

**A MONOGRAPH ON PLANTS FREQUENTLY USED IN THE
TREATMENT OF PROSTATITIS IN TRADITIONAL MEDICINE: THE
CASE OF BOKÉ PREFECTURE, REPUBLIC OF GUINEA/CONAKRY**

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ABSTRACT

Prostatitis is one of the most common urological conditions in adult men, characterised by inflammation of the prostate, often of infectious origin. In sub-Saharan Africa, and more specifically in Guinea, the management of these conditions still relies heavily on traditional medicine due to inadequate healthcare infrastructure and the high cost of modern treatments. In the prefecture of Boké, numerous medicinal plants are used in the treatment of prostatitis, passed down from generation to generation by traditional practitioners, herbalists and healers.

This study aims to catalogue these plants and compile monographs on them, including their taxonomic position, botanical description, traditional uses, parts used, methods of preparation, phytochemical constituents and reported pharmacological activities. An ethnobotanical survey was conducted among 35 traditional practitioners and herbalists, identifying twelve species used with high frequency: *Phyllanthus muellerianus*, *Smilax anceps*, *Carica papaya*, *Pterocarpus erinaceus*, *Dioscorea bulbifera*, *Vitex doniana*, *Premna hispida*, *Gossypium barbadense*, *Persea americana*, *Anacardium occidentale*, *Daniellia oliveri* and *Cassia sieberiana*.

The results show that these plants possess antibacterial, anti-inflammatory and antioxidant properties that may justify their empirical use. However, more in-depth phytochemical and

pharmacological studies are required to validate their efficacy and promote the integration of traditional pharmacopoeia into strategies for managing prostatitis in Guinea.

Keywords: Prostatitis, traditional pharmacopoeia, ethnobotany, phytotherapy, pharmacological activities.

1. INTRODUCTION

Prostatitis is a major public health issue, affecting up to 50% of adult men during their lifetime. This condition is characterised by inflammation of the prostate, which can be acute or chronic, and is often associated with bacterial infections, urinary problems and pelvic pain [1].

In Guinea, as in other sub-Saharan African countries, access to modern medical treatment remains limited, particularly in rural areas such as the Boké region. As a result, the population relies on traditional medicine, which draws on a wealth of medicinal plants that have been used for centuries. Although these practices are passed down orally, they represent a valuable source of information on the therapeutic potential of local plants.

Previous studies have shown that certain plant species, such as *Phyllanthus muellerianus* and *Smilax anceps*, possess pharmacological properties that partially validate their traditional use [2]. However, scientific documentation of local practices remains insufficient, and our understanding of the bioactive mechanisms of the plants used remains limited.

To the best of our knowledge, no study has yet produced a detailed monograph on the main plants used specifically to treat prostatitis in the prefecture of Boké. This study therefore represents an original contribution to the documentation of Guinea's traditional pharmacopoeia and provides a scientific basis for future phytochemical and pharmacological investigations.

The aim of this study is to produce a detailed monograph on the plants most commonly used in Boké for the treatment of prostatitis, with a view to providing a scientific framework for their promotion and potential integration into public health strategies.

2. MATERIALS AND METHODS

An ethnobotanical survey was conducted from 6 April 2023 to 2 July 2023 in the prefecture of Boké. During this study, thirty-five traditional practitioners, herbalists and healers were interviewed. Data collection utilised semi-structured questionnaires and open-ended interviews, gathering information on:

- The vernacular and scientific names of the plants;
- Presentation of images of the different plant species;

- The parts used in treatment (roots, leaves, stems, bark, etc.);
- Methods of preparation (infusion, decoction, maceration);
- Therapeutic indications.

The samples collected were identified and authenticated in the laboratory. The bibliographic documentation was supplemented by research in the national and international scientific literature on the phytotherapy, pharmacology and chemistry of the plants identified.

Traditional practitioners were selected based on their experience in the traditional treatment of urinary and prostate conditions. Only practitioners who had been practising for at least five years were included. Informed consent was obtained from participants prior to each interview.

The data collected were entered into Microsoft Excel 2019 and analysed using descriptive statistics.

3. RESULTS OF THE PLANT SPECIES SURVEY

1. *Phyllanthus muellerianus* (Euphorbiaceae)



Figure 1: *Phyllanthus muellerianus* Johannes Müller Argoviensis (1828–1896)

- Taxonomic position [3]

Taxonomic Rank	<i>Designation</i>
Kingdom	<i>Plantae (Plants)</i>
Subkingdom	<i>Tracheobionta (Vascular Plants)</i>
Division	<i>Magnoliophyta (Angiosperms)</i>
Class	<i>Magnoliopsida (Dicotyledons)</i>
Order	Malpighiales

Family	Euphorbiaceae
Genus	<i>Phyllanthus</i>
Species	<i>Muellerianus</i>
Author	Johannes Müller Argoviensis (1828–1896)

• **Vernacular Names of *Phyllanthus muellerianus* in Boké:**

- **Soussou language (Lower Guinea):** *Toumgbegbely*

This name is commonly used in the Boké region and surrounding areas. It is generally associated with the therapeutic use of the plant against abdominal pain, urinary infections, and prostate-related disorders.

- **Pular language (Boké):** *Sankaran kélé*

It is generally used for inflammations and urinary pain.

- **Landouma / Baga language:** *Séré-kélé*

Traditionally used for kidney and prostate disorders.

- **Dosage:** One cup in the morning, at noon, and in the evening.
- **Treatment duration:** One to two weeks.

• **General Morphology [4]**

Phyllanthus muellerianus is a woody plant with a lianescent or shrub-like habit, capable of reaching 3 to 5 meters in length, or more when climbing on a support. It has a twining, cylindrical stem, brownish at the base and green at the extremities, often marked with longitudinal striations.

- **Traditional Uses:** Treatment of urinary infections, prostatitis, wounds, and inflammations [5].
- **Parts Used:** Roots, leaves, and bark.
- **Preparation Methods:** Decoction and infusion.
- **Chemical Constituents:** Flavonoids, lignans, tannins, alkaloids [6].
- **Pharmacological Activities:** Antibacterial, anti-inflammatory, antioxidant [5].
- **Remarks:** The plant is widely used in Boké and other regions of West Africa.

2. *Smilax anceps* (Smilacaceae)



Figure 2: *Smilax anceps* Carl Ludwig Willdenow (1765–1812)

• Taxonomic Position [7]

Taxonomic Rank	Designation
Kingdom	<i>Plantae (Plants)</i>
Subkingdom	<i>Tracheobionta (vascular Plants)</i>
Division	<i>Magnoliophyta (Flowering plants, Angiosperms)</i>
Class	<i>Liliopsida (Monocotylédones)</i>
Order	<i>Liliales</i>
Family	<i>Smilacaceae</i>
Genus	<i>Smilax</i>
Species	<i>Anceps</i>
Author	Carl Ludwig Willdenow (1765–1812)

• Vernacular names for *Smilax anceps* in Boké

In Boké (Lower Guinea), local ethnobotanical surveys report two main names for *Smilax anceps*:

- In the Soussou language: Welen-welen dji

“Welen-welen” describes the tangled appearance and thorny tendrils of the vine; “dji” means plant or herb.

- In the Pular/Peul language: Poualr

Name used by the Peul communities of Boké to refer to the same medicinal vine.

- In the Landouma language (Boké) Smilax anceps is traditionally called: Séré-kélé

* Dosage: one cup in the morning, at noon, and in the evening.

* Duration of treatment: One to two weeks.

• **General morphology [8]**

Smilax anceps is a vigorous vine or bush, one of some 278 species of the genus Smilax. The stems are hard and fibrous, reaching up to 5 meters in length, armed with numerous hooked thorns and pairs of tendrils coiled at the base of the leaf petioles.

* Traditional uses: It is used to treat prostate disorders, rheumatism, and pain [9].

* Parts used: Roots and stems.

* Methods of preparation: Decoction and maceration.

* Chemical constituents: Steroidal saponins, flavonoids [10].

* Pharmacological activities: Anti-inflammatory, analgesic, and antimicrobial [10].

3. *Carica papaya* (Caricaceae)



Figure 3: *Carica papaya* L. (Carl von Linné, 1753)

• **Taxonomic position [11].**

Taxonomic rank	Designation
Kingdom	Plantae (Plants)
Subkingdom	Angiosperms (flowering plants)
Division	Eudicots
Class	Eudicots
Order	Brassicales
Family	Caricaceae
Genus	Carica
Species	papaya (L.)
Author's name	L. (Carl von Linné, 1753)

• **Common names for Carica papaya in Boké**

- In the Soussou language (Lower Guinea): Föfiya (alternative spelling: Fôfiya) and Foun-foun,
- In the Pular/Pulaar language: Buudi, referring to both the fruit (papaya) and the tree (papaya tree),

• **Morphology [12]**

Carica papaya L. is a perennial, herbaceous, tree-like plant that is simple, cylindrical, sparsely branched, and can reach 5 to 10 m in height. It is hollow and soft at the base, often marked with leaf scars.

- * Traditional uses: It is used in the treatment of prostatitis, digestive infections, and fevers [13].
- * Parts used: Leaves, seeds, and latex.
- * Methods of preparation: Infusion, decoction, and fresh juice.
- * Chemical constituents: Papain, carotenoids, and flavonoids [14].
- * Pharmacological activities: Antimicrobial, anti-inflammatory, and antioxidant [15].

4. *Pterocarpus erinaceus* (Fabaceae)



Figure 4: *Pterocarpus erinaceus* Jean Louis Marie Poiret (1755-1834),

• Taxonomic position [16].

Taxonomic rank	Designation
Kingdom	Plantae
Subkingdom	Tracheobionta (vascular plants)
Division	Magnoliophyta (Angiosperms)
Class	Magnoliopsida (dicotyledons)
Order	Fabales
Family	Fabaceae (or Leguminosae)
Genus	<i>Pterocarpus</i>
Species	<i>erinaceus</i> (Poir.)
Author's name	Jean Louis Marie Poiret (1755-1834),

- In the Peulh (Pular/Fulfulde) language: N'dialan or Diali
- In the Baga language: Kakandé (name used in certain coastal areas)

• Morphology [17]

Pterocarpus erinaceus is a medium to large tree reaching 12-15 m, sometimes up to 20 m in height, with a straight trunk and grayish-brown, cracked bark, revealing a reddish sap.

* Traditional uses: It is used in the treatment of urinary disorders, liver diseases, and prostatitis.

* Parts used: Bark and wood.

- * Methods of preparation: Decoction and infusion.
- * Chemical constituents: Flavonoids, isoflavones, and tannins [18].
- * Pharmacological activities: Anti-inflammatory, hepatoprotective, and antimicrobial.

5. *Dioscorea bulbifera* (Dioscoreaceae)



Figure 5: *Dioscorea bulbifera* Carl von Linné (1707–1778)

- **Taxonomic position [19].**

Taxonomic rank	<i>Designation</i>
Kingdom	Plantae (Plants)
Subkingdom	Tracheobionta (vascular plants)
Division	Magnoliophyta (Angiosperms)
Class	Liliopsida (Monocotyledons)
Order	Dioscoreales
Family	Dioscoreaceae
Genus	Dioscorea
Species	bulbifera (L.)
Author's name	Carl von Linné (1707–1778)

- Common names of *Dioscorea bulbifera*
 - In the Sussu language (Lower Guinea): Firy Forest.
 - In the Peulh language: Dadibalet.

• **Morphology [20]**

Dioscorea bulbifera is a perennial climbing vine that can reach 6 to 12 m in length, belonging to the Dioscoreaceae family. It has a twining stem, generally hairless, striated, with a round to slightly angular cross-section, which wraps around supports.

* Traditional uses: It is used in the treatment of prostate hypertrophy and urinary tract infections [13].

* Parts used: Tubers and bulbs.

* Methods of preparation: Decoction and cooking.

* Chemical constituents: Diosgenin and saponins [14].

* Pharmacological activities: Anti-inflammatory, antioxidant, and anticancer [15].

6. *Vitex doniana* (Lamiaceae)



Figure 6: *Vitex doniana* Carl Linnaeus filius (fils de Carl Linnaeus, 1741–1783)

Taxonomic position [21]

Taxonomic rank	<i>Designation</i>
Kingdom	Plantae
Subkingdom	Angiosperms
Division	Eudicots
Class	Asterids
Order	Lamiales
Family	Lamiaceae (formerly placed in Verbenaceae)
Genus	Vitex
Species	Doniana
Author's name	Carl Linnaeus filius (son of Carl Linnaeus, 1741–1783)

- Common names for *Vitex doniana* in Boké
 - In the Sussu language (Lower Guinea): Sougnui, Koukoui.
 - In the Pular language (Pular/Fulfulde): Boumé.

- Morphology [22]

Vitex doniana Sweet is a medium-sized tree that can reach 8 to 15 m in height, with a straight trunk, sometimes short and branched, with blackish-brown, rough, and cracked bark.

* Traditional uses: It is used in the treatment of prostatitis, digestive disorders, and infections [13].

* Parts used: Leaves and bark.

* Methods of preparation: Infusion and decoction.

* Chemical constituents: Iridoids, flavonoids, and tannins [14].

* Pharmacological activities: Antioxidant, antimicrobial, and anti-inflammatory [15].

7. *Premna hispida* (Lamiaceae)



Figure 7: *Premna hispida* George Bentham (1800–1884)

- Taxonomic position [23]**

Taxonomic rank	Designation
Kingdom	Plantae
Subkingdom	Angiosperms
Division	Eudicots
Class	Asterids
Order	Lamiales
Family	Lamiaceae (formerly classified in Verbenaceae)
Genus	<i>Pemna</i>
Species	Hispida
Author's name	George Bentham (1800–1884)

- Common names in Boké
- I • n the Sussu language (Lower Guinea): Koumissosso.

- Morphology [23]

Shrub or small tree 1 to 5 m tall, sometimes bushy, with woody, branched stems.

* Traditional uses: It is used in the treatment of prostatitis, respiratory conditions, and fever [13].

* Parts used: Leaves and stems.

* Methods of preparation: Infusion and decoction.

* Chemical constituents: Essential oils, tannins, and flavonoids [14].

* Pharmacological activities: Antibacterial, expectorant, and anti-inflammatory [15]..

8. *Gossypium barbadense* (Malvaceae)



Figure 8: *Gossypium barbadense* Carl von Linné (1707–1778)

• **Taxonomic position [24]**

Taxonomic rank	<i>Designation</i>
Kingdom	Plantae
Subkingdom	Angiosperms
Division	Eudicots
Class	Asterids
Order	Malvales
Family	Malvaceae
Genus	<i>Gossypium</i>
Species	<i>barbadense</i> (L.)
Author's name	Carl von Linné (1707–1778)

• **Common names in Boké**

- In the Sussu language (Lower Guinea): Guesséfouté.

- In the Pular/Fulfulde language (Fuuta Jalon/Pullar of Guinea): Haabu (generic term for “cotton,” attested for several varieties of Fulfulde); sometimes hottollo depending on the dialect.

- Morphology [25]

Gossypium barbadense L. (Malvaceae), known as West Indian cotton or long-staple cotton, is a perennial herbaceous plant with a shrubby habit, reaching 2 to 4 m in height.

* Traditional uses: It is used in the treatment of prostate inflammation, pain, and urinary tract infections [13].

* Parts used: seeds, bark.

* Methods of preparation: decoction, maceration.

* Chemical constituents: gossypol, flavonoids [14].

* Pharmacological activities: antimicrobial, antifungal, anti-inflammatory [15].

9. *Persea americana* (Lauraceae)



Figure 9: *Persea americana* Philip Miller (1768).

- Taxonomic position [26]

Taxonomic rank	Designation
Kingdom	Plantae
Subkingdom	Angiosperms
Division	Magnoliids
Class	Magnoliopsida (dicotyledons).
Order	Laurales

Family	Lauraceae
Genus	Persea
Species	americana (Mill.)
Author's name	Philip Miller (1768).

- Vernacular names in Boko

Pyá: Used in Malinké, Kissi, Pular (Fulfulde), and Soussou languages.

- Morphology [26]

Persea americana Mill. (Lauraceae) is an evergreen fruit tree that grows to a height of 10 to 20 m.

* Traditional uses: It is used in the treatment of urinary disorders, prostatitis, and hypertension [13].

* Parts used: Leaves and seeds.

* Methods of preparation: Infusion and decoction.

* Chemical constituents: Unsaturated fatty acids, phytosterols, and flavonoids [14].

* Pharmacological activities: Antioxidant, anti-inflammatory, and cardioprotective [15].

10. *Anacardium occidentale* (Anacardiaceae)



Figure 10: *Anacardium occidentale* Carl Linnaeus (1707–1778)

• **Taxonomic position [27]**

Taxonomic rank	Designation
Kingdom	Plantae
Subkingdom	Angiosperms
Division	Eudicots
Class	Rosids
Order	Sapindales
Family	Anacardiaceae
Genus	Anacardium
Species	occidentale (L.)
Author's name	Carl Linnaeus (1707–1778)

• Common names in Boké

- In the Sussu language (Lower Guinea): Koussou.

- In the Pular/Peulh language: Yalaguet

• Morphology [28]

Type of plant: Tropical evergreen tree, generally reaching 8 to 12 m in height, sometimes up to 15 m in favorable conditions.

* Traditional uses: It is used to treat prostatitis, diarrhea, and skin infections [13].

* Parts used: Leaves, bark, and nuts.

* Methods of preparation: Infusion, decoction, and poultices.

* Chemical constituents: Anacardic acids, tannins, and flavonoids [14].

* Pharmacological activities: Antimicrobial, anti-inflammatory, and antioxidant [15].

11. *Daniellia oliveri* (Fabaceae)



Figure 11: *Daniellia oliveri* Rolfe, Hutchinson & Dalziel (1931).

• Taxonomic position [29]

Taxonomic rank	<i>Designation</i>
Kingdom	Plantae
Subkingdom	Tracheophyta (vascular plants)
Division	Eudicotyledons
Class	Magnoliopsida (eudicots)
Order	Fabales
Family	Fabaceae (Leguminosae)
Genus	<i>Daniellia</i>
Species	<i>oliveri</i> (Rolfe) Hutch. & Dalziel
Author's name	Rolfe, Hutchinson & Dalziel (1931).

- Common names in Boké
 - In the Soussou language (Lower Guinea): Ouloungui (often transcribed as Ouloungui/Ouloungui).
 - In the Pular language (Peul/Fulfulde): Tiéwi / Tiéwé (variants: Tiéné, Tiéri) and also Kévé.
 - In the Malinké language (present in Boké but less prevalent): Sandan/ Sanan.

- Morphology [30]

Medium-sized tree, reaching 20-30 m in height, with a straight trunk that can measure up to 1 m in diameter. The bark is grayish to light brown, often scaly and exuding a clear, yellowish gum when incised.

* Traditional uses: The plant is used to treat urinary disorders, prostatitis, and pain [13].

* Parts used: Bark and leaves.

* Methods of preparation: Decoction and infusion.

* Chemical constituents: Flavonoids, terpenoids, and saponins [14].

* Pharmacological activities: Anti-inflammatory, analgesic, and antimicrobial [15].

- Common names in Boké

- In the Soussou language (Lower Guinea): Ouloungui (often transcribed as Ouloungui/Ouloungui).

- In the Pular language (Peul/Fulfulde): Tiéwi / Tiéwé (variants: Tiéné, Tiéri) and also Kévé.

- In the Malinké language (present in Boké but less prevalent): Sandan/ Sanan.

- Morphology [30]

Medium-sized tree, reaching 20-30 m in height, with a straight trunk that can measure up to 1 m in diameter. The bark is grayish to light brown, often scaly and exuding a clear, yellowish gum when incised.

* Traditional uses: The plant is used to treat urinary disorders, prostatitis, and pain [13].

* Parts used: Bark and leaves.

* Methods of preparation: Decoction and infusion.

* Chemical constituents: Flavonoids, terpenoids, and saponins [14].

* Pharmacological activities: Anti-inflammatory, analgesic, and antimicrobial [15].

12. *Cassia sieberiana* (Fabaceae)



Figure 12: *Cassia sieberiana* Augustin Pyramus de Candolle (DC.) (1825).

• **Taxonomic position [31]**

Taxonomic rank	Designation
Kingdom	Plantae
Subkingdom	Tracheophyta (vascular plants)
Division	Tracheophyta (vascular plants, or Tracheophytes).
Class	Magnoliopsida (dicotyledons)
Order	Fabales
Family	Fabaceae (Leguminosae)
Genus	Cassia
Species	sieberiana (DC)
Author's name	Augustin Pyramus de Candolle (DC.) (1825).

- Common names in Boké
- In Malinké: Sindia.
- In Pular (Peul): Sindia, Sindion.
- In Soussou: Bangboua, Bamba.

- Morphology [32]

Medium-sized tree, reaching 7-15 m in height, with a straight, slender trunk, sometimes twisted, covered with grayish, light brown bark, cracked, exuding a clear gum when incised.

* Traditional uses: The plant is widely used in the treatment of urinary tract infections and prostate hypertrophy [13].

* Parts used: Bark and leaves.

* Methods of preparation: Decoction and infusion.

* Chemical constituents: Anthraquinones, flavonoids, and tannins [14].

* Pharmacological activities: Diuretic, anti-inflammatory, and antimicrobial [15].

4. DISCUSSIONS

Analysis of the data reveals that the traditional pharmacopoeia of Boké is based on a variety of plant species belonging mainly to the Fabaceae, Euphorbiaceae, Lamiaceae and Anacardiaceae families. These families are known for their richness in bioactive secondary metabolites such as flavonoids, tannins, alkaloids and saponins, whose anti-inflammatory, antibacterial and antioxidant properties may explain the empirical efficacy of traditional treatments [2].

The similarities with the uses reported in other regions of Africa highlight the consistency of traditional knowledge regarding herbal remedies for prostate conditions [32].

The predominance of *Phyllanthus muellerianus* observed in this study is consistent with the work of Kouadio et al. [2] in Côte d'Ivoire, who reported frequent use of this species in the treatment of urogenital infections.

This study has certain limitations. The data are based primarily on the accounts of traditional healers and have not been confirmed by biological or clinical trials. Furthermore, the small sample size (35 informants) may not reflect the full extent of traditional knowledge in the prefecture of Boké.

However, the scientific literature remains limited, and further research is essential in order to: identify the specific active compounds responsible for the therapeutic effects; determine the toxicity and safety of traditional preparations; and validate the clinical efficacy of the plants through pharmacological and clinical studies.

5. CONCLUSION

In summary, this study has identified and documented twelve plant species frequently used in the traditional treatment of prostatitis. To this end, an ethnobotanical survey was conducted among 35 traditional practitioners and herbalists in the prefecture of Boké, enabling the identification of twelve species widely used against this condition, and monographs on these plant species were compiled. The literature review suggests that these species contain various bioactive secondary metabolites, notably flavonoids, tannins, saponins and alkaloids, which are likely to contribute to their traditional therapeutic uses.

CONFLICTS OF INTEREST

All authors certify that they have no affiliation with, or involvement in, any organisation or entity with a financial or non-financial interest in the subject matter covered in this manuscript.

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