ISSN(O): 2320-5407 | ISSN(P): 3107-4928

ISSN NO. 2320-5407

International Journal of Advanced Research

Publisher's Name: Jana Publication and Research LLP

www.journalijar.com

REVIEWER'S REPORT

Manuscript No.: IJAR-55038

Title: Diversité et usages traditionnels des plantes médicinales antifongiques dans la région du Poro (Nord de la Côte d'Ivoire)

Recommendation:
Accept as it is

Rating	Excel.	Good	Fair	Poor
Originality		√		
Techn. Quality		√		
Clarity		√		
Significance			√	

Reviewer Name: Dr. Manju M **Date: 01-12-2025**

Detailed Reviewer's Report

1. Study Rationale

The increasing resistance of fungal pathogens to conventional antifungal drugs has renewed interest in medicinal plants as potential sources of new bioactive molecules. This study addresses the need to document antifungal plants used in the Poro region of Ivory Coast.

2. Study Objective

The general objective was to contribute to knowledge on antifungal medicinal plants traditionally used in the Poro region. Specifically, the study aimed to (i) describe socio-demographic characteristics of local populations, (ii) identify plant diversity, and (iii) document usage modalities of antifungal plants.

3. Study Area Description

The research was conducted in the Poro region of northern Ivory Coast, covering 13,400 km² with an estimated population of 1,040,461 (2021). It consists of four departments: Korhogo (KGO), Dikodougou (DIKO), Sinématiali (SINE), and M'Bengué (MBG), dominated by savannah ecosystems.

4. Sampling Strategy

A stratified proportional random sampling method was used, dividing the region into four strata corresponding to the departments. A total of 120 participants (30 per stratum) were interviewed.

5. Data Collection Method

Ethnobotanical data were collected using semi-structured interviews conducted in local languages (Senoufo and/or Malinké). Information included demographic details and traditional knowledge regarding medicinal plants for fungal infections.

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6. Plant Identification Process

Plants cited were identified using botanical references (Arbonnier, Aké-Assi) and verified at the National Floristic Center (CNF). Taxonomic harmonization followed the APG IV (2016) classification and the WFO database.

7. Population Age Structure

Respondents ranged from 19 to 78 years old. The most represented age group was 39–58 years (33.33% to 56.67%), suggesting that knowledge of medicinal plants is typically held by middle-aged adults with more experience.

8. Gender Distribution

Males dominated the sample (66.67%), with highest male presence observed in SINE (73.33%). This reflects a predominance of men in traditional healing roles compared to women, who are more involved in herbal marketing.

9. Education Level of Respondents

The majority were non-schooled (73.33% overall; up to 86.67% in KGO). Low education levels correlate with higher dependence on traditional medicine and stronger retention of indigenous knowledge.

10. Socio-Professional Categories

Three professional groups were identified: traditional healers, herbalists, and "others" (farmers, traders, housewives). The "others" category was most represented (57.5%), reflecting widespread informal knowledge of medicinal plants beyond professional healers.

11. Overall Floristic Diversity

The study documented 101 plant species used for fungal infections, belonging to 90 genera and 34 families. This reflects significant ethnomedicinal richness within the region.

12. Departmental Floristic Variations

- KGO: 47 species
- DIKO: 31 species
- SINE: 28 species
- MBG: 55 species (highest diversity)

MBG exhibited the richest floristic diversity, while SINE showed the lowest.

13. Floristic Similarity (Jaccard Index)

Jaccard similarity values ranged between 0.11 and 0.34 (<0.5), indicating strong floristic dissimilarity between departments. Chi-square tests confirmed significant differences in species richness across strata.

14. Most Confirmed Antifungal Plants

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Species with highest confirmation indices (ICs ≥ 0.10) include:

- Mitracarpus hirtus
- Smilax anceps
- Cassia alata
- Azadirachta indica
- Annona senegalensis
- Trichilia emetica
- Detarium senegalense
- Hyptis suaveolens

These species form core antifungal resources across the region.

15. Common Species Across All Four Departments

The Venn diagram revealed four species shared region-wide:

- Calotropis procera
- Mitracarpus hirtus
- Piliostigma thonningii
- Pterocarpus erinaceus

This suggests strong cross-community recognition of their antifungal efficacy.

16. Most Used Plant Parts

Leaves were the most frequently used plant part in all departments:

- DIKO: 58.82%
- SINE: 47.06%
- KGO: 42.65%
- MBG: 41.75%

Leaves are preferred due to ease of harvest, high phytochemical content, and lower ecological impact.

17. Modes of Preparation

Six preparation modes were identified. Decoction was dominant:

- Overall: 45.90%
- KGO highest: 62.50%

Decoction is preferred because it maximizes extraction efficiency and can reduce plant toxicity.

18. Modes of Administration

Local application was the most used method:

- SINE: highest (79.31%)

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- DIKO: 64.52%
- KGO: 56%
- MBG: 40.82%

This corresponds to the focus on dermatological fungal infections.

19. Interpretation of Ethnobotanical Patterns

Differences in plant use between departments reflect variations in local vegetation, cultural practices, inter-ethnic knowledge exchange, and healer specializations. The predominance of leaves and decoction aligns with ecological sustainability and traditional medicine practices.

20. Study Conclusion and Implications

The study highlights a rich diversity of antifungal medicinal plants in the Poro region, supported by deep indigenous knowledge. These species constitute valuable natural resources for developing new antifungal molecules and warrant further pharmacological and phytochemical validation.

21. Recommendation

- Prioritize scientific studies to confirm efficacy, identify active compounds, and ensure safe therapeutic use.
- Implement community-based conservation, controlled harvesting, and cultivation of key medicinal species.
- Document indigenous knowledge and integrate traditional practices into national health programs.