

Termites in Nigerian Traditional Medicine: An Ethno-Medicinal Review

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Abstract

Termites have long been used in traditional medicine across many African countries, including Nigeria, where they are valued for their nutritional and therapeutic properties. This review synthesizes available literature on the ethnomedicinal applications of termites in Nigeria, with emphasis on commonly used species, preparation methods, therapeutic uses, and cultural practices among the Hausa, Yoruba, and Igbo ethnic groups. Relevant peer-reviewed publications were critically reviewed to identify termite species employed in traditional medicine, their modes of preparation, and reported medicinal applications. The review indicates that *Macrotermes nigeriensis* and *Macrotermes bellicosus* are the most frequently utilized species for treating wounds, malnutrition, inflammatory conditions, gastrointestinal disorders, and certain pregnancy-related ailments. Common preparation methods include roasting, sun-drying, grinding into powder, decoction, and topical application. Beyond their medicinal value, termites also contribute to food security and serve important ecological functions. Despite their widespread traditional use, scientific evidence supporting their pharmacological efficacy and safety remains limited. Therefore, further phytochemical, toxicological, and clinical investigations are needed to validate these traditional claims and facilitate the integration of evidence-based termite-derived products into modern healthcare. This review highlights the importance of preserving indigenous knowledge while promoting future research on the therapeutic potential of termites for sustainable healthcare and biodiversity conservation in Nigeria



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Introduction

Insects represent the most numerous, diverse, and abundant group of organisms, playing a vital role in global faunal biodiversity. They belong to the phylum Arthropoda and are classified under the class Insecta (Premalatha et al., 2011). One of the most remarkable characteristics of insects is their exceptional reproductive capacity, enabling them to produce a vast number of offspring within a short period. This high reproductive potential contributes significantly to their survival, adaptability, and dominance across various ecosystems (Leonhardt et al., 2016). Worldwide, more than 2,141 insect species have been identified as edible (Mitsubishi, 2016), many of these are traditionally consumed by various ethnic groups, particularly in regions of Africa, Asia, Australia, and Latin America (Mozhui et al., 2020). Insects not only offer a unique taste but also provide significant health benefits, as they are packed with essential nutrients and are occasionally used in traditional healing practices. Their rich content of proteins, healthy fats, vitamins, minerals, fiber, and energy makes them a highly nutritious food source, often regarded as natural reservoirs of vital nutrients (Zielińska et al., 2018; da Silva Lucas et al., 2020).

Termites

Termites are social insects known for their complex colony structures and significant ecological roles. They are often perceived negatively due to their destructive impact on human structures, but they also provide essential ecosystem services, such as decomposition and nutrient cycling, particularly in tropical regions (Porter, 2001). Additionally, termites have notable medicinal and nutritional value, being used in traditional medicine and as a food source in various cultures (Mahapatro, 2015).

Ecological Role of Termites

Termites play a vital ecological role by contributing to the decomposition of organic matter, converting dead plant materials into nutrient-rich manure that enhances plant growth. They are also essential in soil processes

and nutrient cycling, particularly in tropical ecosystems, where they improve soil fertility and structure (Bracken, 2022). In addition, termites are an important component of the food web, serving as a food source for numerous animal species and thereby supporting biodiversity and ecosystem stability (Govorushko, 2019).

Medicinal Value of Termites

Termites have long been used in traditional medicine across many cultures, with at least nine species identified for various therapeutic purposes (de Figueirêdo et al., 2015). Termites they are believed to possess medicinal properties and are processed into remedies for disease prevention as well as general health tonics. In addition, fungi associated with termites, particularly *Termitomyces*, are valued for both their medicinal applications and their importance as a nutritious food source (Chaves et al., 2015; Paloi et al., 2023).

The aim of this review is to examine the ethno-medicinal uses of termites in Nigeria by describing the termite species commonly used, their preparation methods, therapeutic applications, and cultural significance among the Hausa, Yoruba, and Igbo ethnic groups. Their view also highlights research gaps and discusses the potential integration of scientifically validated termite-based remedies into modern healthcare.

Diversity and Medicinal Use of Termites in Nigeria

Species Diversity in Nigeria

The main termite species reported in Nigeria for medicinal use include *Macrotermes nigeriensis*, which is traditionally used for treating wounds, ailments in pregnant women, and for spiritual protection, and *Macrotermes bellicosus*, which is commonly used for wound healing and in traditional rituals. Other termite genera, such as *Microtermes* and *Trinervitermes*, are also found in Nigeria and are utilized, particularly in agricultural practices and as dietary resources (Nwilene et al., 2008).

Ethno-medicinal Practices in Nigeria

The use of termites in ethno-medicine (Table 1) is a significant aspect of traditional practices across various regions, these insects are not only a source of nutrition but also serve therapeutic purposes, showcasing their multifaceted role in human health and culture.

Africa is recognized as the continent with the highest diversity of termite species used for medicinal purposes, reflecting both the ecological abundance of termites and the depth of traditional knowledge regarding their applications. Termites are widely utilized in African ethno-medicine for treating a range of ailments, including influenza, asthma, and bronchitis, with the families *Hodotermitidae* and *Termitidae* being especially significant (Jideani & Netshiheni, 2017). The genus *Macrotermes* is particularly prominent, not only as a food

resource but also for its therapeutic value, with species such as *Macrotermes bellicosus* and *Macrotermes nigeriensis* commonly cited in medicinal contexts (de Figueirêdo et al., 2015).

In Nigeria, termites play a notable role in traditional healing systems. Species such as *Macrotermes nigeriensis* are used in remedies for sickness in pregnant women, wound treatment, and as charms for spiritual protection against witches and for ritual promotion; other species, including *Macrotermes bellicosus*, are also reported for their use in wound healing and spiritual applications (Chaves et al., 2015).

The widespread use of termites in Nigeria highlights the integration of entomotherapy into both physiological and spiritual health practices, demonstrating the multifaceted value attributed to these insects by local communities (Jideani & Netshiheni, 2017).

Table 1: Termite Species Used in Nigerian Ethnomedicine

Species / Genus	Local name	Target Ailment Purpose	Mode of Preparation & Administration
<i>Macrotermes bellicosus</i>	Flying termite	Wound healing, inflammation	Roasted, powdered or paste Oral/Topical
<i>Macrotermes nigeriensis</i>	Flying Termite	Pregnancy ailments, wounds, nutrition	Roasted powdered oral
<i>Microtermes spp.</i>	Termite	Malnutrition	Powder, Oral
<i>Trinervitermes spp.</i>	Termite	Nutritional Supplement	Roasted Oral

Preparation Methods of Medicinal Termite Species in Nigeria

General Preparation and Administration Practices:

According to Anyiam et al. (2022), the preparation and administration of termites for medicinal purposes in Nigeria vary depending on the ailment being treated and local cultural practices. The most common preparation methods include roasting or frying the termites to improve their taste and ensure safety for consumption, sun-drying them for preservation and future use, grinding them into powder for

easy incorporation into food or topical formulations, and preparing decoctions by boiling termites with water or medicinal herbs for oral consumption. In addition, termites are sometimes processed into pastes and applied directly to wounds or affected areas to promote healing. Oral administration is the most frequently used route of treatment, while topical application is commonly employed for managing external conditions such as wounds and skin infections.

Macrotermes nigeriensis

In Nigeria, *Macrotermes nigeriensis* is esteemed for its significant nutritional and therapeutic

attributes. The methodologies employed for ethno-medicinal application generally encompass the roasting or frying of the termites prior to ingestion, thereby augmenting both their palatability and safety. Occasionally, the termites are pulverized into a fine powder and incorporated with other food substances, such as fermented cassava products (mahewu), to enhance nutritional adequacy, particularly for vulnerable populations such as children and pregnant women. This powdered variant may also be integrated into porridge or soup formulations, the oral administration of these concoctions is predominantly practiced, addressing health concerns such as wounds, illnesses in pregnant individuals, and serving as a comprehensive health tonic owing to the elevated protein and mineral concentrations (Anyiam et al., 2022; Kourimska&Adamkova, 2016; Rumpold&Schluter, 2013).

Macrotermes bellicosus

Macrotermes bellicosus is another prominent species used in Nigerian ethno-medicine. The termites are usually collected, roasted, or sun-dried, and then consumed directly or processed into a paste. This paste can be applied topically to wounds for its purported healing properties, or ingested to treat internal ailments such as gastrointestinal issues and inflammation. In some cases, decoctions are prepared by boiling the termites with water or medicinal plants, with the resulting liquid administered orally. These methods are rooted in traditional practices and are supported by ethno-medicinal surveys confirming the anti-inflammatory and antispasmodic properties of the species (Hammoud et al., 2020).

Microtermes and Trinervitermes

Other genera, such as *Microtermes* and *Trinervitermes*, are less commonly used but are still incorporated into traditional remedies, particularly in agricultural and dietary contexts. Preparation methods for these termites often mirror those of the larger *Macrotermes* species, roasting, sun-drying, or grinding into powder for oral administration. These preparations are

believed to aid in treating malnutrition and boosting general health, especially in vulnerable populations like children and pregnant women (Anyiam et al., 2022).

Termite Use in Traditional Medicine among the Yoruba, Igbo, and Hausa of Nigeria

In Nigeria, the use of termites in traditional medicine is deeply rooted in the cultural practices of the country's three most prominent ethnic groups: the Yoruba, Igbo, and Hausa. Each of these cultures has developed unique methods for preparing and applying termites and termite mound soil to treat a variety of health conditions.

The Yoruba, who predominantly inhabit southwestern Nigeria, possess a well-developed traditional healthcare system that involves herbalists, Ifa priests (Babalawo), and metaphysical practitioners who combine medicinal plants, animal-derived materials, incantations, and spiritual rituals to treat both physical and spiritual ailments (Ajala et al., 2019; Awojoodu & Baran, 2009). Similarly, the Igbo of southeastern Nigeria practice a holistic form of traditional medicine in which health is viewed as a balance between physical, spiritual, and social well-being. Their traditional healers, known as dibias, employ medicinal plants, divination, and spiritual rituals to restore harmony and manage various diseases (Onwuatuogwu, 2023; Okoye & Okoye, 2019). In northern Nigeria, the Hausa also maintain a rich tradition of herbal and spiritual healing, although studies suggest that they may rely on traditional medicine less frequently than the Yoruba. Their healing practices often reflect a blend of indigenous knowledge and Islamic beliefs (Abubakar et al., 2007). Across these three major ethnic groups, traditional medicine continues to play a central role in healthcare by addressing a wide range of physical, spiritual, and social health conditions while reflecting deeply rooted cultural values and belief systems.

Across these cultures, traditional medicine remains central to healthcare, addressing a wide range of conditions and reflecting deep-rooted cultural values and spiritual beliefs

Yoruba Culture

Among the Yoruba people, termites and termite mound soil are widely used in traditional medicine. The mound soil is applied topically to wounds and skin infections, especially for children, due to its perceived healing and protective properties. Additionally, the Yoruba utilize fungi associated with termite mounds, such as *Termitomyces* species, in remedies for various ailments and as spiritual charms for protection against evil influences (Ibrahim & Adebote, 2012).

Igbo Culture

The Igbo community incorporates termites and termite mound soil in their ethno-medical practices, often combining them with herbal and mineral ingredients. Termite mound soil is used for treating wounds, digestive disorders, and as a component in mixtures aimed at boosting general health. The use of termites is sometimes linked to ritualistic healing and spiritual practices, reflecting the holistic approach of Igbo traditional medicine (Sadiku et al., 2022).

Hausa Culture

In Hausa traditional medicine, termites and their mounds are valued for both medicinal and spiritual purposes. Termite mound soil is consumed or applied to treat skin diseases and is also used in the management of respiratory ailments. The Hausa may also include termites in complex preparations for use as health tonics or as protective charms, demonstrating the integration of entomotherapy into their broader healing systems (Sileshi et al., 2008).

Conclusion

In conclusion, termites play a multifaceted and culturally embedded role in Nigerian ethno-medicine, particularly among the Yoruba, Igbo, and Hausa communities. The use of species such as *Macrotermes nigeriensis* and *Macrotermes bellicosus* for treating wounds, malnutrition, and various ailments demonstrates the depth of indigenous knowledge and the adaptability of traditional health practices. Preparation methods ranging from roasting and sun-drying to

grinding and topical application, reflect both practical and cultural considerations. However, despite their widespread use and perceived efficacy, there remains a critical need for rigorous scientific validation of the pharmacological properties and safety of these termite-based remedies. By fostering interdisciplinary research and supporting the integration of validated traditional practices into Nigeria's modern healthcare system, there is significant potential to improve public health outcomes while preserving cultural identity and promoting sustainable biodiversity use.

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Author contribution

The author conceived the study, conducted the literature review, analyzed the information, prepared the manuscript, and approved the final version.

Conflict of interest

The author declares no conflict of interest.

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