hurter)	Diarrhoea in cattle, goats and dogs (Gradé et al., 2009), ticks in livestock, (Byaruhanga et al., 2015)	Water extract administered topically in goats and cattle (Gradé et al., 2009), Fresh roots are crushed and used for washing and drench (Byaruhanga et al., 2015).	Sh	R	Antimicrobial, antifungal, antiprotozoal, anti-inflammatory, antidiarrhoeal (Mollel et al., 2020).	Quercetin, kaempferol, rutin, catechin, epicatechin, gallic, caffeic acid, chlorogenic acid, ferulic acid, and β-sitosterol (Batiha et al., 2022).	Low acute toxicity in mice: oral LD_{50} = 3.9 g/kg (Batiha et al., 2022).
114. *Vachellia gerrardi* (Benth.) P.J.H.Hurter	Cough in cattle (Gradé et al., 2009), ticks in livestock (Byaruhanga et al., 2015)	Water extract is orally administered in cattle (Gradé et al., 2009), Fresh leaves are crushed, mixed with water, and the extract	Sh	B	Antiinflammatory, antioxidant, antidiarrhoeal, antiviral, and hepato protective in mice (Batiha et al., 2022).	Quercetin, kaempferol, rutin, catechin, epicatechin, gallic, caffeic, chlorogenic &, ferulic acid and β-sitosterol (Elkahoui et al., 2024; Raweh et al., 2022).	Low acute toxicity in mice, with an oral LD_{50} of 3.9 g/kg (Batiha et al., 2022).

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Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
		is used. Washing animal body with extract					
115. *Vachellia amythethophylla* (Steud. ex A. Rich.) Kyal. & Boatwr.	Lumpy skin disease, skin disease with intestinal adhesions in cattle and sheep (Gradé et al., 2009)	Water extract administered topically and orally in cattle and sheep (Gradé et al., 2009)	Sh	B, L			
116. *Dalbergia melanoxylon* Guill. & Perr	Helminthosis, ticks in livestock (Byaruhanga et al., 2015).	Crush fresh roots and bark, mixed with water, and drench (Byaruhanga et al., 2015).	Sh	R, B		Neoflavonoids, benzofuran (Lin et al., 2020), tannins, saponnins, sterols (Chalo et al., 2023; Najeeb et al., 2018).	
117. *Senegalia mellifera* (Vahl) Seigler &Ebinger	Otitis secondary to biting ticks (Gradé et al., 2009)	Water extract applied topically (Gradé et al., 2009)	Sh	B	Antimicrobial, insectcidal (Mutai et al., 2009).	Tannins, phenolics, saponins, terpenoids, alkaloids, flavonoids, (Mutai et al., 2009).	
118. *Vachellia oerfota* (Forssk.) Kyal. and Boatwr.	Pneumonia, rinderpest, trypanosomiases (Gradé et al., 2009).	Water extract given orally, directly fed to animals as fodder (Gradé et al., 2009)	Sh	B, R	Antimicrobial, antifungal, antiprotozoal, anti-inflammatory, antidiabetic (Tiwari et al., 2023).	Phenolics especially quercetin, kaempferol, rutin, and gallic acid (Akapo et al., 2025).	
119. *Vachellia hockii* (De Wild.) Seigler &Ebinger	NCD (Zirintunda et al., 2024)	Pound	Sh	L, B			
120. *Senegalia senegal* (L.) Britton	Delivery and post partum pain in sheep, goats and cattle (Gradé et al., 2009)	Directly as fodder, water extract orally ingested in sheep, goats and camels (Gradé et al., 2009).	Sh	B, Fl, L	Antimicrobial, antifungal, anti-inflammatory, anthelmintic (Djambo et al., 2025; Msimango et al., 2025).	Polysaccharides and glycoproteins (Uzunuigbe et al., 2019).	Low toxicity in mice No deaths/behavioural changes observed at 5000 mg/kg bw; LD_{50} = 5000 mg/kg bw (Magnini et al., 2021).
121. *Vachellia seyal* (Delile) P.J.H. Hurter	Diarrhoea, lumpy skin disease in livestock e.g., sheep, goats and cattle (Gradé et al., 2009), ECF in cattle (Tabuti et al., 2003a)	Water extract both topically and orally administered in goats, sheep and cattle (Gradé et al., 2009)	Sh	R B, L	Antimicrobial, antifungal, anti-inflammatory, antidiabetic, and antioxidant activities in sheep, goats & cattle (Elmi et al., 2020), analgesis, atinflammatory (Kedir et al., 2024).	Polysaccharides and glycoproteins (Ashour et al., 2022).	Safe at 2000 mg/kg in both rats & mice (Kedir et al., 2024).
122. *Vachellia tortilis* subsp. spirocarpa (Hochst. ex A. Rich.) Kyal. & Boatwr.	Abscess in goats and goat pox	Water extract topically administered in goats and various livestock (Prayogo et al., 2021)	Sh	L	Antimicrobial, anti-inflammatory, & antioxidant activities (Prayogo et al., 2021).	Catechin, quercetin, and kaempferol (More et al., 2021; Taha et al., 2022).	Minimal acute toxicity in mice, LD_{50} = 5.2 g/kg bw (Batiha et al., 2022).
123. *Vachellia sp*	Goat pox, retained placenta, low milk production (Gradé et al., 2009)	Water extract with *Ocimum basilicum* (Gradé et al., 2009).	Sh	Fl, Lv	Antimicrobial, anti-inflammatory, (Jaeger et al., 2019).	Tannins, flavonoids, alkaloids, saponins, terpenoids, steroids, and phenols (More et al., 2021)	Low acute toxicity in mice, LD_{50} of 4.8 g/kg bw (Jaeger et al., 2019).
124. *Albizia amara* (Roxb.) Boivin	Abcessess, chronic wound, Mange hoof disease, maggots, otitis with pus, often ticks (Gradé et al., 2009)	Poultrice, oil extraction with topical administration (Gradé et al., 2009)	Sh	L	Antiinflammatory, analgesic, antipyretic, antifungal, antibacterial, and wound healing (Njoroge et al., 2010).	Flavonoids, saponins, tannins, alkaloids, steroids, terpenoids, phenols, glycosides. quercetin, kaempferol, rutin, lupeol, betulinic acid, and albigenin (Srivastava et al., 2020).	Minimal acute and subacute toxicity in mice and rats (Srivastava et al., 2020).
125. *Albizia anthelmintica* (A. Rich.) Brongn.	Bloat and cough, intestinal parasites in goats, sheep and cattle (Gradé et al., 2009)	Water extract administered both topically as poultrice and orally in sheep, goats and cattle (Gradé et al., 2009)	Sh	R, B	Antiparasitic, antinematodal, antibacterial against (El Khodary et al., 2021).	Alkaloids, flavonoids, glycosides, phenolics, saponins, steroids, tannins, and terpenoids (Mohamed et al., 2013).	A dose rate of 1000 mg/kg b.w resulted death of all mice (Githiori et al., 2003).
126. *Albizia coriaria* Welw. ex Oliv.	Barreness, pneumonia, increase fertility, fever, contagious bovine/caprine pleuropneumonia (Gradé et al., 2009), bacillary white	Water extract given orally in cows (Gradé et al., 2009), decoction (Bukenya-Ziraba and Kamoga, 2007), fresh leaves and bark	T	B, L, R	Antioxidant, antibacterial, antifungal, antinflammatory, antiparasitic, and antigiardial (Omara et al., 2023).	Lupeol, lupenone, betulinic acid, betulin, and benzyl alcohol (Omara et al., 2023).	Minimal acute toxicity in mice, LD_{50} = 3.2 g/kg (Omara et al., 2023). Highly cytotoxcix to U87 cells (Anywar, 2022; Anywar et al., 2021).

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	Toxicity

							Toxicity
							No acute toxicity in mice at 5000 mg/kg (Abotsi et al., 2017).
							bis (2- ethylhexyl) phthalate, one of its secondary compounds, is toxic to humans (Ayo et al., 2009).
							Minimal toxicity on the liver, kidney, and hematopoietic tissue (Obakiro et al., 2021).
							Poisoning and death acute atrophy of the liver and muscles (Delachiave and De Pinho, 2003)

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
	diarrhoea, fowl typhoid (Bukenya-Ziraba and Kamoga, 2007), helminthosis in livestock (Byaruhanga et al., 2015), ECF (Tabuti et al., 2003a), NCD & diarrhoea (Zirintunda et al., 2024)	crushed and used for drenching (Byaruhanga et al., 2015), decoction/infusion with *Oncoba spinosa*/roots of *Milicia excelsa* and *S.longipedunculata* (Tabuti et al., 2003a).					
127. *Albizia zygia* (DC.) J.F.Macbr.	Painful red eyes, lice, Mange in livestock (Gradé et al., 2009)	Poultice topically administered in goats, sheep and cattle (Gradé et al., 2009).	T	L	Antinflammatory, analgesic, in chicks, rats and mice (Abotsi et al., 2017).	Lupen-20(30)-3b-ol, pyrogallol, phenol, phytol, dl-α -tocopherol, oleamide, campesterol, stigmasterol, β-sitosterol and lupeol (Olukanni, 2020).	No acute toxicity in mice at 5000 mg/kg (Abotsi et al., 2017).
128. *Chamaecrista nigricans* (Vahl) Greene	Abscess, dermatophilosis, fever, intestinal parasites, meningitis, wounds mainly in goats, cattle, sheep (Gradé et al., 2009)	Powder topically applied/water extract with *P. thonningai* bark, used to wash (Gradé et al., 2009)	Sh	L	Antimicrobial, antiulcer, analgesic, anti-inflammatory, insecticidal, and larvicidal activities (Ayo, 2010).	Emodic acid, citreorosein, and other anthraquinone derivatives, luteolin, flavonoid, and hydroxyestranic acid (Ayo et al., 2009).	bis (2- ethylhexyl) phthalate, one of its secondary compounds, is toxic to humans (Ayo et al., 2009).
129. *Crotlaia* sp.	Poisonous gives cattle foot rot anaplasmosis (Gradé et al., 2009)	Cattle walk on mature pods in pasture (Gradé et al., 2009)	H	Fl	Antioxidant, antibacterial, antifungal, anti-inflammatory, antinociceptive, antimalarial & antitumor (Saba, 2019).	Flavonoids, phenols, tannins, saponins, terpenoids, and steroids, pyrrolizidine alkaloids e.g., senecionine, retrorsine, senkirkine, and monocrotaline (Saba, 2019).	
130. *Erythrina abyssinica* Lam.	Deworming in cattle, goats, and sheep and reduces inflammation (Gradé et al., 2009), Fowl typhoid (Bukenya-Ziraba and Kamoga, 2007), Conjunctivitis (Matovu et al., 2020), cough and ectoparasites &infectious bronchitis in chicken (Zirintunda et al., 2024)	Decoctions or infusions (Bukenya-Ziraba and Kamoga, 2007; Gradé et al., 2009), pound about a handful (200g) of the flowers (Maceration). Squeeze 4–5 drops into the eye (Matovu et al., 2020).	T	B, L, R, F	Antibacterial, antifunga l (Obakiro et al., 2021).	Phenols, flavonoids, saponins, alkaloids, tannins (Obakiro et al., 2021).	Minimal toxicity on the liver, kidney, and hematopoietic tissue (Obakiro et al., 2021).
131. *Phaseolus vulgaris* L.	Fowl pox in chicken (Zirintunda et al., 2024)	Pound	H	L, S, R			
132. *Piliostigma thonningii* (Schumach.) Milne-Redh.	Dermatophilosis, bloody diarrhoea, trypanosomiases in cattle, sheep, goats (Gradé et al., 2009),	Poultice (Gradé et al., 2009),	T	B	Antimicrobial, antiviral, antimalarial, anti-inflammatory (Abubakar et al., 2024; Nethathe et al., 2025).	Terpenoids, alkaloids, phenolics, flavonoids, saponins, tannins, and steroids, quercetin, kaempferol, piliostigmin (Abubakar et al., 2024; Nethathe et al., 2025).	
133. *Philenoptera laxiflora* (Guill. & Perr.) Roberty	Cough and diarrhoea in chicken (Zirintunda et al., 2024)	Pound bark (Zirintunda et al., 2024)	T	Bark			
134. *Pseudarthria confertiflora* (A. Rich.) Baker	Helminthosis in all livestock and poultry (Nabukenya et al., 2014).	Boil leaves or bark for 1 h, cool and drench (Nabukenya et al., 2014).	H	L, B			
135. *Pseudarthria hookeri* Wight & Arn.	Cattle helminthosis (Matovu et al., 2020)	Maceration and (Matovu et al., 2020).	Sh			Alkaloids, flavonoids, terpenoids, peptide, polysaccharide and saponins (Yaya et al., 2023).	
136. *Senna occidentalis* (L.) Link	Worms in cattle, goats, sheep andpoultry, Helminthosis in all livestock and poultry, constipation, heart problems, rotten wounds in mouth in cattle, sheep, goats and horses (Gradé et al., 2009), singamus (Bukenya-Ziraba and Kamoga, 2007; Matovu et al., 2020), fiarrhoea and cough in cattle (Tabuti et al., 2003a)	Decoct and drench (Gradé et al., 2009; Matovu et al., 2020), decoction (Bukenya-Ziraba and Kamoga, 2007),	Sh	St, B, R, Fl, L	Antibacterial, antifungal, anthelmintic, anti-inflammatory (Suleiman et al., 2014).	Neolignan, flavonoidal glycosides, flavonolignans, glucopyranoside, betulinic and vanillic acid (Suleiman et al., 2014), sennosides (Mogaka et al., 2023), alkaloids, tannins, saponins, phytosterols, phenols, flavonoids (Suleiman et al., 2014)	Poisoning and death acute atrophy of the liver and muscles (Delachiave and De Pinho, 2003)

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
137. *Senna* Spp	Fever, rotten wounds in mouth, pneumonia (Nabukenya et al., 2014).	Water extract, Water infusion with salt, wash mouth (Nabukenya et al., 2014).	H	L			
138. *Senna didymobotrya* (Fresen.) H.S. Irwin & Barneby	Anaplasmosis, ECF, and ectoparasites, diarrhoea (Nabukenya et al., 2014), helminthosis (Matovu et al., 2020).	Water extract (Matovu et al., 2020), maceration, decoction and drench (Matovu et al., 2020).	Sh	R	Antimicrobial, anthelmintic (Nyamwamu et al., 2015), analgesic, insecticidal, antiinflammatory (Orwa and Njue, 2019).	Anthroquinones, alkaloids, terpenoids, anthraquinones, tannins, saponins, phenols and flavonoids (Orwa and Njue, 2019)	Slightly toxic. Harmful to both aquatic invertebrates and fish (Nyamwamu et al., 2015).
139. *Senna hirsuta* (L.) H.S.Irwin & Barneby	Helminthosis in all livestock and poultry (Nabukenya et al., 2014).	Boil dry leaves with little rock salt and drench or crush fresh leaves and drench (Nabukenya et al., 2014).	Sh	S, L			
140. *Senna siamea* (Lam.) H.S.Irwin & Barneby	Cough in chicken (Zirintunda et al., 2024)	Crushing (Zirintunda et al., 2024).	T	L	Antibacterial activity (Ogunniran et al., 2024)	Saponin, alkaloids, antraquinones and phylobatannins (Smith, 2009)	Alkaloids are often toxic to man and may have dramatic physiological activities (Shelton, 1980)
141. *Tamarindus indica* L.	Inapetance in calves with diarrhoea, FMD, rotten wounds in mouth (Gradé et al., 2009), coccidiosis, fowl typhoid (Bukenya-Ziraba and Kamoga, 2007), NCD and bacterial infections in chicken (Zirintunda et al., 2024)	Infusion (Gradé et al., 2009), Decoction with unripe fruit (Bukenya-Ziraba and Kamoga, 2007), pound (Zirintunda et al., 2024)	T	Fl Fr	Anthelmintic, antibacterial, wound healing, antiinflamatory, antiviral, analgesis, antifungal (Tugume et al., 2020).	Anthocyanins, flavonoids, phenolics, antibacterial (Tugume et al., 2020).	Cytotoxic to liver tumor cells (Iskandar et al., 2017).
142. *Tephrosia vogelii* Hook.f.	Ticks (Gradé et al., 2009), insecticide/acaricide (Siame et al., 2019), chicken lice, mites (Bukenya-Ziraba and Kamoga, 2007), skin disease 'lukuku' and wounds in cattle and maggot infested wounds (Tabuti et al., 2003a).	Water extracts, applied topically (Gradé et al., 2009), decoction (Bukenya-Ziraba and Kamoga, 2007), rubbed on animal skin, sap applied to wounds (Tabuti et al., 2003a).	H	L	Insecticidal activity (Shin-Foon, 1989)	Deguelin, tephrosin, and rotenone (Belmain et al., 2012).	Rotenone is toxic causing foetotoxicity and death of offspring in genuine pigs at doses of 4.5 and 9.0 mg/kg/day (Moriya et al., 1983).
143. *Tylosema fassoglense* (Kotschy ex Schweinf.) Torre & Hillc.	Fowl typhoid (Bukenya-Ziraba and Kamoga, 2007), ticks in livestock (Byaruhanga et al., 2015)	Dedoction (Bukenya-Ziraba and Kamoga, 2007), fresh leaves and stem are crushed with water and used for washing animal (Byaruhanga et al., 2015).	H	Rt, L. St	Antibacterial activity (Mukavi et al., 2020)	Polyphenols, flavonoids, tannins, and alkaloids (Kudamba et al., 2022)	
144. *Tephrosia* Spp.	Abscess, anaplasmosis, fever (Gradé et al., 2009),	Water extracts, applied topically	H	L			
145. *Neorautanenia mitis* (A. Rich.) Verdc.	Fleas, lice, ficks (Gradé et al., 2009),	Water extract, topically	H	R		Alkaloids, phenols, terpenoids, flavonoids, and tannins, rautandiol A & B (Kagisha et al., 2020).	
146. *Indigofera spicata* Forssk.	Appetite stimulant, calf diarrhoea, trypanosomiases (Gradé et al., 2009),	Water extract is orally applied (Gradé et al., 2009).	H	L	Analgesis & anti-inflammatory (Birhane and Asres, 2014).	Benzofurans, flavonoids, saponins triterpenes, steroids, phthalates, fatty acids (Mouafon et al., 2021), indospicine (Ossedryver et al., 2013).	Leaf & seed hepatotoxic to rabbits & mice (Hutton et al., 1958). Causes ataxia, paresis, depression, muscle fasciculations, dysphagia, ptyalism & halitosis (Ossedryver et al., 2013). Idospicine residues accumute & persist in bovine tissues (Fletcher et al., 2016).
Lamiaceae							
147. *Aeollanthus* sp	Trypanosomiases, diarrhoea in sheep and goats, wound healing, skin infections (Gradé et al., 2009).	Water extract administered orally in sheep and goatsv(Gradé et al., 2009).	H	R	Antimicrobial, insecticidal (Martins et al., 2016).	Flavonoids, phenolic, terpenoids, essential oils (Martins et al., 2016).	The oil is generally recognized as safe at the experimental dosage. Did not cause any mortality in the experimental rats at 2000 mg/kg bw(Yovo et al., 2019).
148. *Clerodendrum rotundifolium* Oliv.	Cattle helminthosis (Matovu et al., 2020)	Maceration/decoction and drench (Matovu et al., 2020).	H	L		Tannins, saponins, flavonoids and cardiac glycosides (Adia et al., 2016)	

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		Toxicity
		Slightly toxic. Harmful to both aquatic invertebrates and fish (Nyamwamu et al., 2015).
		Alkaloids are often toxic to man and may have dramatic physiological activities (Shelton, 1980) Cytotoxic to liver tumor cells (Iskandar et al., 2017).
		Rotenone is toxic causing foetotoxicity and death of offspring in genuine pigs at doses of 4.5 and 9.0 mg/kg/day (Moriya et al., 1983).
		Leaf & seed hepatotoxic to rabbits & mice (Hutton et al., 1958). Causes ataxia, paresis, depression, muscle fasciculations, dysphagia, ptyalism & halitosis (Ossedryver et al., 2013). Idospicine residues accumute & persist in bovine tissues (Fletcher et al., 2016).
		The oil is generally recognized as safe at the experimental dosage. Did not cause any mortality in the experimental rats at 2000 mg/kg bw(Yovo et al., 2019).

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	Toxicity
nes, u	
nes, u	
pone ic emi	Elevated AST and ALT in high doses when administered to mice (Oloyede, 2020)
ns, an, Gang	Pronounced embryotoxic and teratogenic effects in zebrafish (Adolpho et al., 2025).
	Moderate cytotoxicity against various human cancer cell lines (Caamal-Herrera et al., 2018).
9- oxy- a-	Severe toxic inflammatory response of mucous membranes at all body orifices, profuse salivation in man (Panda et al., 2022).
, ,	2000 mg/kg bw caused the death of 2/3 within 24 h preceded by rapid onset of toxicity signs in the respiratory, CNS and autonomic systems (Rojas-Armas et al., 2019)
s, bu htin,).	Toxicity depends on used extraction method, dosage, administration route, animal species, and physiological condition (Tamilvanan Sujatha et al., 2017). Generally considered safe (Njoga et al., 2022).

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
149. *Rotheca myricoides* (Hochst.) Steane & Mabb.	ECF in cattle (Tabuti et al., 2003a)	Infusion (Tabuti et al., 2003a)	Sh/ T	L	Antifeedant activity (Njeru et al., 2016)	Alkaloids, phenols, anthraquinones, terpenoids, and flavonoids (Njeru et al., 2016)	
150. *Fuerstia africana* T.C.E.Fr.	Cattle helminthosis (Matovu et al., 2020),	Decocotion/marceration of roots and leaves and drench (Matovu et al., 2020)	Sh	L, S, R		Terpenoids (Eugster, 1980).	
151. *Rotheca myricoides* (Hochst.) Steane & Mabb.	Bovine Ephemeral Fever, helminthosis (Gradé et al., 2009),	Pounded roots decoct and drench (Gradé et al., 2009),	Sh	R	Antiviral activity (Litabe et al., 2024)	Alkaloids, phenols, anthraquinones, terpenoids, and flavonoids (Njeru et al., 2016)	
152. *Hoslundia opposita* Vahl	Mastitis, infertility, abortion, retained placenta, diarrhoea, dysentery, malaria, fever, cough, respiratory problems, intestinal worms, and wounds (Gradé et al., 2009),.	Powder in eye (Gradé et al., 2009)	H	L	Immunomodulatory, anti-inflammatory, antifungal, antiviral, antihelminthic and antiprotozoal (Namuga et al., 2024; Oyeyemi et al., 2023)	Diterpenoids 3-O-benzoylhosloppone and 3-O-cinnamoylhosloppone, triterpenoid euscaphic and ursolic acid (Namuga et al., 2024; Oyeyemi et al., 2023).	Elevated AST and ALT in high doses when administered to mice (Oloyede, 2020)
153. *Leonotis nepetifolia* (L.) R. Br.	Intestinal parasites, maggots (Gradé et al., 2009),	Water extract/poultice (Gradé et al., 2009).	H	Wp, L	Anti-microbial, anit-inflammatory (Gang and Kang, 2022).	Alkaloids, phenolics, flavonoids, tannins, steroids, glycosides, coumarins, anthocyanins, saponins, hydroxynepetaefolin, nepetaefuran, leonotinin. leonepetaefolin A-E (Gang and Kang, 2022).	Pronounced embryotoxic and teratogenic effects in zebrafish (Adolpho et al., 2025).
154. *Ocimum gratissimum* subsp. *Gratissimum*	Calf diarrhoea, mosquito control (Gradé et al., 2009)	Water extract Smudge in fire, and/or hang near kraal (Gradé et al., 2009)	H	Rt Wp	Antimicrobial, analgesic, antipyretic, anti-inflammatory, antidiarrheal, (Nguta and Kiraithe, 2019)	Tannins, flavonoids, saponins, steroids, alkaloids, and phenol	Moderate cytotoxicity against various human cancer cell lines (Caamal-Herrera et al., 2018).
155. *Tetradenia riparia* (Hochst.) Codd	Gastrointestinal issues, skin diseases, and respiratory problems in cattle, sheep, goats, helminthosis in all livestock and poultry (Nalule et al., 2011), ECF (Tabuti et al., 2003a).	Infusions,/crush leaves, and put on the wound (Nalule et al., 2011), infusion to which salt is added and given to calf (Tabuti et al., 2003a).	Sh	Fl, St	Antimicrobial, antioxidant, analgesic, anti-leishmania, anti-tuberculosis and anti-parasitic (Panda et al., 2022)	Terpenes, fenchone, 14-hydroxy-9-epi (E)-caryophyllene, 9β, 13β-epoxy-7-abietene, and 6,7-dehydroroilea-none (Panda et al., 2022).	Severe toxic inflammatory response of mucous membranes at all body orifices, profuse salivation in man (Panda et al., 2022).
156. *Thymus vulgaris* L.	Body weakness in chicken (Zirintunda et al., 2024)	Crush	H	L	Antibacterial activity (Mukhtar et al., 2018)	Phenolic compounds, terpenoids, flavonoids, steroids, alkaloids, tannins, and saponin (Patil et al., 2021)	2000 mg/kg bw caused the death of 2/3 within 24 h preceded by rapid onset of toxicity signs in the respiratory, CNS and autonomic systems (Rojas-Armas et al., 2019)
Meliaceae							
157. *Azadirachta indica* A.Juss	Chicken mites, eye problems, fleas, genital diseases, Mange, mosquito control, wounds, gastrointestinal disorders, pneumonia, parasitic worms, snake bites (Gradé et al., 2009), BWD, NCD, fowl typhoid, bacillary white diarrhoea (Bukenya-Ziraba and Kamoga, 2007), helminthosis (Byaruhanga et al., 2015), skin disease (itching) in cattle (Tabuti et al., 2003a), NCD, diarrhoea and shistomoniasis in chicken (Zirintunda et al., 2024)	Water extract, grind seeds to extract oil, apply topically in poultry and cattle/decoction administered orally (Gradé et al., 2009)/fresh crushed, mixed with water and used for drenching. Fruits are dried, crushed into powder, and then boiled to extract an oil suspension which is smeared on the animal (Byaruhanga et al., 2015).	T	Lv, Sd, Rt	Antiparasitic, antifungal, antibacterial, antiviral, anti-inflammatory, antipyretic, antidiarrhoeal, and insecticidal (Njoga et al., 2022; Sarkar et al., 2021).	Terpenoids, flavonoids, phenolics, alkaloids, and glycosides (Uchegbu et al., 2011); nimbolide, azadirachtin, and gedunin (Sarkar et al., 2021).	Toxicity depends on used extraction method, dosage, administration route, animal species, and physiological condition (Tamilvanan Sujatha et al., 2017). Generally considered safe (Njoga et al., 2022).
158. *Turraea floribunda* Hochst.	Panacea (Gradé et al., 2009)	Water extract (Gradé et al., 2009)	T	B			
Loganiaceae							

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	Toxicity
,2 –	
elaic ethyl	
s and 22).	Cytotoxic at1.07 mg/g (Hamed et al., 2017)
nd l, cetin	
oids,	
nols, (2- e (	
mel	Toxic in goats, clinical signs included inappetence, salivation, abdominal pain, diarrhoea, weakness of hind limbs cardiac & renal haemorrhages etc (Onsa et al., 2007)
rin	
s,	
s, and	Poisoning may result in gastrointestinal, respiratory, cardiovascular,/ neurological effects, and death in severe cases (Phua et al., 2008).
al,	Mild hepatotoxicity on prolonged administration (Roland et al., 2022).

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
159. *Strychnos innocua* Delile	ECF in cattle (Tabuti et al., 2003a)	Infusion 300–500 ml.	Sh	R		α-Cubebene, Dibutyl benzene −1,2 – dicarboxylate, β-Elemenone, 4-Methoxy-2- nitroformanilide, Azelaic acid, Glycidol stearate, Chloromethyl 2-chlorodecanoate, γ-terpinene (Alagbe, 2023)	
Malvaceae							
160. *Abelmoschus ficulneus* (L.) Wight and Arn.	Newcastle disease (Zirintunda et al., 2024)	Crush (Zirintunda et al., 2024)	H	L		Flavonoids (Dashputre and Bandawane, 2021)	
161. *Abutilon hirtum* (Lam.) Sweet	Retained placenta and anaplasmosis in cattle, dewormer cattle, sheep, and goats (Gradé et al., 2009)	Water extract administered orally in goats, sheep and cattle (Gradé et al., 2009)	Sh	B		Mucilage, tannins, β-sitosterol, asparagines, flavonoids, alkaloids and sesquiterpenes (Gomaa et al., 2022).	Cytotoxic at1.07 mg/g (Hamed et al., 2017)
162. *Grewia bicolor* Juss.	Retained placenta (Gradé et al., 2009)	Water extract which is orally applied (Gradé et al., 2009)	T	B	Antibacterial, antidiabetic, anti-inflammatory, and anti-malarial (Masisi et al., 2021).	Flavonoids, phenolics, tannins, terpenoids, steroids, alkaloids, and saponins, gallic acid, ursolic acid, myricetin, kaempferol, and quercetin (Masisi et al., 2021).	
163. *Grewia mollis* Juss.	Retained placenta Constipation (Gradé et al., 2009).	Water extract used orally or by enema (Gradé et al., 2009)	T	B	Anti-inflammatory, antioxidant, antidiabetic, antibacterial, and wound-healing qualities	Phenols, tannins, saponins, alkaloids, and steroids, glucuronic acid.	
164. *Grewia villosa* Willd.	Retained placenta (Gradé et al., 2009)	Water extract which is topically (Gradé et al., 2009)	T	B	Antibacterial (Mummed et al., 2018).	Alkaloids. saponins, tannins, phenols, icosane, docosane, tricosane, bis(2-ethylhexyl) decanedioate, icosane (Kamau et al., 2025).	
165. *Hibiscus trionum* L.	Fodder, diarrhoea in goats and cattle (Gradé et al., 2009)	Direct as fodder (Gradé et al., 2009)	H	St	Improves weight loss caused by experimental diabetes in rats, antidiabetic, hypolipidemic, hepatoprotective (Ziyanok-Demirtas, 2024).	Cleomiscosin A, mansonone (Kamel et al., 2024).	Toxic in goats, clinical signs included inappetence, salivation, abdominal pain, diarrhoea, weakness of hind limbs cardiac & renal haemorrhages etc (Onsa et al., 2007)
166. *Sida cuneifolia* Roxb.	Fractures and sprains (Gradé et al., 2009)	Decoction and infusions applied topically or orally (Gradé et al., 2009)	Sh	L, R, Wp		Alkaloids, flavonoids, andcoumarin (Aminah et al., 2021)	
167. *Theobroma cacao* L.	Diarrhoea in chicken (Zirintunda et al., 2024)	Crush seeds	Sh	Sd	Antibacterial property (Patil et al., 2022)	Phenols, flavonoids (catechin, epicatechin, and procyanidins) (Akinmoladun et al., 2016)	
168. *Sida ovata* Forssk.	Fodder, retained placenta (Gradé et al., 2009)	Water extract (Gradé et al., 2009)	H	L, Fl	Antimicrobial, inflammation and analgesic and anti-inflammatory.	Terpenoids, alkaloids, flavonoids, phenols, saponins and steroids.	
Meliaceae							
169. *Melia azedarach* L.	Contagious bovine/caprine pleuropneumonia, measles, Rinderpest in cattle, sheep, goats, pigs, dogs, and poultry (Gradé et al., 2009), body weakness, wounds, infectious Coryza in chicken, chronic respiratory disease, fowl pox and fowl cholera, ectoparasites, infectious bronchitis in chicken (Zirintunda et al., 2024).	Water extract (Gradé et al., 2009),	T	R, B	Antioxidant, antimicrobial, antiviral, antifeedant, antifungal, and cytotoxic effects (Hieu et al., 2022)	Coumarin derivatives, flavonoids, sterols, and xanthones (Dougnon and Ito, 2022)	Poisoning may result in gastrointestinal, respiratory, cardiovascular,/ neurological effects, and death in severe cases (Phua et al., 2008).
170. *Trichilia prieureana* A. Juss.	Chest pain, East coast fever (Gradé et al., 2009), coccidiosis (Zirintunda et al., 2024).	Water extract (Gradé et al., 2009), pound and give (Zirintunda et al., 2024).	T	B	Antimicrobial (da Silva et al., 2021).	Terpenes, limonoids (Resetar et al., 2023).	Mild hepatotoxicity on prolonged administration (Roland et al., 2022).
Menispermaceae							

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	Toxicity
one-	Minimal cytotoxicity against brine shrimp larvae & no chronic toxicity in experimental rats (Kola-Mustapha et al., 2020).
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	Low acute toxicity with zero lethality (Burci et al., 2019).
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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
171. *Chasmanthera dependens* Hochst.	Anaplasmosis, fever East Coast fever, diarrhoea, Foot and mouth disease prophylaxis Cattle and goats (Gradé et al., 2009).	Water extract which is orally applied/with *T. indica* fruits for FMD (Gradé et al., 2009)	H	St, R, B	Antiplasmodial, antioxidant, analgesic, anti-inflammatory, antihyperlipidemic & antimicrobial (Kola-Mustapha et al., 2020).	Alkaloids, flavonoids, saponins, tannins, terpenoids, steroids, glycosides, 4-hydroxyanthraquinone-2-carboxylic acid & β-sitosterol acetate (Enenebeaku et al., 2021).	Minimal cytotoxicity against brine shrimp larvae & no chronic toxicity in experimental rats (Kola-Mustapha et al., 2020).
172. *Hyalosepalum afrum* (Miers) Troupin	Anaplasmosis (Gradé et al., 2009).	Water extract (Gradé et al., 2009)	T	R			
Moraceae							
173. *Artocarpus heterophyllus* Lam.	Newcastle disease in chicken (Zirintunda et al., 2024)	Crush (Zirintunda et al., 2024)	T	B	Antibacterial effects (Baliga et al., 2011)	Carotenoids, flavanoids, volatile acids, sterols and tannins (Arung et al., 2007)	Low acute toxicity with zero lethality (Burci et al., 2019).
Moringaceae							
174. *Moringa oleifera* Lam.	Arthritis in cattle, sheep goats (Gradé et al., 2009), cattle helminthosis (Matovu et al., 2020), NCD, diarrhoea and cough, bacterial infections and bronchitis in chicken (Zirintunda et al., 2024).	Fed directly, water extracts, added in feed formulation (Gradé et al., 2009), leaves mixed with fodder (Matovu et al., 2020), crush (Zirintunda et al., 2024)	T	L	Antimicrobial, anti-inflammatory (Henuk, 2018), Anti-inflammatory, antioxidant, antimicrobial, antilelminthic, antihepatotoxic (Singh et al., 2023).	Alkaloids, flavonoids, anthocyanins, proanthocyanidins and cinnamates (Singh et al., 2023).	
Musaceae							
175. *Musa* × *paradisiaca* L.	ECF in cattle (Tabuti et al., 2003a)	Prepared as a beer and given when warm (Tabuti et al., 2003a).	H	F			
Myrtaceae							
176. *Psidium guajava* L.	Coccidiosis (Bukenya-Ziraba and Kamoga, 2007), Newcastle disease (Zirintunda et al., 2024)	Decoction (Bukenya-Ziraba and Kamoga, 2007), crush (Zirintunda et al., 2024)	T	L	Antimicrobial activity (Gutiérrez et al., 2008)		
177. *Syzygium cumini* (L.) Skeels	Haematuria (Rajkumari et al., 2014), cough and diarrhoea in chicken (Zirintunda et al., 2024).	Decoction, seeds powdered (Rajkumari et al., 2014), pound leaves and bark	T	L B	Anti-salmonella activity (Bari et al., 2024).	Glucoside jamboline, resin, tannins and phenolics (Srivastava and Chandra, 2013), betulinic acid, β-sitosterol, friedelin, epi-friedelanol (Sengupta and Das, 1965).	
Nyctaginaceae							
178. *Boerhavia diffusa* L.	Singamus (Bukenya-Ziraba and Kamoga, 2007), ECF in cattle (Tabuti et al., 2003a)	Decoction (Bukenya-Ziraba and Kamoga, 2007), infusion (Tabuti et al., 2003a).	Sh	R, Ap			
Oleaceae							
179. *Olea europaea* L.	Intestinal parasites (Gradé et al., 2009).	Water extract (Gradé et al., 2009).	T	L		Alkaloids, phenolics, terpenoids, flavonoids, and saponins, oleuropein (Adem et al., 2020).	
180. *Olea europaea* L. subsp. *africana* (Mill.) P.S. Green	Intestinal parasites (Gradé et al., 2009).	Water extract (Gradé et al., 2009).	Sh	L	Antiparasitic (Siyadatpanah et al., 2022)		
Orobanchaceae							
181. *Striga hermonthica* (Delile) Benth.	Newcastle disease in chicken (Zirintunda et al., 2024)	Crushing (Zirintunda et al., 2024)	H	Fl			
Oxalidaceae							
182. *Oxalis corniculata* L.	Influenza, enteritis, diarrhoea, traumatic injuries, sprains, and snake bites (Rashmi and Sahu, 2020), fowl typhoid, coccidiosis (Bukenya-Ziraba and Kamoga, 2007).	Infusions/decoction (Bukenya-Ziraba and Kamoga, 2007)	H	L, WP	Anti-oxidant, wound healing properties, antimicrobial (Duc et al., 2023).	Flavonoids, tannins (Duc et al., 2023).	
Phyllanthaceae							

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
183. *Bridelia micrantha* (Hochst.) Baill.	Retained placenta in cattle and sheep (Gradé et al., 2009).	Water extract which is administed orally in cattle & sheep (Gradé et al., 2009).	T	B	Anthelmintic, antimicrobial, anticonvulsant and sedative, antidiabetic, antidiarrhoeal, antinociceptive, antioxidant and β-lactamase inhibitory activities (Maroyi, 2017).	Brideliol, bridelic acid, β-sitosterol, lupeol, betulinic acid, oleanolic acid, ursolic acid, kaempferol, quercetin, rutin and catechin (Maroyi, 2017).	LD_{50} of the stem bark's aqueous extract in mice was 3.9 g/kg (Maroyi, 2017).
184. *Bridelia scleroneura* Müll	Retained placenta in common livestock such cattle (Gradé et al., 2009).	Water extract given in common livestock (Gradé et al., 2009).	T	B	Antibacterial, antifungal, anti-inflammatory, & analgesic (Ngueyem et al., 2009; Théophile et al., 2006)	Quercetin, kaempferol, rutin, catechin, gallic caffeic, chlorogenic, & ellagic acid (Ngueyem et al., 2009).	Low toxicity LD_{50}=2.5–5 g/kg (Ngueyem et al., 2009).
185. *Flueggea virosa* (Roxb. ex Willd.) Royle	Bacterial infections in chicken (Zirintunda et al., 2024)	Pounding	Sh	Rt	Antimicrobial effect (Bailly, 2024).		
Sapotaceae							
186. *Vitellaria paradoxa* C.F. Gaertn.	Constipation, diarrhoea, Mange, stomach pain in goats and camels Gradé et al. (2009), Newcastle disease in chicken (Zirintunda et al., 2024)	Extract oil from seeds which is topically in goats and camels (Gradé et al., 2009), poud roots and give	T	Fl, Sd	Anti-inflammatory, antioxidant &, gastroprotective (Dangnon et al., 2025).	Phenolics, flavonoids, terpenoids, steroids, saponins, alkaloids, and tannins (Sinan et al., 2020).	Considered non-toxic due to its widespread use by humans and animals for various purposes (Sinan et al., 2020).
187. *Calotropis procera* (Aiton) W.T. Aiton	East coast fever, anaplasmosis in sheep & goats (Gradé et al., 2009).	Water extract administered orally in sheep and goats (Gradé et al., 2009).	H	Wp	Anti-inflammatory, analgesic, antipyretic, anthelmintic, antimicrobial (Kaur et al., 2021).	Calotropin, calactin, uscharin, proceroside, calotoxin, calotropagenin, & gigantin (Kaur et al., 2021; Wadhwani et al., 2021).	Toxic to humans and animals. Latex can cause skin irritation, blistering, inflammation and ulceration (Wadhwani et al., 2021).
188. *Phyllanthus* sp.	Snake bite (Gradé et al., 2009)	Water extract (Gradé et al., 2009)	H	Wp		Phenolics tannins, saponins, terpenoids, coumarins, and flavonoids (Nahar et al., 2011).	
Papaveraceae							
189. *Argemone mexicana* L.	Fowl typhoid (Bukenya-Ziraba and Kamoga, 2007)	Cold water extract (Bukenya-Ziraba and Kamoga, 2007).	H	L	Antibacterial activity (Saranya et al., 2012)		
190. *Papaver somniferum* L.	Heartwater (Gradé et al., 2009)	Crushed leaves nasally (Gradé et al., 2009).	H	L	Antispasmodic, analgesic (Lim, 2012).	Morphine, codeine, thebaine, papaverine, noscapine, sanguinarine, and rhoeadine alkaloids, phenols, anthocyanins, & flavonoids (Lim, 2012).	
Pedaliaceae							
191. *Sesamum angustifolium* (Oliv.) Engl.	Parasites, wounds, diarrhoea, constipation, fever and respiratory ailments in cattle., lorms, laminitis, arthritis, colic, ulcers, and anaemia, helminthes, coccidiosis and boosts immunity, increases egg production in poultry,TB (Gradé et al., 2009)	Water extract	H	R	Anti-inflammatory, antioxidant, antipyretic, analgesic, anthelmintic, antibacterial (Siamayuwa et al., 2020).	Sesamin, sesamol, sesaminol, sesamolin, quercetin, kaempferol, rutin, catechin are some of the main flavonoids (Siamayuwa et al., 2020).	
192. *Sesamum* sp.	Retained placenta tuberculosis (Gradé et al., 2009)	Water extract (Gradé et al., 2009)	H	R		Lignans, phytosterols, tocopherols, phenolic acids, and flavonoids (Kamal-Eldin et al., 1994).	No negative effects 2000 mg/kg in seeds (Kamal-Eldin et al., 1994).
Plumbaginaceae							
193. *Plumbago zeylanica* L.	Contagious, bovine/caprine pleuropneumonia, Pneumonia (Gradé et al., 2009)	Water extract (Gradé et al., 2009)	Sh	B, L, R	Antibacterial, anti-inflammatory, and wound healing (Shukla et al., 2021).	Alkaloids, flavonoids, phenols, tannins, saponins, steroids, terpenoids, and naphthoquinones, plumbagin (Roy et al., 2022)	
Phytolaccaceae							
194. *Phytolacca dodecandra* L'Hér.	Schistosomiasis in cattle and goats, helminthosis in all livestock and	Extracts administered orally and topically (Gradé et al., 2009). Burn	Sh	F, L, R	Molluscicidal/ antischistosomiasis,	Saponins, tannins, flavonoids, terpenoids, phenolics, genins and	Harmful to both aquatic invertebrates and fish. High doses cause reduced

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Toxicity

LD_{50} of the stem bark's aqueous extract in mice was 3.9 g/kg (Maroyi, 2017).

Low toxicity LD_{50}=2.5–5 g/kg (Ngueyem et al., 2009).

Considered non-toxic due to its widespread use by humans and animals for various purposes (Sinan et al., 2020).

Toxic to humans and animals. Latex can cause skin irritation, blistering, inflammation and ulceration (Wadhwani et al., 2021).

No negative effects 2000 mg/kg in seeds (Kamal-Eldin et al., 1994).

Harmful to both aquatic invertebrates and fish. High doses cause reduced

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
	poultry (Gradé et al., 2009), worms and fowl typhoid (Bukenya-Ziraba and Kamoga, 2007), retained placenta, constipation, ECF (Matovu et al., 2020)	to ash with skin of snake, make a filtrate (Bukenya-Ziraba and Kamoga, 2007), macerate/decoct and drench (Matovu et al., 2020).			antibacterial, antifungal, and anthelmintic (Beressa et al., 2020), larvicidal, insecticidal, antibacterial, antifungal, and anti-inflammatory activity (Desta and Abd El-Aty, 2021).	glycosides (Beressa et al., 2020; Desta and Abd El-Aty, 2021).	appetite, excessive urination, shivering, and sleepiness (Beressa et al., 2020).
Poaceae							
195. *Cymbopogon citratus* (DC.) Stapf	NCD (Zirintunda et al., 2024)	Crushing	H	L	Antibacterial activity (Machraoui et al., 2018).		No observed adverse effects in rats (Fandohan et al., 2008).
196. *Cynodon dactylon* (L.) Pers.	Body weakness in chicken (Zirintunda et al., 2024)	Pounding (Zirintunda et al., 2024)	H	L, St			
197. *Dactyloctenium aegyptium* (L.) Willd.	Diarrhoea (Gradé et al., 2009).	Water extract/fodder (Gradé et al., 2009).	H	Fr	Larvicidal (Muthu et al., 2025), antidiarrhoeal (Muthu et al., 2025).	Pyrimidines, tricin, phenolic acids, β-sitosterol glucoside, asysgangoside (Kayed et al., 2015; Kumar, 2025).	Cytotoxic against HeLa, A549, and HepG2 cancer cell lines (Kayed et al., 2015).
198. *Digitaria abyssinica* (Hochst. ex A. Rich.) Stapf	Helminthosis in all livestock & poultry (Gradé et al., 2009), Cattle helminthosis (Matovu et al., 2020)	Boil leaves and roots, cool then drench (Nabukenya et al., 2014)/graze animals/administer as feeds (Matovu et al., 2020).	H	L	Antimicrobial (Sapunyo et al., 2023)	Alkaloids, glycosides, phenolics, coumarins, tannins, flavonoids, steroids, and terpenoids (Sapunyo et al., 2023)	
199. *Hyparrhenia rufa* (Nees) Stapf	Retained placenta (Gradé et al., 2009)	Root decoction and drench animal (Gradé et al., 2009)	H	L			
200. *Sorghum bicolor* (L.) Moench	Lice, fleas, mites, mange and wounds (Nabukenya et al., 2014), Diarrhoea in chicken (Zirintunda et al., 2024).	Mix crushed fruits with roots of *C. adenocaule and* apply on wound-Smear on skin (Nabukenya et al., 2014). Add to feeds (Zirintunda et al., 2024).	H	Sd	Antibacterial activity(Kil et al., 2009).		
201. *Sporobolus pyramidalis* P. Beauv.	Newcastle disease in chicken (Zirintunda et al., 2024)	Pounding (Zirintunda et al., 2024)	H	R	Anti microbial(Gebashe et al., 2020)	Flavonoids, proanthocyanidins, iridoids and phenolic acids (Gebashe et al., 2020)	
202. *Zea mays* L.	Diarrhoea in chicken (Zirintunda et al., 2024)	Eaten directly	H	Sd	Antimicrobial effect (Balasundram et al., 2006)	Steroids (sitosterol and stigmasterol), saponin, tannin, alkaloid, flavonoids (Žilić et al., 2016)	
Portulacaceae							
203. *Portulaca psammotropha* Hance	Bacillary white diarrhoea (Gradé et al., 2009), coccidiosis, bacterial infections, chronic respiratory disease, infectious coryza, fowl pox, histomoniasi, Ectoparasites and cough, infectious bronchitis, fowl and Pullorum/Salmonellosis in chicken (Zirintunda et al., 2024)	Cold water extract (Gradé et al., 2009) Pound (Zirintunda et al., 2024)	H	Wp			
204. *Talinum afrum* (Thunb.) Eckl. & Zeyh.	Low milk production, eye infections, diarrhoea,wounds (Gradé et al., 2009)	Water extract (Gradé et al., 2009)	H	R			
205. *Talinum portulacifolium* (Forssk.) Asch. ex Schweinf.	Anaphylaxis (Bukenya-Ziraba and Kamoga, 2007)	Cold water extract	H	L		Steroids, terpenoids, alkaloids, glycosides, flavanoids, saponin (Rao et al., 2008).	
Primulaceae							
206. *Maesa latifolia* A.DC.	Babesiosis, aspiration pneumonia, diarrhoea, and rabies (Gradé et al., 2009).	Decoctions infusions (Gradé et al., 2009)	T	L, R	Antibacterial, anti-inflammatory (Barman et al., 2025; Bayisa and Bultum, 2022).	lfavonoids, alkaloids, tannins, saponin, Terpenoids, phenols, benzoquinones, e.g., maesanin, dihydromaesanin (Barman et al., 2025; Bayisa and Bultum, 2022).	Generally considered safe $LD_{50} > 2$ g/kg in mice (Megersa et al., 2023).

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	Toxicity
Desta	appetite, excessive urination, shivering, and sleepiness (Beressa et al., 2020).
	No observed adverse effects in rats (Fandohan et al., 2008).
ds, side 5).	Cytotoxic against HeLa, A549, and HepG2 cancer cell lines (Kayed et al., 2015).
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erol), oids	
Rao	
	Generally considered safe $LD_{50} > 2$ g/kg in mice (Megersa et al., 2023).

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	Toxicity
s, &	Nontoxic at moderate doses (up to 2000 mg/kg, but could be injurious at high doses (Yahaya et al., 2019).
al.,	
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3).	
nine ives,	Nontoxic to melanocytes at 15 μg/mL and but inhibited cellular tyrosinase with IC_{50} of 1.56 μg/mL (Thibane et al., 2019).
ine ((	
- ., in; n, e, i,	Increased blood levels of cyclosporine, causing toxicity (Bent et al., 2004), synephrine and octopamine may cause hypertension (Nykamp et al., 2004) and cardiac arrhythmias leading to heart attack (Bui et al., 2006).
phol, bol, bin,	Highly toxic to Vero cells (Gaobotse et al., 2023).
e,	Low toxicity of leaf extracts in rats (LD_{50} < 2000 mg/kg bw (Egbèyèmi et al., 2022).

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
Proteceae							
207. *Protea gaguedi* J.F. Gmel.	Anthrax (Gradé et al., 2009)	Water extract	T	B, L			
Rhamnaceae							
208. *Ziziphus mauritiana* Lam.	Constipation, vomiting, nausea with salivation (Gradé et al., 2009)	Water extract	T	B	Anti-inflammatory, antibacterial, immunomodulatory & antipyretic (Prakash et al., 2021).	Terpenoids, flavonoids, alkaloids, & saponins (Prakash et al., 2021).	Nontoxic at moderate doses (up to 2000 mg/kg, , but could be injurious at high doses (Yahaya et al., 2019).
Rubiaceae							
209. *Gardenia ternifolia* subsp. *jovis-tonantis* (Welw.) Verdc.	Bloat, heartwater, snakebite, snake spit, stick for spinning milk (Gradé et al., 2009)	Water extract with *Steganotaenia,* bark and stem, wash eyes (Gradé et al., 2009)	T	R, B	Antibacterial, antisickling (Ngbolua et al., 2015).	Polyphenols, anthocyanins, flavonoids, tannins, coumarines, alkaloids, saponins (Ngbolua et al., 2015).	
210. *Gardenia ternifolia* Schumach. &Thonn.	ECF in cattle (Tabuti et al., 2003a)		Sh	R	Larvicidal (Ochieng et al., 2010)	Naringenin-7-O-methylether, quercetin-4, kaempferol-7-O-methylether, stigmasterol, β-sitosterol (Ochieng et al., 2010).	
211. *Gladiolus Spp*	Low milk production in cattle, sheep, goats, camels, horses, and donkeys (Gradé et al., 2009).	Water extract orally applied (Gradé et al., 2009)	H	R		Arabinogalactan-protein (Gleeson and Clarke, 1979).	
212. *Neonauclea media* (Havil.) Merr.	Diarrhoea in cattle (Tabuti et al., 2003a)	Infusion. Give calf 500 ml of once a day (Tabuti et al., 2003a).	Sh/ T	R	Antidiarrhoeal (Gidado et al., 2005)	Tannins, alkaloids, flavonoids, saponins, cyanogenic glycosides, anthraquinones, coumarins, monoterpenes (Fadipe et al., 2013).	
Rutaceae							
213. *Clausena anisata* (Willd.) Hook.f. ex Benth.	Calf diarrhoea fever in cattle and goats (Gradé et al., 2009)	Paste enema (Gradé et al., 2009)	Sh	R		Carbazole alkaloids e.g., clausamine H, coumarins, porphyrin derivatives, and limonoids (Lawal, 2020), Clausamines A−E, ekeberginine, Clausine F, O-demethylmurrayanine (Ito et al., 2000).	Nontoxic to melanocytes at 15 μg/mL and but inhibited cellular tyrosinase with IC_{50} of 1.56 μg/mL (Thibane et al., 2019).
214. *Citrus* Spp	Rinderpest (Gradé et al., 2009), ECF in cattle (Tabuti et al., 2003a)	Paste enema (Gradé et al., 2009)	T	R	Insecticidal potential (Ribeiro et al., 2020).	Monoterpene and sesquiterpenes (Othman et al., 2022)	
215. *Citrus* × *limon* (L.) Osbeck	ECF in cattle (Tabuti et al., 2003a)	Decoction given as a prophylactic (Tabuti et al., 2003a)	Sh/ T	F	Anthelmintic (Yilmaz and Yildiz, 2023).	Alkaloids, flavonoids, steroids, terpenoids, saponins, cardiac glycosides (Oikeh et al., 2016)	
216. *Citrus aurantium* f. *aurantium*	Newcastle disease in chicken (Zirintunda et al., 2024), Coccidiosis in chicken (Zirintunda et al., 2024)	Crushing (Zirintunda et al., 2024)	T	L	Antibacterial activity (Okla et al., 2019)	4-terpineol, D-limonene, 4-carvo-menthenol & linalool (Okla et al., 2019), octopamine, neohesperidin; nobiletin, 5-odesmethyl nobiletin, quinoline; narcotin; noradrenline, tryptamine, tyramine; naringin; rhoifolin; Ionicerin (Suryawanshi, 2011)	Increased blood levels of cyclosporine, causing toxicity (Bent et al., 2004), synephrine and octopamine may cause hypertension (Nykamp et al., 2004) and cardiac arrhythmias leading to heart attack (Bui et al., 2006).
217. *Fagaropsis angolensis* (Engl.) H.M. Gardner	Anaplasmosis, contagious bovine/ caprine, pleuropneumonia, lice, snake bite (Gradé et al., 2009)	Water extract topically applied (Gradé et al., 2009)	T	B	Antibacterial, antifungal, antiviral, antiprotozoal, anti-inflammatory (Mutinda et al., 2022).	Diesters, a tigliane diterpene, euphol, euphorbinol, euphorone, euphorbol, euphorginol, euphorinol, euphorbin, euphorbinone, euphorbinene (Mutinda et al., 2022).	Highly toxic to Vero cells (Gaobotse et al., 2023).
218. *Harrisonia abyssinica* Oliv.	Contagious bovine/caprine, pleuropneumonia, chronic neck/ back wound with maggots, dermatophilosis, fly and maggot control, Mange, heartwater, rectal	Water extract orally applied Poultice with oil/water/urine extract and butter, topically applied (Gradé et al., 2009), infusion/decoction with above	Sh	R	Antimicrobial, antifungal, (*A. niger*, *P.aeruginosa, C. albicans*, and *S.aureus*) anti-inflammatory, antipyretic (Egbèyèmi et al., 2022).	Alkaloids, flavonoids, tannins, saponins, steroids, terpenoids, coumarins, quinones, harrisonine, harrabyssinol, harrabyssinone, harrabyssic acid, harrabyssolide,	Low toxicity of leaf extracts in rats (LD_{50} < 2000 mg/kg bw (Egbèyèmi et al., 2022).

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	Toxicity
5-	Highly potent toxicity in Brine shrimp lethality assay (Mguni et al., 2023)
	Some of its compounds are more toxic on Chang cells than to HepG2 cells (Zondegoumba et al., 2019).
	Immunotoxicity and mutagenicity (Chepkirui and Kagia, 2020)
oids (	
7-O- etin ossi	
	Safe for human &and animal consumption. In a 4-week feeding study, *C. annuum* in the diet at concentrations up to 10 % was relatively nontoxic in groups of male mice (Wilbur, 2007).
al.,	No significant gross pathology in rats, but slight hyperemia of the liver and reddening of the gastric mucosa (Wilbur, 2007).
(	Clinical signs of poisoning appear within 6 h and include tachycardia, circling, tremors of the hind limbs, bloat, convulsions, coma and death (Gupta et al., 2014)
s (	Neuronal and liver degeneration, necrosis and cirrhosis (Shekins et al., 2016).
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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
	wound (Gradé et al., 2009), ECF and diarrhoea in cattle (Tabuti et al., 2003a), bacterial infections in chicken (Zirintunda et al., 2024).	ground parts of *O. sinuatum*/Infusion with roots of *V. amygdalina* and 'kalimi kambwa' with salt (Tabuti et al., 2003a).				harrabyssinolide (Madivoli et al., 2018).	
219. *Zanthoxylum chalybeum* Engl.	Anaplasmosis, calf diarrhoea, fever, liver disease in cattle, goats and sheep (Gradé et al., 2009), diarrhoea in chicken (Zirintunda et al., 2024)	Water extract (Gradé et al., 2009), pounf bark (Zirintunda et al., 2024)	T	R	Antibacterial, antifungal, analgesic (Okagu et al., 2021).	6-benzo(1,3)dioxol-5-yl-hexa-2,5-dienoic acid isobutylamide, 4-methoxy-N-(2-methoxy-phenyl), phenyl acrylamidefagaramide (Zondegoumba et al., 2019)	Highly potent toxicity in Brine shrimp lethality assay (Mguni et al., 2023)
220. *Zanthoxylum leprieurii* Guill. & Perr.	Newcastle disease in chicken (Zirintunda et al., 2024)	Pounding (Zirintunda et al., 2024)	T	B	Antibacterial activity (Oloya et al., 2023)	1-Hydroxy-3-methoxy-N-methylacridone, scoparone, arborinine (Zondegoumba et al., 2019)	Some of its compounds are more toxic on Chang cells than to HepG2 cells (Zondegoumba et al., 2019).
221. *Vepris nobilis* (Delile) Mziray	Rheumatism, arthritis, pneumonia, cough, fever, joint anthelmintic in cattle, goats (Gradé et al., 2009)	Water extracts, decoction (Gradé et al., 2009)	Sh	L, St, B, R, Fr,	Antipyretic, analgesic, anti-inflammatory, antimicrobial, antileishmanial and antitrypanosomal (Omujal et al., 2020).	Quinoline and furoquinoline alkaloids, terpenoids and flavonoids (Omujal et al., 2020).	Immunotoxicity and mutagenicity (Chepkirui and Kagia, 2020)
Salicaceae							
222. *Oncoba spinosa* Forssk.	ECF in cattle (Tabuti et al., 2003a)	Infusion/dried fruits tied around neck of calf to act as a prophylactic (Tabuti et al., 2003a).	Sh	R, F	Anti-parasitic activity (Kodi, 2018)	Kaempferol, quercetin, apigenin-7-O-β-D-glucuronopyranoside, quercetin 3-O-β-D-galactopyranoside (Djouossi et al., 2015).	
Solanaceae							
223. *Capsicum annuum* L.	Contagious bovine/caprine, pleuropneumonia, heartwater in livestock (Gradé et al., 2009), Coccidiosis in chicken (Zirintunda et al., 2024), NCD (Nabukenya et al., 2014), bacillary white diarrhoea, coccidiosis, fowl typhoid (Bukenya-Ziraba and Kamoga, 2007).	Water extract with *W. Warburgia spp* bark, *S. incanum* fruits, sediment rock (CaCO3) and water/ Paste, nasally/pound fruit and apply to freshly branded areas (Gradé et al., 2009), Add ash and water to freshly squeezed leaves then drench/mix with *C. sativa*, *A. sisalana* juice and ash then drench/Mix with *Aloe* spp (Nabukenya et al., 2014)	H	F, F	Anthelmintic, insecticidal and insect repellent, antimicrobial acvtivity (Sann, 2020).	Capsaicinoids, carotenoids, flavonoids, phenolics, alkaloids, saponins, tannins, phlobatannins, anthraquinones and cardiac glycosides (Wahua et al., 2013)	Safe for human &and animal consumption. In a 4-week feeding study, *C. annuum* in the diet at concentrations up to 10 % was relatively nontoxic in groups of male mice (Wilbur, 2007).
224. *Capsicum frutescens* L.	Diarrhoea in chicken (Zirintunda et al., 2024)	Crush (Zirintunda et al., 2024).	H	L	Antibacterial activity (Emeka et al., 2022)	Tropane alkaloids (El Bazaoui et al., 2011)	No significant gross pathology in rats, but slight hyperemia of the liver and reddening of the gastric mucosa (Wilbur, 2007).
225. *Nicandra physalodes* (L.) Gaertn.	Cattle helminthosis (Matovu et al., 2020), ECF in cattle (Tabuti et al., 2003a)	Pound 2 handfuls add water/ macerate and drench (Matovu et al., 2020), mixed with milk of the mother cow (Tabuti et al., 2003a).	H	L	Insecticidal property (Gupta et al., 2014)	Alkaloids like withanolide, withaperuvin E and nicandrin B (Bagchi et al., 1984)	Clinical signs of poisoning appear within 6 h and include tachycardia, circling, tremors of the hind limbs, bloat, convulsions, coma and death (Gupta et al., 2014)
226. *Nicotiana tobacum* L.	Fleas (Gradé et al., 2009), ticks (Byaruhanga et al., 2015), cattle helminthiasis (Matovu et al., 2020), NCD, ectoparasites in chicken (Zirintunda et al., 2024)	Urine extract, add ash and wash/ crush fresh leaves, mix with water and wash (Byaruhanga et al., 2015; Gradé et al., 2009), pound to make paste/macerate & squeeze 4-5drops in eye (Matovu et al., 2020).	H	L	Antiparasitic effect (Sharma et al., 2016)	Saponin, flavonoids and alkaloids (Sharma et al., 2016)	Neuronal and liver degeneration, necrosis and cirrhosis (Shekins et al., 2016).
227. *Solanum aculeastrum* Dunal	Retained placenta	Squeeze fruits in water/milk and drench (cough)/heat ripe fruits and	Sh	Fl		Alkaloids (Wanyonyi et al., 2002), tannins and terpenoids (Hikaambo et al., 2023)	

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Toxicity
No toxic in rats (Kunwar et al., 2020)
Toxic glycoalkaloids which cause diarrhoea/carcinogenic glycosides (Eletta et al., 2017)
No clear acute toxicity of fruits crude extracts in wiss albino mice, but showed toxic effects and mortality at high doses (400 mg/kg) (Feyera et al., 2017)
Steroidal glycoalkaloids toxic to many organisms (Akiyama et al., 2023)
Cardiac toxicity in adult Wistar rats (Mahdi and Al-Okialy, 2019)
Genotoxic (Emeka et al., 2022).
Poising in cattle mainly affecting the liver and kidneys the most (Sharma et al., 1981).

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
		smear on vulva (Nabukenya et al., 2014; Zirintunda et al., 2024).					
228. *Solanum aculeatissimum* Jacq.	Anaplasmosis (Gradé et al., 2009).	Water extract (Gradé et al., 2009).	Sh	Fl	Antibacterial (Koduru et al., 2006).	Alkaloids, flavonoids, phenols, saponins, steroids, and terpenoids (Nabeta, 1993).	No toxic in rats (Kunwar et al., 2020)
229. *Solanum dasyphyllum* Schumach. & Thonn.	Contagious bovine/caprine Pleuropneumonia, Heartwater, Poultry respiratory infection(Gradé et al., 2009).	Water extract	H	F	Antibacterial activity (Belitibo et al., 2024)	Saponins, tannins, alkaloids, flavonoids, steroids and cardiac glycosides (Matthew et al., 2021)	Toxic glycoalkaloids which cause diarrhoea/carcinogenic glycosides (Eletta et al., 2017)
230. *Solanum incanum* L.	Anthrax, inappetence, diarrhoea, respiratory diseases and tick infestations, abscess (Gradé et al., 2009), retained placenta (Nabukenya et al., 2014), ECF (Matovu et al., 2020), cataract in cattle (Tabuti et al., 2003a), wounds on eye in cattle (Tabuti et al., 2003a; Zirintunda et al., 2024).	Pound (Gradé et al., 2009), smear crushed fresh fruit on vulva (Nabukenya et al., 2014), decoct/macerate and drench (Matovu et al., 2020). Use sap/mix sap with powder from burnt snail shell/salt/cassava flour and apply to eye (Tabuti et al., 2003a)/ash from leaves and fruits (Zirintunda et al., 2024).	H	L, St, Fr	Antimicrobial, antiparasitic (Sbhatu and Abraha, 2020).	Steroids, flavonoids, quercetin, solasodine, β-Sitosterol, stigmasterol, solamargine, yamogenin (Rani et al., 2025).	No clear acute toxicity of fruits crude extracts in wiss albino mice, but showed toxic effects and mortality at high doses (400 mg/kg) (Feyera et al., 2017)
231. *Solanum giganteum* Jacq.	Pain (Gradé et al., 2009).	Flesh around seeds consumed direct (Gradé et al., 2009).	H	F		Alkaloids (Chowański et al., 2016)	
232. *Solanum sp.*	Otitis with pus, often ticks, Anaplasmosis, East coast fever, heartwater, liver flukes, rinderpest	Water extract with sediment rock (CaCO3) and *Warburgia Warburgia spp* bark	H	F	Insecticidal activity against various insect species (Chowański et al., 2016)	Polyphenols, glycoalkaloids and saponins (Yuan et al., 2020)	Steroidal glycoalkaloids toxic to many organisms (Akiyama et al., 2023)
233. *Withania somnifera* (L.) Dunal	Improve broiler performance and carcass attributes in poultry (Gradé et al., 2009).	Water extract(Gradé et al., 2009).	H	Wp		Steroidal lactones called withanolides, phenolic acids, flavonoids, and alkaloids (Polumackanycz et al., 2023).	Cardiac toxicity in adult Wistar rats (Mahdi and Al-Okialy, 2019)
Theaceae							
234. *Camellia sinensis* (L.) Kuntze	Newcastle disease in chicken & Fowl cholera (Zirintunda et al., 2024).	Crush leaves (Zirintunda et al., 2024)	T	L	Antibacterial activity (Al-Aboudi and AL-Azawi, 2024)	Phenolic compounds (Camargo et al., 2016)	
Urticaceae							
235. *Laportea aestuans* (L.) Chew	Diarrhoea, dysentery, fevers, ulcers, oedema (Gradé et al., 2009).	Water extract, dried powder orally, topically as poultirce (Gradé et al., 2009).	H	L, St, Fl	Anti-helmintic (Oloyede and Ayanbadejo, 2014).	Saponins, alkaloids, cardiac glycosides, phenolics, tannins, flavonoids (Emeka et al., 2022)	Genotoxic (Emeka et al., 2022).
Verbenaceae							
236. *Lantana camara* L	Measles in cattle (Tabuti et al., 2003a)	Infusion made after adding leaves of *C. opulifolium* and *C. sativa* (Tabuti et al., 2003a).	Sh	L	Antiviral activity (García et al., 2010).	Tannins, steroids, flavonoids, quinones, phenols, caumarins, alkaloids (Mansoori et al., 2020), lantadenes (Sharma et al., 1991)	Poising in cattle mainly affecting the liver and kidneys the most (Sharma et al., 1981).
Vitaceae							
237. *Cissus cactiformis* Gilg	Bloat, fractures, wound healing in cattle, sheep, goats, & dogs (Gradé et al., 2009).	Water extract which is orally applied	Sh	St	Anti-inflammatory, analgesic, antibacterial (Panthong et al., 2007).	Flavonoids, triterpenoids, phenolics, alkaloids, & steroids. β-cholest-3-ene (Yoon et al., 2023)	
238. *Cissus quadrangularis* L.	Anaplasmosis, contagious bovine/ caprine, pleuropneumonia, calf diarrhoea, intestinal parasites, low milk production (Gradé et al., 2009).	Water extract for infections, and wounds, and sheep, goats, horses, and dogs (Gradé et al., 2009).	Sh	L	Antibacterial (Anwar et al., 2020)	Flavonoids, triterpenoids, phenolics, alkaloids, steroids, β-sitosterol, kaempferol, resveratrol, β-amyrin, α-amyrin, & quercetin (Bafna et al., 2021)	
239. *Cissus rotundifolia* Lam.	Rotten wounds, mouth wounds of cows, goats and sheep.	Water extract orally applied to wash mouth/poultice with oil or water used	Sh	Wp, L	Antibacterial, analgesic, anti-inflammatory (Bawakid et al., 2025; Shanmugam et al., 2025).	β-cholest-3-ene, heptadecanoic acid, and β-sitosterol acetate (Bawakid et al., 2025).	

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Table 1 (*continued*)

Scientific Name and (Family)	Diseases/ethnoveterinary use and animals treated	Method of preparation and use	LF	Part used	Bioactivity related to traditional ues in Ugnada	Phytochemical composition	Toxicity
240. *Cyphostemma adenocaule* (Steud. exA. Rich.) Desc. ex Wild & R.B. Drumm.	Bovine Ephemeral Fever	Crush leaves, add ash and drench (Nabukenya et al., 2014)	H	L	Antimicrobial activity (Hamill et al., 2003)	Betulin, betulinic, cyphostemmic A, B, C, D, & epigouanic acids A, lupeol, zizyberanal acid, β-sitosterol (Chouna et al., 2016).	
241. *Cyphostemma* ukerewense (Gilg) Desc.	Abscess with maggots, fly repellent, intestinal parasites, ticks (Gradé et al., 2009),	Powder topically applied, water extract/poultice (Gradé et al., 2009).	H	L			
Zingiberaceae							
242. *Curcuma longa* L.	Gastrointestinal issues, inflammmation (Gradé et al., 2009), NCD in chicken (Zirintunda et al., 2024)	Powders/infusions given topically/ inhalated (Gradé et al., 2009), crush and administer (Zirintunda et al., 2024).	H	Rh	Antimicrobial, anti-oxidant, anti-inflammatory (Jyotirmayee and Mahalik, 2022).	Flavonoids, alkaloids, tannins, and saponins (Jyotirmayee and Mahalik, 2022).	Turmeric and curcumin are also safe in animals (Soleimani et al., 2018).
243. *Zingiber officinale* Roscoe	NCD and diarrhoea in chicken (Zirintunda et al., 2024).	Crush and administer (Zirintunda et al., 2024)	H	Rh	Antimicrobial, antidirrhoeal (Shah and Krishnamurthy, 2013),	Zingerone, shogaols and gingerols, and volatile oils (Shah and Krishnamurthy, 2013).	No maternal toxicity in rats (Wilkinson, 2000).
Zygophyllaceae							
244. *Balanites aegyptiaca* (L.) Delile	Blindness, eye diseases, diarrhoea, painful red eyes, mosquito control (Gradé et al., 2009), helminthosis (Byaruhanga et al., 2015), ECF, measles, worms in cattle (Tabuti et al., 2003a).	Put sap in eye/water extract/ powder fruits mixed with ashe of *K. africana* (Gradé et al., 2009). Crushed with water for drenching (Byaruhanga et al., 2015), infusion (Tabuti et al., 2003a).	T	Ex, B, R Fl L	Antibacterial, antifungal, antiprotozoal, antibacterial (Singh et al., 2017).	Flavonoids and alkaloids, Saponins - diosgenin, yamogenin and balanitin-6 (Gautam et al., 2025; Singh et al., 2017).	Generally safe for livestock, but high quantities or prolonged use may have harmful effects (Gautam et al., 2025).
245. *Balanites rotundifolia* var. *rotundifolia*	Otitis with pus, often ticks	Paste is applied in ear	T	L	Antimicrobial, (Seid et al., 2025).	Balanitoside, diosgenin, balanitin-6, spinasterol, stigmasterol, β-sitosterol, lupeol, betulin, betulinic, ursolic oleanolic acids, quercetin, alkaloids, steroids, glycosides, terpenoids, coumarins, phenols (Seid et al., 2025; Thakkar et al., 2025).	

Key: B = bark, LF = Life Form Wp = Whole plant, Fl = flowers, St = Stem, Sd = seeds, R = roots, L = leaves, Ex = Excudate

Toxicity
A, peol, ouna
nd alik, Turmeric and curcumin are also safe in animals (Soleimani et al., 2018).
ls, No maternal toxicity in rats (Wilkinson, 2000).
ins - tin-6 ., Generally safe for livestock, but high quantities or prolonged use may have harmful effects (Gautam et al., 2025).
n-6, erol, ids, 025;

对所使用的各植物种类的毒性特征进行了全面的描述。因此，本综述仅纳入了提供全面毒性信息的研究。

4. 用于民族兽医药的植物科、生活形式及植物部位

只有一种植物物种代表了二十九个科，而每两个植物物种分别代表了18个物种（图1）。使用的植物物种大多数来自豆科（38种），其次是菊科（16种）和大戟科（13种）。其次是锦葵科、芸香科和葫芦科，各有9种。

大戟属产生腐蚀性乳胶，对人类和牲畜构成健康危害。刺激性乳胶与眼睛直接接触可能导致失明（Upadhyay 等，1976）。在本综述中，引用了大戟科的13个物种，即心叶阿尔乔尼（Alchornea cordifolia）、红果阿尔乔尼（Erythrococca bongensis）、大戟（Euphorbia bongensis）、烛形大戟（Euphorbia candelabrum）、库珀大戟（Euphorbia cooperi）、狗尾大戟（Euphorbia hirta）、异叶大戟（Euphorbia heterophylla）、伞形大戟（Euphorbia umbellata）、木脂大戟（Euphorbia tirucalli）、蓖麻（Jatropha curcas）、灌木野苦楝（Acalypha fruticosa）、短柄刺果（Tragia brevipes）、蓖麻（Ricinus communis），其中7个物种属于大戟属。在尼日利亚牧场常见异叶大戟（Euphorbia heterophylla）和狗尾大戟（Euphorbia hirta），并已显示对白化大鼠有毒性（Adedapo 等，2004）。大戟科植物成员往往富含二萜类化合物，其中大部分佛波醇和英格诺酯类化合物可被视为毒素，几乎没有任何药用价值，而另一类二萜化合物则包括一些化合物，

在民族兽医药中使用的大多数植物种类是草本植物（48.4%），其次是灌木（26.8%）和乔木（24.8%）（图2）。

在民族兽医药中最常使用的植物部位是叶子（34.2%），其次是根（20.7%）和树皮（14.2%）（图3）。

5. 关于民族兽医药使用的比较分析 乌干达和非洲其他地区

在非洲大陆，植物在民族兽医中的使用非常广泛，许多农民依赖传统医疗实践来保持动物健康，并在动物生病时进行治疗。民族兽医实践在畜牧健康护理中发挥着比现代兽医实践更重要的作用，无论作为替代方法还是其中的一部分 (Dzoyem 等, 2020)。许多研究报道了植物物种在民族兽医中的使用。例如，(Saganuwan, 2017) 报道了尼日利亚的 215 种植物物种，(Dzoyem 等, 2020) 记录了喀麦隆用于管理牲畜疾病的 69 个科的 138 种植物，以及埃塞俄比亚的 645 种植物 (来自 133 个科)(Tilahun 等, 2019; Chaachouay 等, 2022) 记录了摩洛哥民族兽医中使用的 129 属 56 科的 150 种植物物种。

在非洲南部，尤其是南非，传统动物医药（EVM）的特点是使用的物种更广、植物化学多样性更高，以及初步验证更为广泛。例如，Selogatwe 等（2021）在对南非用于动物健康管理的药用木本植物的民族兽医知识、生物活性和次生代谢产物的综述中，识别出44科共104种木本植物用于治疗不同动物疾病，尤其是牛和山羊。McGaw 等（2020）报告了从2009年至2019年，在南非有139种植物来自50个科被用于防治21种动物疾病和状况。而Gobvu 等（2023）对津巴布韦家禽的民族兽医用药的药用植物进行了综述，并报告了商业家禽饲养者使用53种植物。Chakale及其同事评估了用于治疗di的植物的民族兽医知识。来自南非七个省份的牛病类别（Chakale 等，2021）。本综述中报告的最主要的植物科：豆科、菊科、大戟科、锦葵科、芸香科和禾本科，与其他综述中报告的相似，例如其他研究中的民族兽医药综述（Chaachouay 等，2022；Gobvu 等，2023；McGaw 等，2020；Selogatwe 等，2021）。

Chakale 等人（2021）报告称，只有相对较低的比例（21%）的植物被使用与牛类疾病相关的生物测定进行了各种生物活性评估。同样，在乌干达，只有少数植物物种被使用与牛类疾病相关的生物测定进行了各种生物活性评估，而抗微生物活性通常是研究最广泛的活性。或许这可以归因于微生物引起的大量疾病。这凸显了关于用于民族兽医的药用植物生物活性和功效的科学研究的缺乏。乌干达与其他非洲地区的对比凸显了不同的发展轨迹。乌干达的民族兽医仍主要在基层被记录，具有丰富的民族植物学细节，但实验室验证有限。相比之下，南部非洲显示出更为整体的方法：广泛的民族植物学记录、早期的科学验证、

6. 使用民族兽医学治疗的疾病和状况

我们将治疗的疾病或状况分为84个大类。然而，一些被治疗的疾病/状况已被列为某些疾病的症状。例如，世界动物卫生组织将结节性皮肤病描述为一种牛类病毒性疾病，其特征为发热、皮肤、黏膜和内脏上的结节、消瘦、淋巴结肿大、皮肤水肿，有时乃至死亡。其中一些体征和症状在不同研究中被列为不同的疾病或治疗的状况（世界动物卫生组织，2025年）。至少在三项不同研究中提到的疾病或状况有49种，而至少提到10次的有19种。世界动物卫生组织还制作了一份对经济、贸易和粮食安全具有重大影响的疾病清单（清单A）。这些疾病包括炭疽、布鲁氏菌病、蓝舌病病毒和口蹄疫（Clemmons 等, 2021；Penr）。

一些常见的治疗疾病如图4所示。最常见的疾病约占所有提及的一半，包括腹泻、蛔虫病/蠕虫（12%）、东海岸热/西线热（Theileriosis）和胸膜肺炎/肺炎（7%）、新城疫、伤口和阿那普拉斯病（6%）、球虫病、胎盘滞留、眼疾和外寄生虫（5%）。这些疾病与南非一些最常见的治疗疾病非常相似（McGaw等，2020）。最近的一项研究表明，包括东海岸热、阿那普拉斯病、球虫病在内的血液寄生虫以及蛔虫等内寄生虫是乌干达最常报告的疾病和需要诊断服务的病症之一（Vudriko等，2021）。其他治疗的情况中，不一定是疾病，包括食欲不振、蛇咬伤、受伤、扭伤、奶产量低和不孕。

7. 民族兽医药的制备与使用方法

本综述中报告的民族兽医药的制备和使用方法与非洲大陆其他地区的类似，包括煎剂、浸剂和外用，但也存在一些独特的方法（Chavula 等，2024）。在对马拉维、卢旺达和埃塞俄比亚的民族兽医药实践进行的综述中，也报告了类似的方法。一些做法，例如在使用酸浆果（Nicandra physalodes）时将药物与母牛奶混合，是由（Tabuti 等，2003a）报告的，或者与牛酥油、烧焦的蜗牛壳、盐、木薯粉和尿液提取物混合。刺果茄（Solanum aculeastrum）也通过将果实挤入水或牛奶中制备并口服灌服。

comprehensive account of the toxicity profiles of the individual pant species used. As a result, only studies which provided comprehensive information on toxicity were included in this review.

4. Plant families, life forms and parts of plants used in ethnoveterinary medicine

Twenty nine familes were represented by only one plant specie and 18 species were represented by two plant species each (Fig. 1). Most of the plant species used were from the Fabaceae family (38) followed by Asteraceae (16) and Euphorbiaceaae (13). These were followed by Malvaceae, Rutaceae and Curcurbitaceae with 9 species each.

The genus Euphorbia produces caustic lattices, which constitute a health hazard to humans and livestock. Direct contact of the irritant latex with the eye can cause blindness (Upadhyay et al., 1976). In this revew, 13 species of the family Euphorbiaceae were cited viz *Alchornea cordifolia*, *Erythrococca bongensis*, *Euphorbia bongensis*, *Euphorbia candelabrum*, *Euphorbia cooperi*, *Euphorbia hirta, Euphorbia heterophylla, Euphorbia umbellata, Euphorbia tirucalli, Jatropha curcas*, *Acalypha fruticosa, Tragia brevipes*, *Ricinus communis* out of which 7 species were from the genus Euphorbia. Euphorbia heterophylla and *Euphorbia hirta* are commonly found d in the Nigerian pasture and have been shown to be toxic in albino rats (Adedapo et al., 2004). Members of the Euphorbiaceae family tend to be rich in diterpenes, such as most of phorbol and ingenol esters can be considered exclusively as toxins without any possible medicinal use, whereas the other group of diterpenes consists of compounds, which display toxicity, but in adequate dose they have therapeutic perspective (e.g. the resiniferatoxin with capsaicine-like effect), and are thus promising lead compounds for natural product based drug developments (Hohmann and Molnár, 2004).

Most of the plant species used in ethnoeterinary medicine were herbs (48.4 %), followed by shrubs (26.8 %) and trees (24.8 %) (Fig. 2).

The commonest plant parts used in ethnoveterinary medicine were leaves (34.2 %), followed by roots (20.7 %) and bark (14.2 %) (Fig. 3).

5. A comparative analysis of ethnoveterinary medicine use in Uganda and the rest of Africa

The use for plants in ethnoveterinary medicine is widespread across the African continent and many farmers rely on traditional healthcare practices to keep their animals healthy and to treat them when they are sick. Ethnoveterinary practices play significantly greater roles in livestock health care as an alternative or integral part of modern veterinary practices (Dzoyem et al., 2020). A number of studies have reported the use plant species in EVM. For instance (Saganuwan, 2017), reported 215 plant species in Nigeria and (Dzoyem et al., 2020) recorded 138 plants belonging to 69 families used to manage livestock diseases in Cameroon, and 645 plant species (from 133 families) from Ethiopia (Tilahun et al., 2019; Chaachouay et al., 2022) documented 150 plant species from 129 genera and 56 families used in ethno-veterinary medicine in Morocco.

Across southern Africa, especially in South Africa, EVM is characterized by broader species use, greater phytochemical diversity, and more extensive preliminary validation. For instance (Selogatwe et al., 2021), identified 104 woody plant species from 44 plant families that are used in the treatment of different diseases in animals, particularly cattle and goats in a review of ethnoveterinary knowledge, biological activities and secondary metabolites of medicinal woody plants used for managing animal health in South Africa (McGaw et al., 2020), reported the use of 139 plants from 50 families used against 21 animal diseases and conditions in South Africa from 2009 until 2019, whereas (Gobvu et al., 2023), conducted a review of medicinal plants used for ethnoveterinary medicine, specifically for poultry in Zimbabwe and reported the use of 53 plant species among commercial poultry farmers and Chakale and colleagues evaluated the ethnoveterinary Knowledge of plants used for treating diseases of cattle in South Africa. They reported a total of 310 medicinal plants from 81 families used to treat 10 categories of cattle diseases from 7 provinces in South Africa (Chakale et al., 2021). The most dominant plant families reported in this review: Fabaceae, Asteraceae, Euphorbiaceae, Malvaceae, Rutaceae and Poaceae are similar to those reported in other reviews such as the review of ethnoveterinary medicine in various other studies (Chaachouay et al., 2022; Gobvu et al., 2023; McGaw et al., 2020; Selogatwe et al., 2021).

Chakale et al. (2021) reported a relatively low proportion (21 %) to have been evaluated for various biological activities using relevant bioassays related to cattle diseases. Similarly, few plant species in Uganda have been evaluated for various biological activities using relevant bioassays related to cattle diseases and antimicrobial activity generally is the most widely studied activity. Perharps this could be attributed to the large number of diseases caused by microbes. This highlights the dearth of scientific research on the biological activities and efficacy of medicinal plants used in ethnoveterinary medicine.The contrast between Uganda and other African regions underscores divergent trajectories. Uganda's EVM remains primarily documented at the grassroots level, with rich ethnobotanical detail but limited laboratory validation. In comparison, southern Africa demonstrates a more holistic approach: widespread ethnobotanical documentation, early-stage scientific validation, and structured analytical methods.

6. Diseases and conditions treated using ethnoveterinary medicine

We grouped the diseases or conditions treated into 84 broad categories. Howover, some of the diseases/conditions treated have been listed as symptoms of some diseases. For instance, the World Health organization for animal health describes Lumpy skin disease as a viral disease of cattle characterised by fever, nodules on the skin, mucous membranes and internal organs, emaciation, enlarged lymph nodes, oedema of the skin, and sometimes death. Some of these signs and symptoms are listed as different diseases or conditions treated in the different studies cited (World Health Organisation for Animal Health, 2025). Forty nine diseases or conditions were mentioned in at least 3 different studies, while 19 were mentioned at least 10 times.The World Organisation for Animal Health produced a list (list A) of diseases with high impacts on the economy, trade, and food security. These diseases include anthrax, brucellosis, bluetongue virus, and foot and mouth disease (Clemmons et al., 2021; Penrith and Thomson, 2004).

Some of the common diseases treated are shown in Fig. 4. The most common diseases constituting about half of all the mentions were diarrhoea, helminthosis/worms (12 %), theileriosis/East Coast fever and pleuropneumonia/pneumonia at 7 %, Newcastle disease, wounds, and anaplasmosis at 6 %, coccidiosis, retained placenta, eye diseases, and ectoparasites at 5 %. These were very similarly to some of the commonest diseases treated in south Africa (McGaw et al., 2020). A recent study indicated that hemoparasites including East Coast fever, anaplasmosis, coccidiosis and endoparasites such as helminths to be among the most reported diseases and conditions for which diagnostic services were needed in Uganda (Vudriko et al., 2021). Other conditions treated that were not necessarily diseases included inappetence, snakebites, injuries, sprains, low milk production and infertility.

7. Method of preparation and use of ethnoveterinary medicine

Whereas the methods of preparation and administration of ethnoveterinary medicines reported in this review are similar to those across the continent, ranging from decoctions, infusions, and topical applications, there are some unique methods (Chavula et al., 2024). reported similar methods in a review of ethnoveterinary medicine practices from Malawi, Rwanda, and Ethiopia, some practices such as mixing the medicine with milk of the mother cow in the case of *Nicandra physalodes* was reported by (Tabuti et al., 2003a), or with cow ghee or salt burnt snail shells, salt, cassava flour and urine extract. *Solanum aculeastrum* was also prepared by squeezing the ruits in water or milk and drench

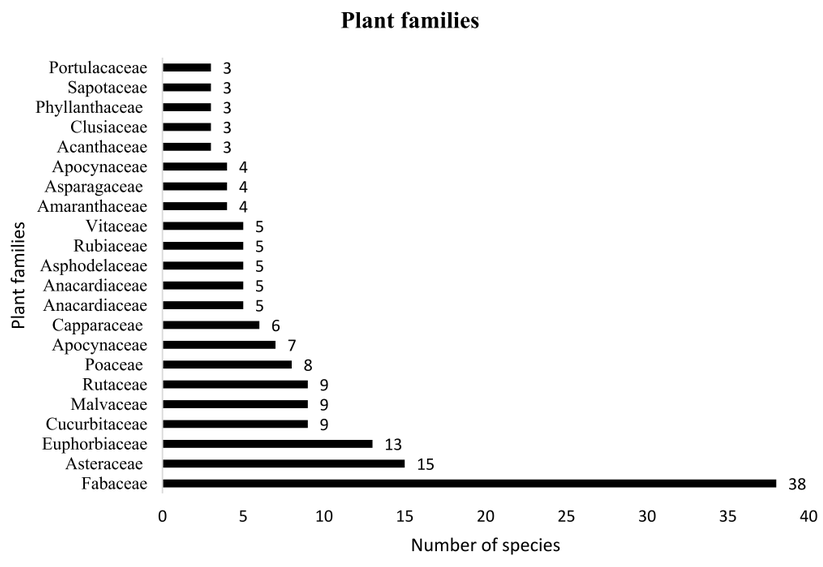

图1. 乌干达用于民族兽医医学的植物种类家族。

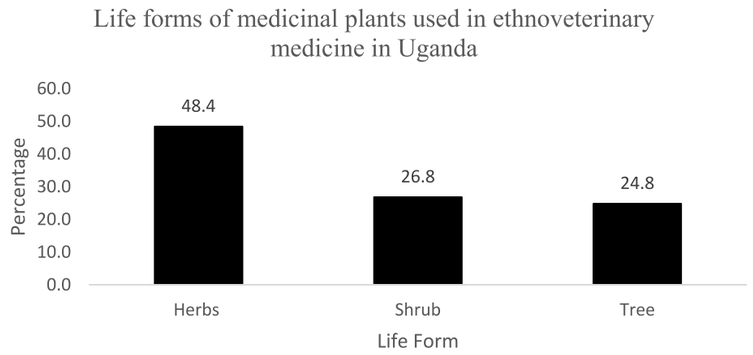

图2. 乌干达用于民族兽医药的植物物种的生活型。

咳嗽的牛（Nabukenya 等, 2014；Zirintunda 等, 2024）。与所有其他被考虑的综述一样，主要的药物给药途径是口服，例如在喀麦隆（Dzoyem 等, 2020）、尼日利亚（Saganuwan, 2017）、南非（McGaw 等, 2020）、埃塞俄比亚（Tilahun 等, 2019）和摩洛哥（Chaachouay 等, 2022）。

用于草药的剂量不精确，并且因治疗者和所治疗的病症而异。在摩洛哥也有类似关于民族兽医药的报告（Chaachouay 等，2022）。民族兽医药大多是根据需要新鲜制备的。这是非洲民族兽医药使用中的常见趋势，已在多项研究中报道（Eshetu 等，2015；Grad´e 等，2009）。

EVM的准备和使用高度依赖口传传统和经验学习，通常仅限于年长的社区成员或传统治疗师。这些知识由于代际差异、城市化以及缺乏正式文献记录而日益面临威胁。此外，标准化、剂量准确性和潜在毒性问题凸显了科学验证的必要性。

以及与传统兽医医学的整合（Chaachouay 等, 2022；Tabuti 等, 2003b）。

8. 乌干达民族兽医学中使用植物的生物活性、植物化学成分及毒性

在本综述中报道的一些药用植物种类，有一些文献报告或确认了其部分生物活性方面的内容，特别是关于其抗微生物活性的。对南非民族兽医药使用的广泛综述也报告称，抗菌活性是研究最广泛的生物活性（Chakale et al., 2021）。关于某些植物种类的一般植物化学成分也有大量信息，尽管这些信息并不具体。植物化学分析通常是一般性的（定性性质），没有具体归因于任何报道的生物活性。同样，从该综述来看，大多数植物种类尚未对其所有民族兽医用途以及毒性进行评估。摄入某些植物对动物和人类都可能有毒。

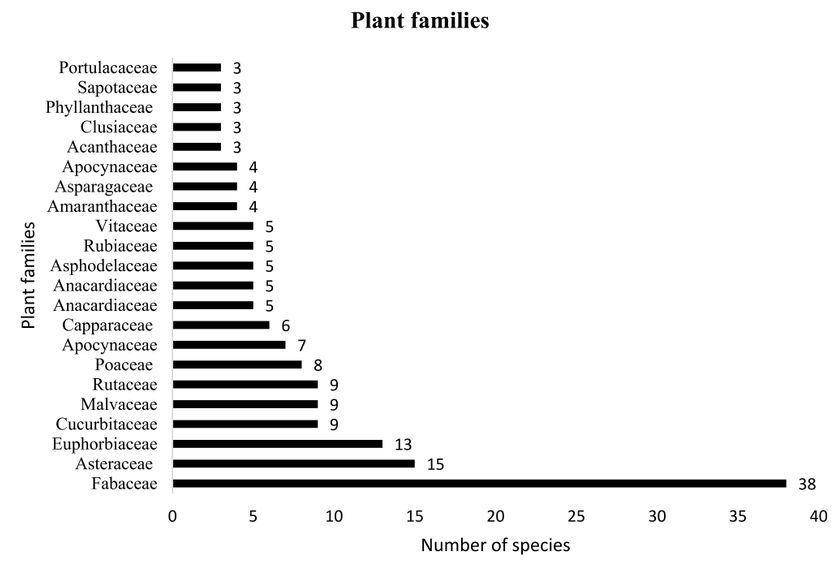

Fig. 1. Familes of plant species used in ethnoveterinary medicine in Uganda.

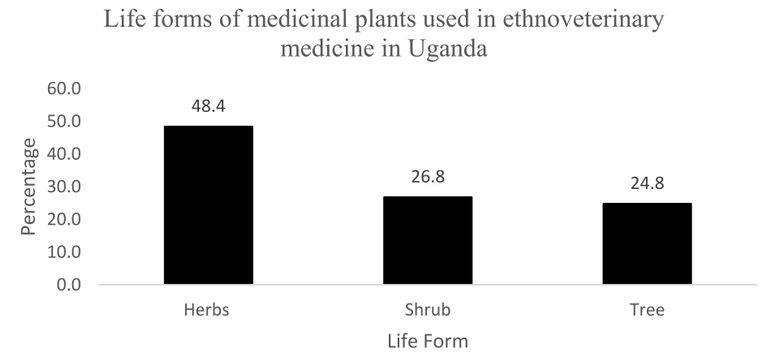

Fig. 2. Life forms of plant species usedin ethnoveterinary medicine in Uganda.

cows with cough (Nabukenya et al., 2014; Zirintunda et al., 2024). Like in all other reviews considered, the predominant route of drug administration is oral, for instance in Cameroon (Dzoyem et al., 2020), Nigeria (Saganuwan, 2017), South Africa (McGaw et al., 2020) and Ethiopia (Tilahun et al., 2019) and Morocco (Chaachouay et al., 2022).

The dosages used for the herbal medicines are not precise and vary with the person treating, the condition being treated. Similar reports have been made with EVM in Morocco (Chaachouay et al., 2022). The ethnoveterinary medicines were mostly freshly prepared as and when need arose. This is a common trend in ethnoveterinary medicine use in Africa and has been reported in various studies (Eshetu et al., 2015; Gradé et al., 2009).

The preparation and use of EVM are highly dependent on oral tradition and experiential learning, often restricted to elder community members or traditional healers. This knowledge is increasingly under threat due to generational gaps, urbanization, and lack of formal documentation. Furthermore, issues of standardization, dosage accuracy, and potential toxicity underscore the need for scientific validation and integration with conventional veterinary medicine (Chaachouay et al., 2022; Tabuti et al., 2003b).

8. Bioactivity, phytochemical composition and toxicity of plants used in ethnoveterinary medicine in Uganda

Some of the medicinal plant species reported in this review have some literature reporting or confirming some aspects of their bioactivity, especially for concerning their antimicrobial activity. An etensive review of ethnoveterinary medicine use in South Africa also reported that antibacterial activity was the most studied biological activity (Chakale et al., 2021). There is also a wealth of information on the general phytochemical composition of some of the plant species, although non-specific. The phytochemical analyses were generally of a general (qualitative nature) without any specific attribution to any reported bioactivity. Also from the review, most of the plant species have not been evaluated for all their ethnoveterinary uses as well as toxicity.

Ingesting certain plants can be toxic to both animals and humans,

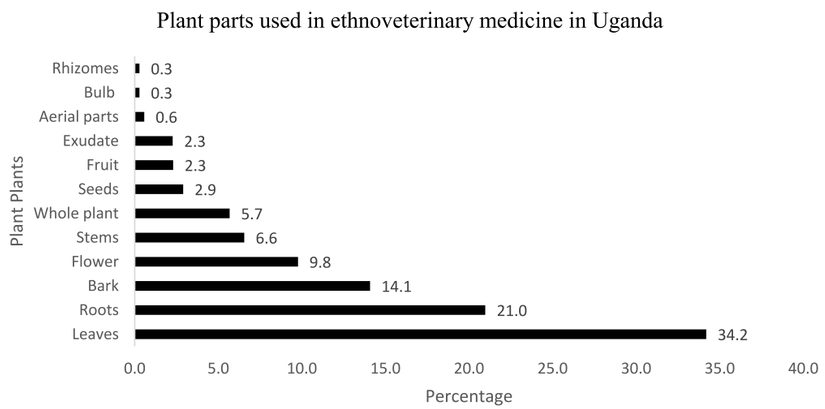

图3. 用于民族兽医学的植物部分。

即使少量也可能导致中毒。这对牲畜的健康构成严重威胁，并可能阻碍经济发展。由于使用不当和缺乏既定剂量标准，药用和有毒植物导致的牲畜中毒事件时有发生（Abdisa 和 Dilbato Dinbiso，2024；Stegelmeier 等，2025）。有毒植物产生次生化合物作为防御物质，从而阻止草食动物和其他潜在威胁（Kumar 等，2025）。在草地和森林地区放牧的牲畜尤其容易摄入有毒植物。对动物健康和经济生产力构成风险的主要有害次生代谢物包括存在于菊科、旋花科、唇形科、豆科和紫草科等植物科中的生物碱；高粱属及其他禾本科植物中的含氰化合物；苋属、茄属和藜属植物中的硝酸盐；禾本科、苋科的草酸盐。

家族；以及各种苷类（Abdisa 和 Dilbato Dinbiso，2024；Divekar 等，2022）。

文献中关于有毒植物对牲畜健康影响的最常见报道包括致畸和引产、肝毒性、光敏性以及损害呼吸和循环系统（Abdisa 和 Dilbato Dinbiso, 2024；Poppenga, 2010；Stegelmeier 等, 2020）。有毒植物会造成显著的经济损失，包括直接和间接损失。直接影响包括牲畜死亡、流产、奶质量下降以及皮毛产量减少，而间接影响则涉及治疗和管理受影响动物的费用（Keeler 等, 2013；Panter 等, 2013）。因此，有必要重点关注识别最常见的有毒植物、分离其二级代谢物、进行毒性评估、建立规范的剂量，并制定有效的管理这些植物及其毒性影响的方法（Abdisa 和 Dilbato）。

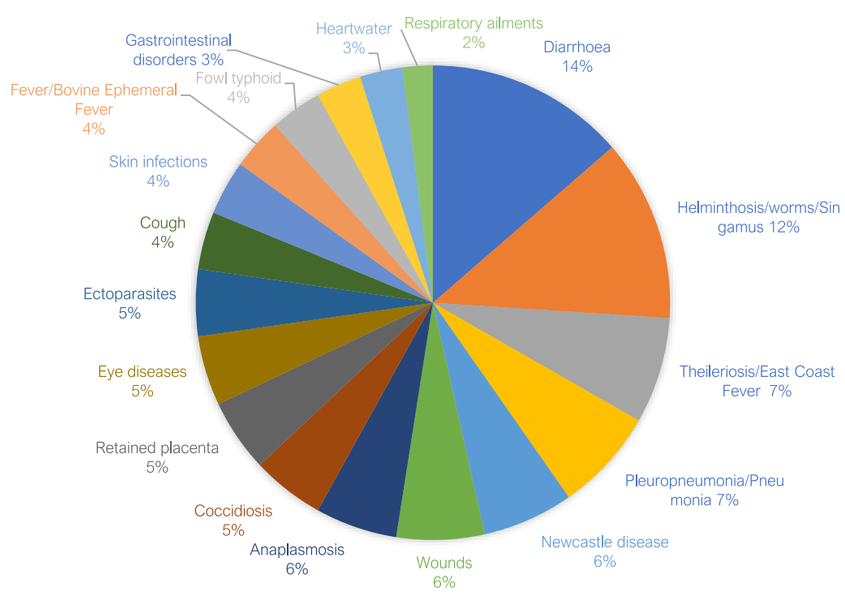

图4. 最常治疗的疾病。

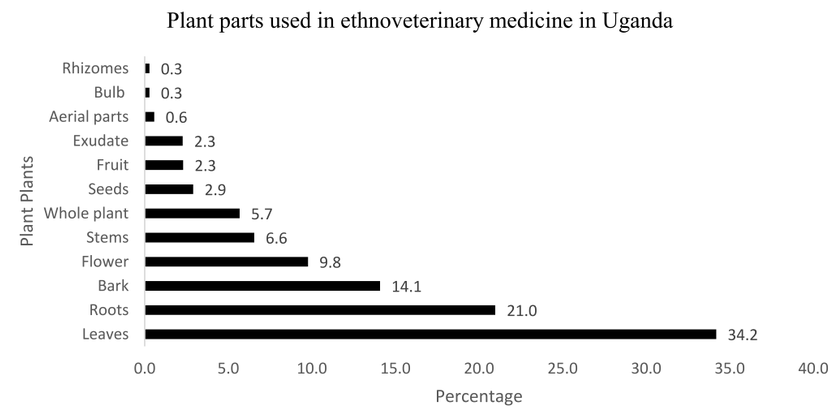

Fig. 3. Plant parts used in ethnoveterinary medicine.

potentially causing poisoning even in small amounts. This poses serious threats to livestock well-being and may hinder economic development. Incidents of livestock poisoning from medicinal and toxic plants frequently occur due to incorrect usage and the lack of established dosage standards (Abdisa and Dilbato Dinbiso, 2024; Stegelmeier et al., 2025). Poisonous plants produce secondary compounds that function as protective agents, deterring herbivores and other potential threats (Kumar et al., 2025). Livestock that graze in grasslands and forested areas are especially vulnerable to ingesting toxic plants. Key harmful secondary metabolites that pose risks to animal health and economic productivity include alkaloids found in plant families such as Asteraceae, Convolvulaceae, Lamiaceae, Fabaceae, and Boraginaceae; cyanogenic compounds present in *Sorghum* sp and other Poaceae members; nitrates from *Amaranthus* spp, *Solanum* spp, and *Chenopodium* spp; oxalates from the Poaceae, Amaranthaceae, and Polygonaceae families; as well as various glycosides (Abdisa and Dilbato Dinbiso, 2024; Divekar et al., 2022).

The most commonly reported effects of toxic plants on livestock health in the literature include teratogenic and abortifacient, hepatotoxicity, photosensitization and impairing respiratory and circulatory systems (Abdisa and Dilbato Dinbiso, 2024; Poppenga, 2010; Stegelmeier et al., 2020). Toxic plants cause significant economic damage, both directly and indirectly. Direct impacts include livestock fatalities, miscarriages, lower milk quality, and diminished skin and hide yields, while indirect impacts involve the expenses related to treating and managing the affected animals (Keeler et al., 2013; Panter et al., 2013). Therefore, it is essential to focus on identifying the most common toxic plants, isolating their secondary metabolites, performing toxicity assessments, establishing standardized dosages, and formulating effective approaches for managing both the plants and their toxic effects (Abdisa and Dilbato

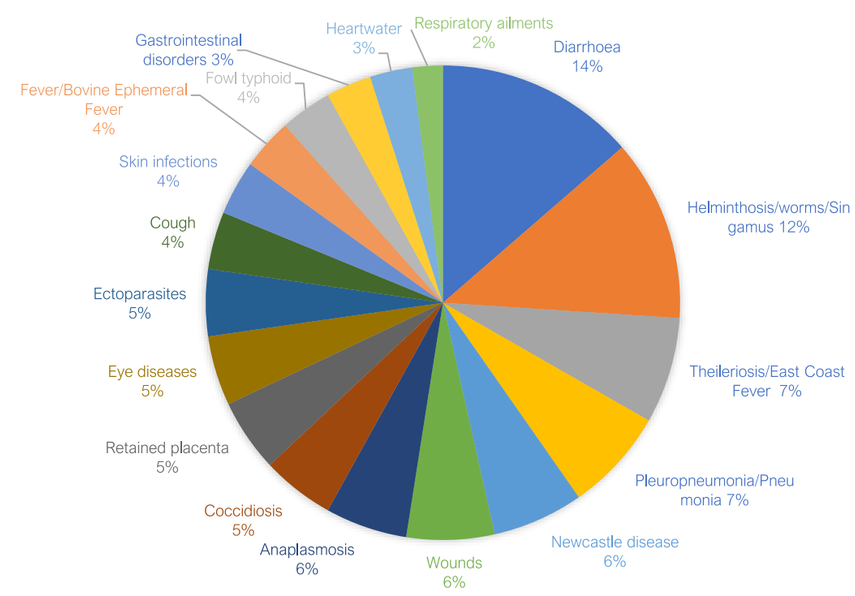

Fig. 4. Commonest disease treated.

Dinbiso，2024）。信息

关于植物的毒性，尤其是那些已知高度毒性的植物，例如马樱丹（Lantana camara）和弯枝蛇麻草（Sarcostemma viminale），对绵羊有毒（Jackson 和 Shone, 1958），在鸵鸟中会导致啄食拍打、肌肉颤动、头部摆动甚至死亡（Cooper, 2007）；蓖麻（Ricinus communis）含有生物活性蛋白蓖麻毒素，其A链和B链可导致细胞死亡（Bozza 等, 2015）；西部番泻（Senna occidentalis）可引起肝脏和肌肉急性萎缩，导致死亡（Delachiave 和 De Pinho, 2003）；臭楝（Melia azedarach）中毒可能引起消化系统、心血管、呼吸系统/神经系统的影响，在严重情况下可致死（Phua 等, 2008），以及其他若干例子。

在民族兽医药中使用有毒植物对动物和人类健康都有深远的影响，需要进一步研究。尽管存在这些挑战，民族兽医药有潜力促进畜牧病害方面的民族兽医研究，并可能导致新型、高效且安全的民族兽医药物的开发（Eiki 等人，2021）。

近几十年来，新兴传染病引起了越来越多的关注，因为它们可能引发全球大流行并破坏畜牧业（Jones 等，2008）。多个例子包括导致全球鸡群大幅减少的禽流感大流行，以及威胁世界不同地区猪肉生产的非洲猪瘟疫情（Singh 等，2019；Costard 等，2013）。这些疫情通过展示人类生计、动物健康和国际贸易的相互依赖性，突显了在疾病监测、预防和控制方面开展合作努力的必要性（FAO，2011）。此外，人类可从动物身上感染的动物源性疾病不仅对公共健康构成严重威胁，还通过直接传播或摄入受污染的动物制品对动物福利产生不利影响（WHO，2020）。

尽管疾病监测和管理策略有所改进，但我们对动物疾病的认知仍然存在空白，尤其是在资源有限的环境中，兽医服务和监测设备可能稀缺（Grace 等，2012）。此外，鉴于抗微生物耐药性对疾病管理带来的迫在眉睫的威胁，开发替代治疗技术和谨慎使用抗生素的做法也显得尤为重要（Gakuubi 和 Wanzala, 2012; O’Neill, 2016; Rostami 等，2017）。

尽管具有历史和文化价值，民族兽医学之所以具有相关性，是因为它为当前医疗问题提供了可行的解决方案。随着传统兽医疗法面临成本、可及性和抗菌耐药性等障碍，人们对民族兽医技术的有效性及其融入主流兽医护理的兴趣日益增加（Mathias，2004）。然而，电子投票机（EVM）常被忽视或忽视，尽管其潜在的益处与传统生物医学治疗相符。这种忽视不仅危及依赖传统兽医知识的社区和生态系统的韧性，还忽视了数百年积累的智慧（McCorkle 和 Mathias-Mundy，1992）。

9. 研究的局限性

9.1. 民族植物学数据收集中的潜在偏见

在民族兽医学研究中，民族植物学数据的收集通常受到若干方法和背景偏差的影响，这些偏差可能影响研究结果的可靠性和代表性。一个常见的问题是依赖有限且局部的研究，这可能只捕捉到传统知识的一小部分（Tabuti 等, 2010）。乌干达的许多调查集中在特定地区或特定族群，如牧民社区的传统医学从业者。这使得很难将研究结果推广到全国范围内。

多样的文化和生态区域（Nabatanzi 等，2025）。选择偏差是另一个问题，因为研究人员经常会

依赖易于接触或知名的治疗者，可能会忽视边缘化或不太显眼的从业者，他们的知识可能有很大不同（Martin, 2010）。同样，当信息提供者根据记忆而非观察描述植物用途时，可能会发生回忆偏差，从而导致报告不完整或夸大（Cunningham, 2001）。

植物可用性和疾病流行的区域差异会影响报告的使用情况。在卡拉莫贾干旱地区使用的物种，可能与湿润高地地区使用的物种完全不同（Grad´e 等, 2009）。这种生态变异性，加上语言和文化的多样性，使跨区和跨研究的比较分析变得复杂。发表偏倚也可能出现，因为许多民族植物学调查未发表或仅出现在当地灰色文献中，而报道新物种或具有生物活性化合物的研究更可能被传播 (Hamilton, 2004)。这也可归因于该领域研究资金的有限。解决这些偏倚需要方法上的三角互证、包容性的抽样以及标准化的记录协议，以确保乌干达丰富的民族兽医知识得以准确呈现和保存。

9.2. 纳入研究质量的关键评估

虽然许多研究记录了乌干达药用植物在民族兽医学中的使用及其生物活性，但更仔细的审查显示，方法学上存在相当大的差异，这限制了研究结果的可靠性和可比性。许多生物活性检测只是初步筛选，通常使用粗提物进行，提取过程、溶剂选择和浓度定义不明确。这种缺乏标准化的情况使得很难将观察到的效果归因于特定的植物化学成分，也难以在不同实验室间重复结果。

此外，几篇报告中的植物化学分析仍然主要是定性的。这种有限的表征限制了对剂量–反应关系和生物活性化合物机制的理解。在生物活性评估中，方法学缺陷包括模型选择不当、样本量小和重复性不足。一些抗菌试验采用过时的扩散法，缺乏阳性对照或参考抗生素，可能会高估效力（Benkova 等，2020）。同样，一些抗氧化试验很少使用标准化方案或体内模型进行验证，导致效力被夸大（Gulcin，2025）。许多研究仅根据传统使用推断安全性，而没有进行急性或亚慢性毒性测试。这在将传统动物医药配方转化为正规兽医实践时存在风险。

本综述受到乌干达植物物种的综合民族植物学、生物活性和植物化学数据匮乏的限制，尤其是灰色文献和未发表的民族兽医地方知识。分析的少数研究主要集中在特定动物种类，尤其是家禽，或特定情况如蜱虫管理。该国的几个地区也没有相关数据，例如牛走廊的一些地区，特别是乌干达西部。这使得全面评估乌干达的民族兽医知识变得困难。

我们建议由多学科研究团队在乌干达开展更详细和全面的民族兽医研究。我们还建议对药用植物进行毒理学分析，以建立一个基于科学证据的地区性图谱，列出最麻烦的植物以及对动物疾病有用的植物。我们还建议探索如何将民族兽医最好地与现代兽医体系整合，并建立专门针对乌干达民族兽医药用植物的开放获取数字数据库，记录植物的用途、生物活性、植物化学成分及已知毒性特征。

Dinbiso, 2024).

Information on the toxicity of especially plants that are already known to be highly toxic such as *Lantana camara* and *Sarcostemma viminale* which are toxic to sheep (Jackson and Shone, 1958), and resulting in beak patting, muscular tremors and head flopping and death in ostriches (Cooper, 2007), *Ricinus communis* which contains biologically active protein ricin which has A- and B-chains that cause cell death (Bozza et al., 2015), *Senna occidentalis* which causes acute atrophy of the liver and muscles leading to death (Delachiave and De Pinho, 2003), *Melia azedarach* whose poisoning may result in gastrointestinal, cardiovascular, respiratory,/neurological effects, and death in severe cases (Phua et al., 2008), plus several other examples.

The use of toxic plants in ethnoveterinary medicine has far reaching implications to both animal and human health and needs to be investigated further. Despite these challenges, ethnoveterinary medicines have the potential to foster ethnoveterinary research among livestock disease and could lead to the development of new, efficacious and safe ethnoveterinary drugs (Eiki et al., 2021).

Emerging infectious illnesses have drawn more attention in the last few decades because of the possibility that they could start pandemics and destroy the livestock industry (Jones et al., 2008). Multiple examples include the avian influenza pandemics that have decimated chicken populations worldwide and the African swine fever outbreaks that are endangering the production of pork in different parts of the world (Singh et al., 2019; Costard et al., 2013). These outbreaks highlight the need for cooperative efforts in disease surveillance, prevention, and control by demonstrating the interdependence of human livelihoods, animal health, and international trade (FAO, 2011). In addition, zoonotic diseases that people can contract from animals pose a serious threat to public health in addition to having an adverse effect on animal welfare through direct transmission or ingestion of contaminated animal products (WHO, 2020).

Gaps in our knowledge of animal diseases continue to exist despite improvements in disease surveillance and management strategies, especially in resource-constrained environments where veterinary services and surveillance equipment may be scarce (Grace et al., 2012). Furthermore, the development of alternate treatment techniques and cautious antibiotic usage practices are important in light of the impending threat that antimicrobial resistance poses to disease management (Gakuubi and Wanzala, 2012; O'Neill, 2016; Rostami et al., 2017).

Despite its historical and cultural value, ethnoveterinary medicine is relevant because it presents viable answers to current problems in animal healthcare. There is increased interest in investigating the effectiveness of ethnoveterinary techniques and incorporating them into mainstream veterinary care as traditional veterinary therapies encounter obstacles such cost, accessibility, and antimicrobial resistance (Mathias, 2004). However, EVM is frequently disregarded or ignored in favour of traditional biomedical treatments, despite its potential benefits. This neglect jeopardizes the resilience of communities and ecosystems that depend on traditional veterinary knowledge, in addition to ignoring centuries' worth of accumulated wisdom (McCorkle and Mathias-Mundy, 1992).

9. Limitations of the study

9.1. Potential biases in ethnobotanical data collection

Ethnobotanical data collection in ethnoveterinary studies is often influenced by several methodological and contextual biases that can affect the reliability and representativeness of findings. One common issue is reliance on limited and localized studies, which may capture only a narrow segment of traditional knowledge (Tabuti et al., 2010). Many investigations in Uganda focus on specific regions or ethnic groups, such as pastoralist communities traditional medicine practitioners. This makes it difficult to generalize findings across the country's diverse cultural and ecological zones (Nabatanzi et al., 2025).

Selection bias is another concern, as researchers often depend on easily accessible or well-known healers, potentially overlooking marginalized or less visible practitioners whose knowledge might differ substantially (Martin, 2010). Likewise, recall bias can occur when informants describe plant uses based on memory rather than observation, leading to incomplete or exaggerated reports (Cunningham, 2001).

Regional variations in plant availability and disease prevalence influence reported uses. Species applied in the drylands of Karamoja may differ entirely from those used in humid highland areas (Gradé et al., 2009). Such ecological variability, combined with linguistic and cultural diversity, complicates comparative analysis across districts and studies. Publication bias amy also arises because many ethnobotanical surveys remain unpublished or appear in local grey literature, while studies reporting novel species or bioactive compounds are more likely to be disseminated (Hamilton, 2004). This can also be attributed to the limited research funding into this area. Addressing these biases requires methodological triangulation, inclusive sampling, and standardized documentation protocols to ensure that Uganda's rich ethnoveterinary knowledge is accurately represented and preserved.

9.2. Critical appraisal of the quality of included studies

While numerous studies have documented the ethnoveterinary use and biological activity of medicinal plants in Uganda, a closer examination reveals considerable methodological variability that limits the strength and comparability of findings. Many bioactivity assays are preliminary screenings, often conducted using crude extracts with poorly defined extraction procedures, solvent choices, and concentrations. This lack of standardization makes it difficult to attribute observed effects to specific phytochemical constituents or to reproduce results across laboratories.

Moreover, phytochemical analyses in several reports remain largely qualitative. Such limited characterization constrains understanding of dose–response relationships and bioactive compound mechanisms. In bioactivity evaluations, methodological flaws include inappropriate model selection, small sample sizes, and insufficient replication. Some antimicrobial assays employ outdated diffusion methods lacking positive controls or reference antibiotics, which can overestimate potency (Benkova et al., 2020). Similarly, some antioxidant assays are rarely validated with standardized protocols or *in vivo* models, leading to exaggerated claims of efficacy (Gulcin, 2025). Many studies infer safety from traditional use without conducting acute or sub-chronic toxicity tests. This poses a risk for translating EVM formulations into formal veterinary practice.

This review was constrained by the scarcity of comprehensive ethnobotanical, bioactivity and phytochemical data on Ugandan plant species, particularly grey literature and unpublished ethnoveterinary local knowledge. The few studies analysed largely focus on particular animal species especially poultry or specific conditions such as tick management. There is also no data for several regions in the country, for instance, some of the areas in the cattle corridor, especially in western Uganda. This make it difficult to have a comprehensive assessment of ethnoveterinary knowledge in Uganda.

We recommend more detailed and comprehensive ethnoveterinary studies in Uganda, by multidisciplinary research teams. We also recommend toxicological profiling of medicinal plants to come up with a regional atlas of the most troublesome plant but also useful plants for animal diseases based on scientific evidence. We also recommend exploration of how EVM can be best integrated with modern veterinary systems and establishment of open-access digital databases specific to Ugandan ethnoveterinary medicinal plants, documenting uses, bioactivity, phytochemistry, and known toxicity profiles.

10. 将民族兽医药整合到乌干达的国家疾病控制计划中

民族兽医药（EVM）通过增强社区参与、监测和治疗可及性，可以在乌干达国家疾病控制工作中发挥重要的补充作用。传统畜牧业者和治疗师拥有长期积累的诊断知识，这可以强化基于社区的疾病监测，尤其是在卡拉莫贾等偏远牧区，这些地区的正规兽医覆盖有限（Grad´e 等，2009）。他们对疾病综合症的早期识别能够在“整体健康”框架下改善疫情检测和应对（Buregyeya 等，2020）。

经过验证的草药疗法提供了负担得起、本地可获得的治疗方法，可以补充常规药物，特别是在药物短缺期间（Patwardhan 和 Partwardhan, 2005）。在经过安全性和有效性验证后，将这些疗法纳入区域兽医处方可提高可及性和可持续性。协作培训和推广项目可以弥合传统与正规体系之间的差距，改善知识交流、可持续采集以及草药实践的标准化（Nalule 等, 2011）。最后，将地方兽药方法（EVM）纳入农业、动物产业和渔业部（MAAIF）下的国家政策框架，可确保其获得认可、研究资金和公平的利益分配。总体而言，这些策略支持以文化为基础、具有成本效益和可持续性的畜牧健康系统，从而补充乌干达的常规疾病防控项目。

11. 结论

民族兽医药（EVM）仍然是乌干达动物保健的重要基石，当地农民依赖多种本土和引进的药用植物，如百里香（Thymus vulgaris），用于疾病预防和治疗。这一植根于社区的知识体系为可持续、易获得且符合文化的牲畜健康管理提供了机会。然而，由于缺乏植物化学、药理学和毒理学的验证，以及标准剂量和安全性资料的缺失，其全部潜力仍未得到充分利用。为了加强与传统兽医实践的整合，未来的努力应集中于科学验证、政策认可和社区参与。国家研究机构和大学应与传统从业者合作，进行严格的生物测定，并建立剂量和安全标准。政策制定者，特别是农业、动物产业与渔业部，应

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Godwin Anywar：写作 – 审阅与编辑，写作 – 原始草稿，可视化，验证，监督，软件，资源，项目管理，方法学，调查，资金获取，正式分析，数据管理，概念化。Arnold Ssegabo：方法学，正式分析，数据管理。James Wanyama：写作 – 原始草稿，可视化，方法学，调查，正式分析，数据管理。Caroline S. Weckerle：写作 – 审阅 & 编辑、项目管理、资金获取、概念化。

利益冲突声明

作者声明，他们没有已知的可能影响本文报道工作的竞争性财务利益或个人关系。

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附录 A. 补充数据

本文的补充数据可在网上找到，网址为 https://doi.org/10.1016/j.jep.2025.120917。

数据可用性

本文描述的研究未使用任何数据。

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10. Integration of ethnoveterinary medicine into national disease control programmes in Uganda

Ethnoveterinary medicine (EVM) can play a vital complementary role in Uganda's national disease control efforts by enhancing community participation, surveillance, and treatment accessibility. Traditional livestock keepers and healers possess long-standing diagnostic knowledge that can strengthen community-based disease surveillance, particularly in remote pastoral areas like Karamoja, where formal veterinary coverage is limited (Gradé et al., 2009). Their early recognition of disease syndromes can improve outbreak detection and response within the "One Health" framework (Buregyeya et al., 2020).

Validated herbal remedies offer affordable, locally available treatments that can supplement conventional pharmaceuticals, especially during shortages (Patwardhan and Partwardhan, 2005). Integrating such remedies into district veterinary formularies after safety and efficacy validation would enhance accessibility and sustainability.Collaborative training and extension programmes can bridge traditional and formal systems, improving knowledge exchange, sustainable harvesting, and standardization of herbal practices (Nalule et al., 2011). Finally, incorporating EVM within national policy frameworks under the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) would ensure recognition, research funding, and equitable benefit sharing. Together, these strategies support culturally grounded, cost-effective, and sustainable livestock health systems that complement conventional disease control programmes in Uganda.

11. Conclusion

Ethnoveterinary medicine (EVM) remains a cornerstone of animal healthcare in Uganda, where farmers depend on a diverse range of indigenous and introduced medicinal plants such as *Thymus vulgaris* for disease prevention and treatment. This community-rooted knowledge system offers an opportunity for sustainable, accessible, and culturally relevant livestock health management. However, its full potential remains underutilized due to limited phytochemical, pharmacological, and toxicological validation, as well as the absence of standardized dosages and safety profiles. To strengthen integration with conventional veterinary practice, future efforts should focus on scientific validation, policy recognition, and community engagement. National research institutions and universities should collaborate with traditional practitioners to conduct rigorous bioassays and establish dosage and safety standards. Policymakers, particularly within the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), should embed EVM into veterinary extension programs, regulatory frameworks, and One Health strategies. Meanwhile, documentation and preservation of orally transmitted knowledge should be prioritized through participatory community mapping and digital archiving. Such evidence-based and policy-supported integration will enhance animal health services, safeguard indigenous knowledge, and promote resilient, sustainable livestock systems across Uganda and beyond. Future research should prioritize systematic documentation, rigorous bioassays linked to specific diseases, and the establishment of dosage and safety standards. Such efforts will not only safeguard livestock health but also enhance rural livelihoods and preserve invaluable indigenous knowledge systems for generations to come.

CRediT authorship contribution statement

Godwin Anywar: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Arnold Ssegabo:** Methodology, Formal analysis, Data curation. **James Wanyama:** Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation. **Caroline S. Weckerle:** Writing – review & editing, Project administration, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jep.2025.120917.

Data availability

No data was used for the research described in the article.

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