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Sous la direction de
Koffi Ganyo AGBEFLE

Histoire

Science Politique

Géographie

Autres sciences sociales

TOME 3

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Prénom, NOM (en gras, sur la première ligne), Nom de l'institution (en italique, sur la deuxième ligne), e- mail de l'auteur ou du premier auteur (sur la troisième ligne). L'ensemble en taille 10.

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Bibliographie -Il reprend tous les livres et articles qui ont été cités dans le corps de son texte.

Conseils techniques

Mise en page - Marges : haut 2 cm, bas 2 cm, gauche 2 cm, droite 2 cm.

Style et volume – **Garamond, taille 12 pour le titre de l'article et pour le reste du texte Garamond taille 11 (sauf pour le résumé, les mots-clés et la bibliographie qui ont la taille 10), interligne 1,5 ; sans espace avant ou après.** Le texte ne doit pas dépasser 12 pages (minimum de 8 pages & maximum de 12pages). Le titre de l'article, l'introduction, les sous-titres principaux, la conclusion et la bibliographie ne sont pas numérotés mais sont précédés par deux interlignes. Les autres titres sont numérotés et les paragraphes sont séparés par une seule interligne.

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NB : Les notes de bas de page sont à éviter.

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NB : Eviter autant que possible les tableaux trop longs

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ETHNOBOTANICAL STUDY OF THE FALSE BAOBAB (KIGELIA AFRICANA LAM. BENTH) IN THE DISTRICT OF ISSABA (COMMUNE DE POBÈ).

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Abstract

Kigelia africana is one of the poorly understood species. Thus, this study aims to document the different uses of K. africana in the Borough.

An ethnobotanical survey was carried out among 71 people in Issaba. The data collected is processed with Excel 2010 and analyzed from ethnobotanical indices.

In total 5 categories of uses are recognized for K. africana by local populations among which traditional medicine is the most cited with thirty-one (31) types of uses. The most used organs are the bark (32 %), pharmaceutical forms and the fruit (19 %). Decoction and calcination are the most commonly used and most administered orally and through the skin. In addition, K. africana is abundant in the medium. Despite this abundance, the study also showed that human pressure on the species and its habitat is significant in this locality that it is necessary to define a short-term conservation strategy for the species.

Key words: *Issaba district, Kigelia africana, ethnobotany*

Resume

Kigelia africana est l'une des espèces mal connues. Ainsi, cette étude vise à documenter les différents usages de K. africana dans l'Arrondissement.

Une enquête ethnobotanique a été réalisée auprès de 71 personnes à Issaba. Les données collectées sont traitées avec Excel 2010 et analysées à partir des indices ethnobotaniques.

Au total 5 catégories d'usages sont reconnues de K. africana par les populations locales parmi lesquelles la médecine traditionnelle est la plus citée avec trente-un (31) types d'utilisations. Les organes les plus utilisés sont l'écorce (32 %), le fruit (19 %). La décoction et la calcination sont les formes pharmaceutiques les plus pratiquées et plus administrées par voie orale et cutanée. De plus, K. africana est abondante dans le milieu. Malgré cette abondance, l'étude a également montré que la pression humaine sur l'espèce et son habitat est significative dans cette localité qu'il est nécessaire de définir à court terme une stratégie de conservation de l'espèce.

Mots clés : *Arrondissement d'Issaba, Kigelia africana, ethnobotanique*

Introduction

In Africa, medicinal and aromatic plants constitute the main component of the practice of traditional medicine, and have been used for centuries in the traditional health culture of the African people (F. Gachathi and Al., 2017, P.2). They constitute and remain the most used means, especially in rural areas, to resolve human and animal health problems (K. A. Yaya and Al., 2018, P441). Therefore, around 80 % of the population mainly depends on traditional medicines for their primary health care: (K. Siddiqui and Al. 2015; p35). However, the lack of essential medicines, the inadequacy of health care, the high cost of medicines in pharmacies and the socio-cultural habits of the populations explain the use of traditional practices based on medicinal plants. These plants contain a large number of metabolites which have multiple interests used in pharmacology, the food industry and cosmetology (K. A. Yaya and al, 2018; P442). The art of healing with plants has been known and practiced in Africa for a long time, because it exploits knowledge transmitted orally from generation to generation to certain categories of initiated individuals such as traditional health therapists and herbalists (R. Sanogo, 2006, p. 5).

In Benin, 5,000 plant species are inventoried in forest ecosystems (MEHU, 2002, p. 8). According to J. T. Codjia *et al.* cited by K. A. Yaya (2018, p. 9), among these plants, 172 are consumed by local populations as food plants and 814 as medicinal plants. Indeed, several ethnobotanical studies have been carried out in Benin on these medicinal species (E. J. Adjanahoun *et al.*, 1989, p. 886).

K. africana (Lam.) Benth of the Bignoniaceae family is an interesting example of a medicinal plant among many others that are used in traditional medicine. It is a plant that is used locally in many fields, ranging from traditional medicine to cosmetics and traditional rituals. The organs of the species are used topically to treat cancer, ulcers, gynecological disorders, genital infections, skin diseases, diabetes, epilepsy, bacterial and fungal infections, as well as for cosmetics (D. E. Atawodi and O. D. Olowoniyi, 2015, p. 3). Despite these enormous potentials and prospects in traditional medicine and African pharmacopoeia, Benin is still characterized by a paucity of usable ethnobotanical and pharmacological data (African Ethnobotanical Networks, cited by E. T. Tokannou, 2015, p. 2).

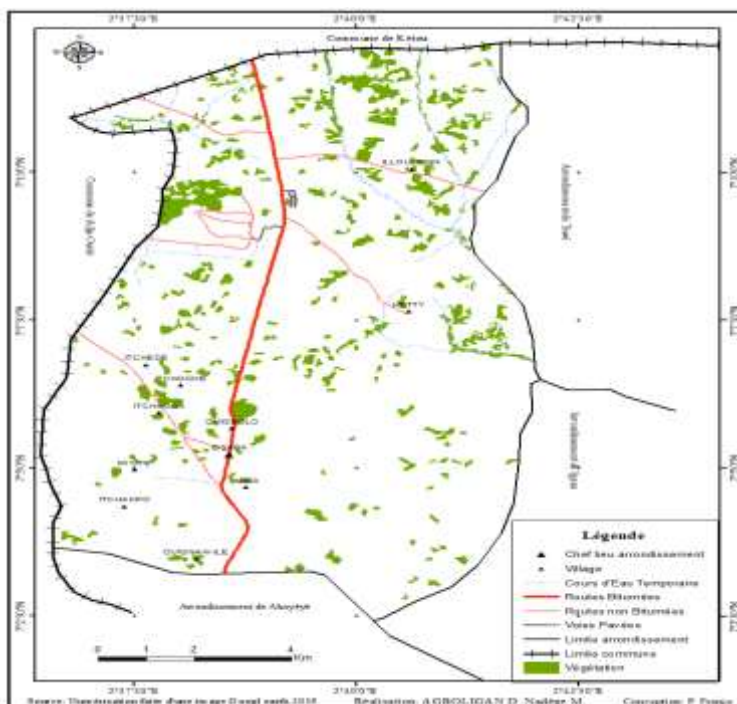
The present study carried out in the Municipality of Pobè, precisely in the District of Issaba, aims to study the existing relationship between this plant and man, in order to gather as much information as possible on endogenous knowledge linked to its uses. therapeutic practices practiced by the local population, with a view to defining solution approaches for the conservation and sustainable management of *K. africana*.

1. Material and Method

1.1. Study Framework

Located in the Plateau Department between 7°2'30" and 7°8'35" north latitude, then between 2°36'51" and 2°38'33" east longitude. The District of Issaba is limited to the north by the Municipality of Kétou, to the east by the Districts of Towé and Igana, to the south by the District of Ahoyéyé, and to the west by the Municipality of Adja-Ouèrè. The study area enjoys a tropical climate with a bimodal rainfall regime with two shades (of the middle Zou and the southeastern plateaus) with two rainy seasons and two dry seasons (G. Bani, 2006, p. 2). The annual rainfall average is around 1,073mm in 65 days (G. Bani, 2006, p. 2). The vegetation of Issaba is composed in places of gallery forest, light forest, wooded savannah, shrub savannah, which vegetation is already under the influence of anthropogenic activities. According to the results from the General Population and Housing Census (RGPH4), the Issaba District had respectively 28,223 inhabitants including 14,546 women and 13,677 men. The local economy of Issaba is mainly based on agriculture (INSAE, 2013). Figure 1 presents the geographical location of the Issaba District.

Figure 1: Geographical location of the Issaba District



1.2 Sampling

The sample is determined by the random reasoned choice method with the use of several selection criteria which are:

- Knowing the species *K. africana*;
- Be either a traditional therapist, seller of medicinal plants, artisan, or users of the species *K. africana* in the Issaba District;
- Have endogenous knowledge of the species in traditional medicine;
- Have at least 3 years of professional experience (traditional therapists, sellers of medicinal plants and artisans);
- Belong to one of the three age categories used by (E. A. Assogbadjo et al. , 2008), who are: young people < 30 years old; adults between 30 and 60 years old and elderly people > 60 years old. All sixteen (16) villages in the Issaba District were visited.

An exploratory survey carried out in these villages a number of 30 individuals representative of the population. During this survey, a single question was asked to respondents (Do you know the false baobab?) in order to determine the proportion (P) of the population who knows *Kigelia africana*.

The size of the sample (N) of people surveyed in each village following the binomial sampling law is expressed as follows:
$$N = \frac{U^2_{1-\alpha/2} \times P(1-P)}{d^2}$$

N is the study sample size;

$U^2_{1-\alpha/2}$ is the normal distribution value for a normality value

D is the zero margin of error, $d=5\%$;

P is the proportion of people with knowledge of *D* use. *Africana* in the locality and its value obtained after the exploratory survey carried out among 30 people taken at random in the district, $P=0,9$.
$$N = \frac{1,96 \times 0,9(1-0,9)}{0,0025} = \frac{0,1764}{0,0025} = 70,56 \approx 71$$

Thus, 71 people were surveyed in the study environment following previously defined selection criteria.

1.3 Data Collection Technics:

Several techniques were used for data collection. The semi-structured interview is a technique based on the use of a grid of themes. This type of interview was mainly used during the exploratory phase with the help of an interview guide to facilitate direct communication from resource people, especially in the local language (Holli) concerning the distribution of the species in the study environment. Direct observation is a technique for studying social actors and their interaction in their real context by a researcher who is integrated into an environment. This technique allowed integration into the environment on the one hand, to locate the feet of the species found in the environment in order to take their geographical coordinates and above all to evaluate the use score (high, medium, low) organs of the species in order to analyze the different pressures weighing on the latter in the study environment. The observation grid is the tool used.

1.4 Data Processing

This phase made it possible to process and discuss the recovered data. Thus, the processing of the survey sheets was done manually and codified in a database before being processed on the computer. The data collected is grouped by center of interest, which allowed the use of

appropriate processing software. These basic data (table, figures, etc.) are processed using Excel 2010 and Microsoft Office Word 2013. The data thus processed was analyzed and commented. At this level, frequencies of responses obtained, for the sociocultural parameters considered, were calculated index of respondents (ID) as well as fairness (EI) was evaluated by sociocultural parameters as a percentage.

Various parameters such as the diversity

- **Respondent diversity index (de Freitas et al., 2010):**

This index is calculated by the following formula:

$ID = U_x / U_t$, U_x : number of uses cited by a respondent,
 U_t : total number of uses

$ID \in [0, m]$; with m = number of respondents using this use

It makes it possible to measure how many respondents use a given species and how this knowledge is distributed among the respondents. When $ID \leq 0.5$ so many people know and use this species; $ID > 0.5$ so few people know and use this species.

- **Fairness index of respondents (Byg and Baslev, 2001):**

It was determined by the formula below:

$IE = ID / ID_{max}$

ID: diversity value

ID max: maximum diversity value index

$IE \in [0, 1]$. The equitability index measures the degree of homogeneity of knowledge among respondents. When $IE \leq 0.5$ the knowledge is held by a small number of individuals among the respondents; $IE > 0.5$ knowledge more or less uniformly distributed among the respondents.

This value makes it possible to measure the importance of each category of use and how it contributes to the total use value.

2. Results

2.1 Distribution of K. africana (Lam.) Benth in the district of Issaba

In Benin in general, and in the study environment in particular, *K. africana* intervenes on the health, artisanal, cultural and religious levels. From a health perspective, the organs of the species are used in the composition of various phytomedicines for traditional care. It is used artisanally for the manufacture of masks, artistic objects and especially charcoal. She is considered in certain villages in the district as a cultural

deity; thus it represents a place of traditional dance called “Ibidjo oyichanagbo”. According to these populations, the species plays the role of a traditional amplifier (funnel). In other words, it carries far the way of the singers. It is also a place of offerings and spiritual rituals called “Igwi èbo” or “Ita èbo” by others. Given its abundance in the environment, *K. africana* does not have considerable commercial value for populations, which is justified by their insensitivity to fruit rot (Plate 1).

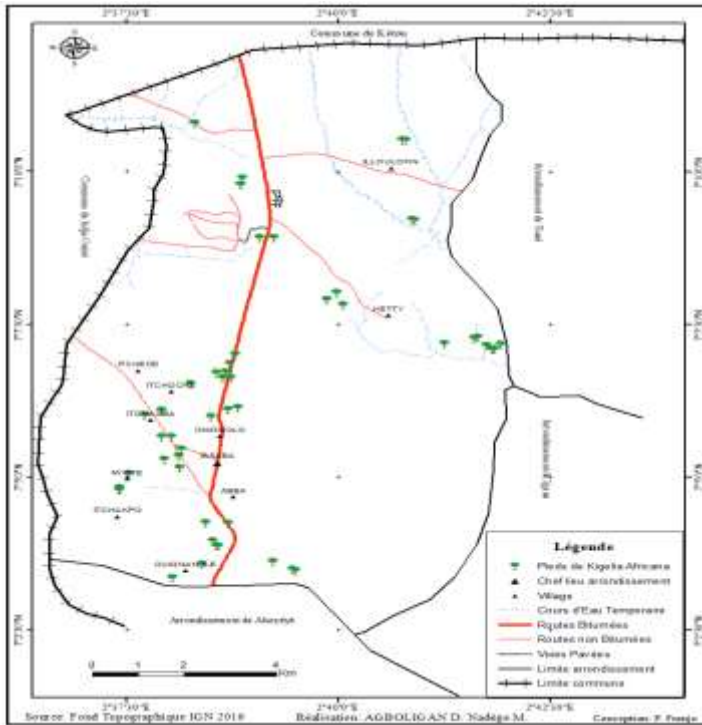
Plate 1: Rot of *K. africana* fruits in Illekpa (1.1) Fruit of *K. africana*: subject to access ban in a field in Itchaagba (1.2).



Photo taken: Ali, June 2023

The Observation of photo 1.2 shows that the fruits of *K. africana* (Lam.) Benth are also used spiritually to protect fields from crop theft. Thus, in the study area, the species has naturalized around the villages of the district of Issaba.

Figure 2: provides us with information on its distribution.



An analysis of Figure 2 shows that the species is abundant in the district. Indeed, *K. africana* (Lam.) Benth is located in almost all the villages in the study area.

2.2 Endogenous knowledge and forms of use of the species in Issaba

In the study area, several local forms of use are made of the species by local populations.

2.2.1 Parataxonomy of the species

➤ Local names of *K. africana* in the Issaba District

K. africana is designated by eight (08) vernacular names in the Issaba District, including three (03) by the Hollis who also represent the majority sociolinguistic group in the area, two (02) by the Mahi, one (01) by the Nagot, one (01) by the Yoruba, and finally one (01) by the Fon

and the Goun. The following Table I summarizes all the local names listed by ethnicity.

Table I: Local names of *K. africana* (Lam.) Benth in the Issaba District

| Ethnic groups | Pourcentages surveyed (%) | Local names | meaning |
|----------------------|----------------------------------|--------------------|---|
| <i>Hollis</i> | 82 | <i>Iyankpan</i> | Magical power of healing : allow me to heal with your organs qualifies the long form of the fruits of the species |
| | 11 | <i>Oguiyan</i> | |
| | 7 | <i>Adèrè</i> | |
| <i>Mahi</i> | 20 | <i>Oyanssisin</i> | - |
| | 80 | <i>Yanblikpé</i> | Magical power of healing |
| <i>Nagot</i> | 21 | <i>Kpaboudoro</i> | Qualifies the long form of the fruits of the species |
| | | <i>r</i> | |
| <i>Yoruba</i> | 5 | <i>Omonyán</i> | The child survived |
| <i>Fon</i> | 4 | <i>Yanblipké</i> | - |
| <i>Goun</i> | 1 | <i>Yanblipké</i> | - |

Source: Field surveys, June 2023

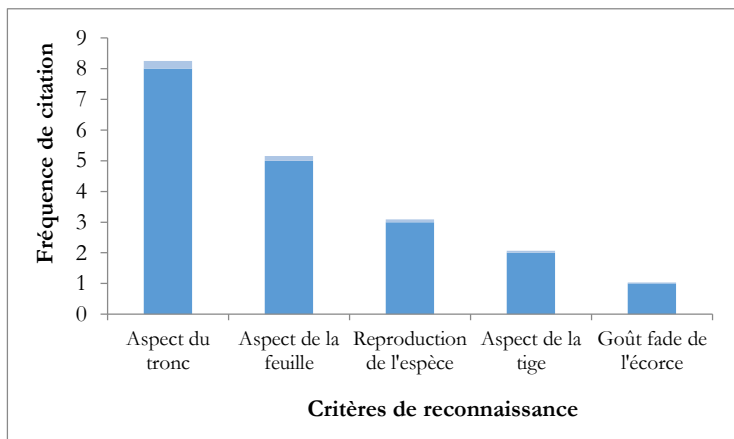
Considering the table above, the Nagot, Yoruba, Fon and Goun have a single local name for the species while the Holli and Mahi have several names to call him. These local names have meanings only for the Holli, the Nagot, the Yoruba and part of the Mahi.

Characteristics of the morphotypes of *Kigelia africana* (Lam.) Benth for 65 % of the reseachs, *K. africana* is uni-morphotype. Some people among those who have investigated (35 %) notice that the species has two morphotypes (male and female) which each have particular characteristics. These people manage to recognize the different morphotypes of the species according to visual and sometimes tasty criteria. After the analyses, we notice that knowledge or not of the recognition criteria is not linked to any of the sociolinguistic categories investigated. For 30% of populations that have knowledge of morphotypes, the female of *K. africana* has longer fruits than those of the male; 20 % finds that the female has enough fruit, while the male has

few or none; For 18 % of population, the trunk of the female of the species is larger than that of the male.

Regarding the reproduction of the species, according to 7 % of the respondents, the reproduction of the female is faster than that of the male. For the appearance of the leaves, fruits and trunk, according to 5%, the leaves of the female are less green and wider; those of the male are greener and narrower; 3 % note that the fruits and trunk of the female are smoother than those of the male; its stems are more flexible and have quite a few more leaves than those of the male; and its calcined barks are less fermented than those of the calcined male. To conclude, the criteria for recognizing the morphotypes of the species used in the Issaba District relate to the appearance of the leaf 15.63, the fermented taste of the bark after calcination 3.12%, the appearance of the fruits 40.63%, the appearance of the stems 6.25, the appearance of the trunk 25% and the reproduction of the species 9.38. Figure 3 presents parataxonomic knowledge by respondents.

Figure 6: Para-taxonomic knowledge by respondents



Source: Field surveys, June 2023

According to the figure above, the recognition criteria vary depending on the citation frequencies. Consequently, parataxonomic knowledge of the species varies from one respondent to another.

2.2.2 Ecological perception of local populations

The ecological perception of the local population focused on habitat, availability, phenology and the status of *K. africana*.

➤ Habitat of the species

The *Kigelia africana* species is very common in more humid environments, more precisely in lowlands, it is also more noticeable on clay soils than sandy soils. Note that *K. africana* is a forest species.

➤ Availability of *K africana* (Lam.) Benth in Issaba

Regarding the availability of the species, 68% of the surveyed sample estimated that *K. africana* is not a rare species. Among this percentage of populations surveyed, 77.08% of people found that *K. africana* is often encountered in fields, forests and fallows. For some 22.92 %, the species is also found in habitats. According to the respondents, *K. africana* is not a ruderal species (around houses). However, most of the respondents avoid the domestication of the species just to spare small children and adolescents who are unaware of the various negative effects noticed following touching the fruits of the species.

For 32 % of the total population, this plant is poorly available in the study environment. According to these populations, this low availability is explained by the abusive use of the organs of the species for various purposes (medicinal use, artisanal use, cultural ceremony as well as the effect of urbanization).

According to 38.03 % of the total population surveyed, the presence of *K. africana* in this or that location depends on certain valid reasons. Among this small proportion of populations having answered this question, 44.44 % affirm that the species does not depend on a particular type of soil for its development; on the other hand, for the knowledge of other 22.22 %, the species needs certain types specific soils for good growth (preferably clay soils). From the point of view of 33.34 % people, the presence of *K. africana* in certain unexpected places (do not cultivate by human hands), depends on the distribution of its grains under the effect of erosion or following the use of its fruits for medicinal or various purposes. However, a relatively large segment of respondents 61.97 % remained silent on this question. In terms of food, according to 100 % all of the respondents, the fruits of *K. africana* are not edible. Only 2.82 % of the respondents consume its leaves as a vegetable (young shoot). The remaining 97.18 % have no concept of consuming the leaves of the

species. For them, the fruits and leaves of *K. africana* are consumable only as phytomedicines.

➤ **Phenology of the species according to local populations**

Knowledge of the local population in relation to the phenology of the species is not however precise. Nevertheless, a high proportion of the total population of respondents have an idea of the flowering period, fruiting period and the number of annual elds of *K. africana*; a small proportion of people gave their views only in relation to the flowering and fruiting periods. Certain people 14.08 % gave their knowledge on the fruiting and the yield per year of the species on the other hand, the remaining 16.90 % have no knowledge of the phenology of the species during the year.

Regarding the flowering of *K. africana*, 84.51 % of the total proportion of respondents have a precise idea while the remaining 15.49 % have no point of view concerning it. Among those who gave their knowledge regarding the flowering period, 43.33% think that it takes place only between the months of May and August during the short season and the long rainy season (June to September; March to May) eight note that flowering takes place 20% find that the species flower during of the whole year.

Concerning fruiting, for 87.32 % of the population surveyed, gave their opinion in relation to that question. Of this population group, some 53.22 % of people believe that it takes place between 4 and 6 years of age: therefore, the growth of the species is moderately rapid while other 25.81 % affirm that the species begins by giving its first fruits between 6 and 8 years old: according to these, the growth of the species is slow. Only 20.97 % found that *K. africana* produced for the first time after several years (8 years to 12 years): its growth was very slow. The other respondents remaining 12.68 % are all unaware of the fruiting period of the species.

As for the annual yield, most of the populations surveyed 91.55 % have a precise idea on this question. Thus, a small part of these 1.54 % of populations think that the species reproduces only once a year. For the 72.31 % majority, *K. africana* reproduces two to three times per year; for others 26.15 %, it is capable of reproducing several times in a year. The few remaining 8.45 % people remained silent regarding this issue. Regarding the reproduction of the species, a large number of sample

92.96 % gave their knowledge on this issue. The majority of these 89.39 % of people believe that the species reproduces by seed following the rotting of its fruits, while for other 10.61 % of people, it can also reproduce by planting its limp branches (preferably during rainy seasons). According to the few remaining people (7.04%), *K. africana* is a forest species; therefore, they are all unaware of the mechanism of its reproduction.

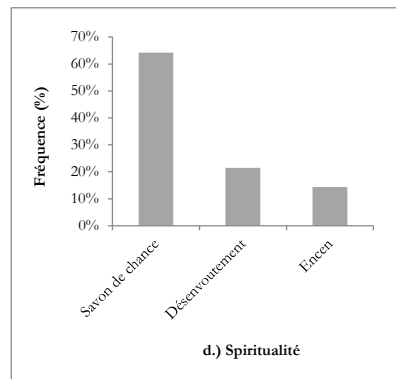
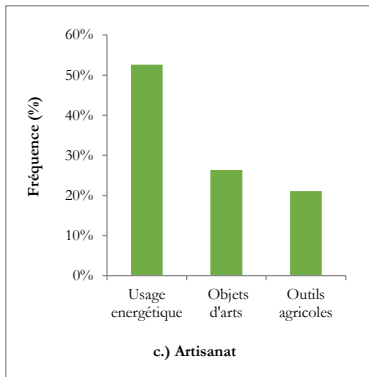
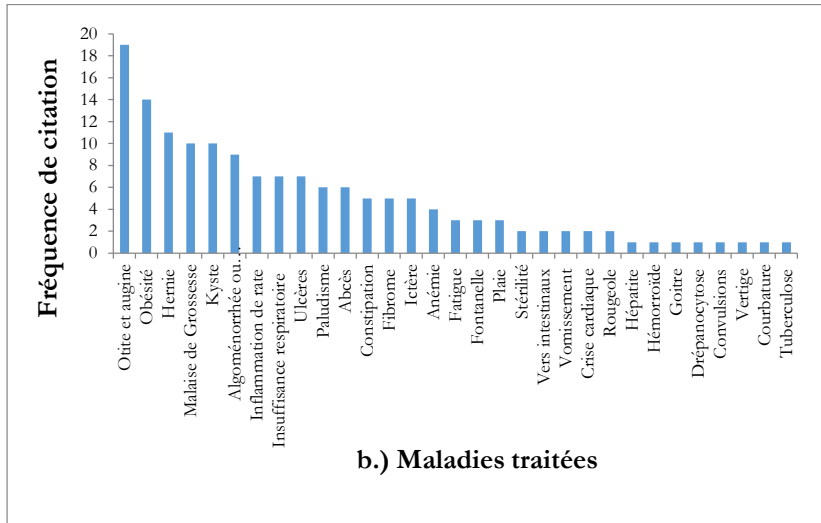
According to the respondents, the flowering, fruiting, annual yield and even growth of *K. africana* sometimes depends on its morphotype and its habitat.

2.2.3 Use of K africana (Lam.) Benth in Issaba.

Five (05) categories of use of *K. africana* are identified by the local populations of Issaba: traditional medicine 80.28%; craft 26.76 %; spirituality 19.72 % the manufacture of chemical fertilizers 16.90 %; and food 2.82 %. For the three most cited categories, thirty-seven types of uses are made of *K. africana* by local populations. The traditional medicine category is first of all the most diverse category, with thirty-one types of uses. It is followed by the craft and spirituality categories, which each have three forms of use. Taking into account the frequency of citation of the types of uses, *K. africana* is cited by 26.76 % for its use in the manufacture of bows for hunting, masks or other objects of art, agricultural tools (hoe handle, etc.) and especially coal manufacturing and heating; and by 19.72 % for its usefulness in the manufacture of incense, the composition of lucky soaps and also for disenchantment. In the category of traditional medicine, for the thirty-one types of uses, *K. africana* is most cited by 30.92 % of the respondents for its use in the treatment of diseases linked to human reproduction; 28.95 % for the treatment of diseases related to general medicine; 15.13% for the usefulness of the species in the treatment of ENT (Oto-Rhino-Laryngology); by 11.18 % of respondents for the use of *K. africana* in the treatment of diseases of the digestive tract.

On the other hand, only 7.24 % of populations cited *K. africana* as an important species in the treatment of dermatological diseases and other 6.58 % in the cure or reduction of various respiratory ailments. The following figure 4 shows the frequency of citation of the types of uses of *K. africana* at the level of each category of use.

Figure 4 : Frequency of citation of types of uses at the level of categories of uses



Source: Field surveys, June 2023

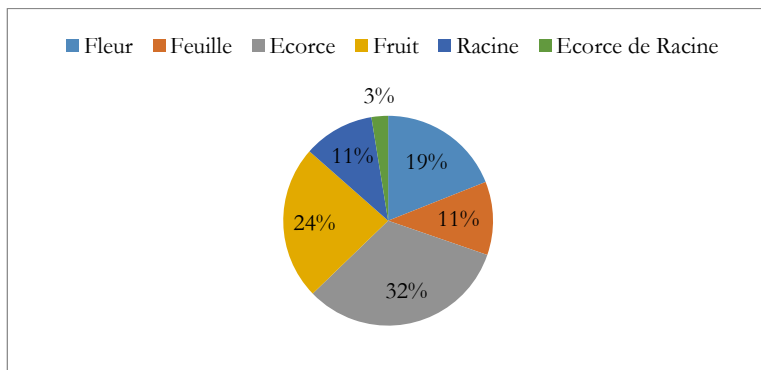
According to the figure above, the frequency of citations varies depending on the types of uses at the level of each use category.

2.2.4 Organs used and modes of acquisition.

The organs used and their mode of acquisition vary depending on the categories of use. The most used organs are: the bark, the fruit and the

flower. Figures 5 below present the frequency of the organs used and their modes of acquisition.

Figure 5: Frequently used organs



Source: Field surveys, June 2023

According to the analysis of Figure 8, the bark, fruit, and root of *K. africana* are the most cited organs. Field investigations show that these organs are used in the cure of several diseases.

Regarding modes of acquisition, the results revealed two modes: harvesting and purchasing. Harvesting is more frequent with 92% in proportion. According to local populations, this high proportion is due to the abundance of the species in the district. In addition, some medicinal plant sellers surveyed do not sell *K. africana* organs. The remaining 8% are essentially made up of populations from more or less urbanized localities in the district (Onigbolo, Gbanago, etc.) and those belonging to less humid soils (Igbo-éwé, Illouloufin).

3. Discussion

In order to identify the different uses of *K. africana* in the south of Benin, more precisely in the district of Issaba, a survey was carried out in the villages of this part of the country. During this investigation, almost all the results obtained confirm the work carried out on the species in Africa generally and particularly in Benin. In the field, some traditional health therapists were skeptical and hesitant to share their knowledge. As in the work of R. G. Kipre *et al.* (2017, p. 10871) during an ethnopharmacological investigation of antimalarial plants in the

department of Agboville, southeast of Ivory Coast, this observation is justified by three reasons which are:

- researchers would use their knowledge to manufacture modern drugs with the sole aim of making money without partners;
- researchers never return to give the results of their work;
- researchers are often confused with usurpers looking for secrets and/or traditional medicines in order to use them for their own purposes.

The results showed that approximately 68 % of the respondents are illiterate and are mostly adults. According to Benin's fourth national report on biological diversity, the majority of illiterate rural populations hold medicinal plant knowledge (UNDP-Benin, 2009). The results found are similar to national data and show that the sale and knowledge of the virtues of medicinal plants remain most of the time the prerogative of poor and illiterate people. All the traditional therapists surveyed are male and only a few herbalists are female. This is explained by the fact that in Benin, the sale of plant organs at the market is usually reserved for women. It is especially accepted in Africa that it is wise people, people of a certain age, who hold the traditional knowledge of treating illnesses. In addition, the medicinal virtues of plants are ancestral knowledge that is passed down from generation to generation (H. G. Dassouet al., 2014, p. 201). The collection of data from market herbalists showed that the organs of *K. africana* are not sold given its abundance in the area. During field surveys, we noted that the species is much more dominant in bafions and wetlands (clayey soils). The results are consistent with the work of Grace and Davis (2002, p. 35), on the plant resources of tropical Africa, who found that *K. africana* is present along watercourses, in the fringes of rivers, in alluvial and open forests, savannah with high rainfall, bush and rainforests. The species is found on red clay loam soils, sometimes rocky, humid or peaty. On the other hand, the species is more found in particular in the drier regions for others (Flore de la Réunion 2019).

According to the respondents, *K. africana* reproduces by seed and sometimes by cutting. These results are similar to those obtained by Grace and Davis (2002, p. 36), who agree after their investigations that, the species is easily propagated by seeds; vegetative propagation by cutting is possible, but recovery rates are generally low.

For this study, the organs of *K. africana* are used for multiple purposes. Mainly in traditional medicine, various parts of the plant are used locally

to treat otitis and sore throat, sterility, fatigue, fontanel, cyst, respiratory failure, obesity, hepatitis, vomiting, sickle cell anemia, constipation, ulcers, convulsions, dizziness, sore, fibroid, hernia, algomenorrhea or dysmenorrhea, anemia, intestinal worms, body ache, heart attack, malaria, abscess, inflammation of the spleen, goiter, measles, hemorrhoid, tuberculosis, pregnancy, jaundice. Our results are likely similar to those of D. E. Atawodi and O. D. Olowoniyi (2015, p. 11); R. Costa *et al.* (2017, p. 8), in their respective research on “Annual research report and review in biology” and “Development, Environment and Health: role of medicinal plants in traditional medicine”. These results indicate that the species plays an essential role in maintaining the livelihood of especially rural communities.

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To facilitate the administration of phytomedicines, several preparation methods are used by local populations. Thus, a total of seven (07) preparation methods are identified during ethnobotanical surveys such as decoction, calcination, crushing, maceration, pounding, dusting and poultice. Among these methods, the decoction is the most cited with a total of 79.63%. Corroborating the work of C. A. Adomou *et al.* (2017, p. 15) on plant resources in South Benin, the decoction allows the most active ingredients to be collected and reduces or cancels the toxic effect of certain recipes. For V. Houmenou *et al.* (2017, p. 18), in addition to decoction, maceration is also a more important preparation method in traditional pharmacopoeia. This variation of opinion may be linked to

the socio-cultural groups questioned and to the eating habits of each region.

Regarding the methods of administration, they derive from the methods of preparation of the recipes. In this study, three methods of administration are identified: oral route, cutaneous route and scarification. According to the results, medicinal extracts used to treat various diseases are mainly administered orally. These results are exactly those found by F. D. Félix Guinnin *et al.* (2015, p. 1374), during an ethnobotanical study of medicinal plants used in the traditional treatment of viral hepatitis B and C in several departments in Benin.

The results of this study reveal that plant drugs are thus routinely prescribed, without any scientific knowledge of their biological activities (pharmacokinetics and pharmacodynamics) and especially of the toxicity and possible interaction of the species and the different components. It is therefore important to carry out a phytochemical, toxicological and pharmacological study of *K. africana*.

Conclusion

Medicinal plants remain and will remain for a long time to come a reliable source of active ingredients known for their therapeutic properties. An ethnobotanical study of the false baobab (*K. africana*) carried out in the district of Issaba made it possible to identify the available *K. africana* plants and the different uses that local populations make of the species as well as the human threats exerted on the latter in the environment and the approaches to adequate solutions.

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