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ETHNOBOTANICAL STUDY OF MANGROVE FOREST EPE LAGOS STATE NIGERIA FOR THE TREATMENT OF TROPICAL DISEASES

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ABSTRACT

The research study on Ethnobotanical study of mangrove forest Epe Lagos state Nigeria for the treatment of tropical diseases was carried out for six months in 2022 between January and June. Direct observation was used for field survey in collecting medicinal plant species (Okosodo and Sarada, 2021). In the seven towns around Epe Local government area, six well-known and heavily frequented traditional healing houses were visited. The plants were recognized using their common names, and their scientific names were discovered and recorded. With the help of a book on the trees of Nigeria, Medicinal herbs were identified and their uses were noted as the inventory of accessible herbs was kept. The result indicates that the study area is in rich medicinal plant species used for the treatment of tropical diseases. In all, a total of 51 plant species belonging to 29 families were identified in the Data collected from the study area. The family Bignonaceae has the highest number of plant species six (6) which is followed by with Rhizophoraceae and Rubiacea with plant species of four (4) each. The barks, flowers, fruits, Leaves, roots, and stem were the parts plant used. The leaves constitute the highest percentage of (48%), this is followed by barks (22%) and fruits (9%)

KEYWORDS: *Medicinal plants, mangrove forest, tropical diseases, treatment.*

INTRODUCTION

Mangroves are a type of forest that develops on beaches in tropical and subtropical climates where saltwater meets freshwater. As a result, interactions between freshwater, terrestrial, and marine ecosystems are created. In other words, mangroves serve as a transition between terrestrial and marine ecosystems by linking sea grass to coral reefs and facilitating species' movement between certain of these two environments. They are essentially a collection of specialized plants that have evolved especially to survive near rivers and beaches where saltwater and freshwater mingle. A few other plants can also survive the hard temperature in such places. These plants have evolved to withstand recurrent saltwater inundation during flood stage as well as exposure to the intense tropical heat. In addition, during the rainy season when streams overflow, mangroves regularly experience saltwater floods. Thanks to rhizomes that resemble stilts, mangrove trees may root in soil that is rich in salt or aquatic vegetation. Mangrove forests are found in just 123 tropical and subtropical countries and territories; they have a total size of around 240,000 square kilometers (WRI/IIED, 1986). Tropical forests make up less than 1% of all tropical forests worldwide, occupying less than 0.4% of the world's total forest area (FAO, 2006; Van, 2012). The shores of South and South-east Asia, Africa, and South America are where mangrove forests are primarily found. Over 40% of the world's mangroves are found in four nations: Mexico, Brazil, Australia, and Indonesia, with Indonesia having the most at over 20%. (Van, 2012).The largest mangrove forest is found in Nigeria, which ranks third in the world. The Niger Delta region is thought to include between 5000 and 8500 km3 of Nigeria's mangrove forest, one of the most overexploited in the entire world (Nwilo and Badejo, 2007). Ethnobotany is the study of plants and how they are used in a particular location or region by a certain local culture and its inhabitants. It discusses the relationship between humans and plants with an emphasis on how indigenous knowledge is utilized to classify plants, grow them, and use them for food, medicine, and shelter. Recently, ethnobotanical knowledge has been applied to modern society, most notably in the creation of medicines (Soejartoetal., 2005). The complicated interactions between people and plants are being studied in depth. Its early history is linked to colonial explorers' hunt for exotic treasures like pricey spices like nutmeg and cinnamon. As colonial traders and settlers accidentally brought tropical diseases to the farthest corners of the world, the search for herbal

remedies for the armada of new and geographically scattered illnesses intensified. As businessmen and scientists searched for "green gold" in these recently discovered sites in an effort to obtain notoriety and money, the ethnobotanical sector grew. The use of medicinal plants has typically been centered on medical treatment rather than stressing preventative care. However, a number of recent studies that have been documented in the literature have focused on the use of herbal medicines and the compounds present in them to prevent disease. Herbal remedies were defined by a World Health Organization (WHO) Expert Group as the entirety of all beliefs and practices, regardless of their justification, used in the identification, treatment, and eradication of physical, mental, or social imbalance and solely based on real-life observation and experience passed down orally or in writing from generation to generation (WHO, 1978). This might be made even more comprehensive by adding the words "while having in mind the essential notion of environment which contains the nature of reality, the sociocultural backdrop whether living or dead, and the metaphysical forces of the universe." Although medicinal herbs are used in more than 90% of traditional medical recipes and treatments, this research will primarily focus on those that have been associated with methods of sickness prevention. There is occasionally a very little window of time between prevention and treatment. The current study seeks to collect information on traditional uses of plant species found in mangrove ecosystems for the treatment of tropical diseases as well as to give ethnobiological data on how different plant species are used in the study area.

MATERIALS AND METHOD

Study Area

At latitude 6'31oN and longitude 4oE, Epe is located northeast of the Lagos Metropolitan Area. Between 30 and 60 meters above sea level, Epe is a riverine area with land that is just marginally elevated. It is close to the shore of Lagos, and behind it are the Lekki Lagoons, which are conserved. The climate may be described as having year-round precipitation, a high relative humidity, and high temperatures. Due to the region's abundance of water bodies, the area is also affected by the water bodies' regulating influence on temperature. Precipitation is made primarily of rain, with an annual rainfall average of about 400 mm. In the area, there are two distinct seasons: the wet season, which lasts from April to November, and the dry season, which lasts from December to March. The area's estimated yearly maximum temperature is around 30°C, while the average annual minimum is at 23.8°C. The comparative humidity is high all year long and ranges from 60% in January to over 80% in July. It is higher between 7 and 10 in the morning and lower between 1 and 4 in the evening. Epe is located in the freshwater swamp forest habitat of Nigeria's tropical sub-humid region. The forest ecosystems are composed of freshwater wetlands across riverbanks and salt/freshwater wetlands around lagoon shores. Raffia palms, silt-rooted trees with dense bush, red mangroves, and mangrove shrubs can also be found in this ecological zone. Extending through Ikorodu and to the northwest of Epe town is the lowland (tropical) rainforest that has been altered by humans (deforestation). At the time of the 1963 head count, the area's population was 130390; in 1988, an estimate based on a 3 percent annual rate of growth predicted the population to be 273020.

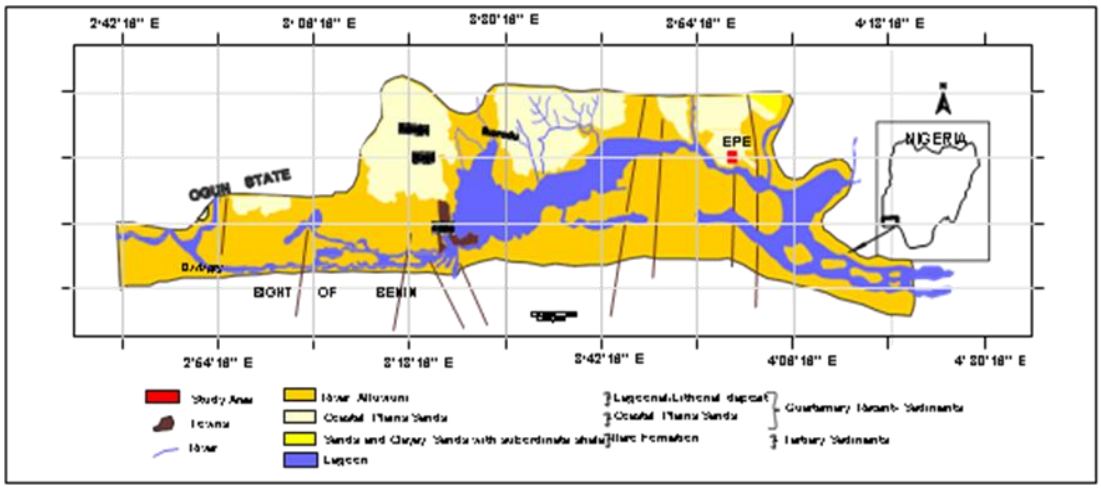

Figure 1: Map of the study area (source: Okorie, 2012).

Data Collection

The research study on Ethnobotanical study of mangrove forest Epe Lagos state Nigeria for the treatment of tropical diseases was carried out for six months in 2022 between January and June. Direct observation was used for field survey in collecting medicinal plant species (Okosodo and Sarada, 2021).In the seven towns around Epe Local government area , six well-known and heavily frequented traditional healing houses were visited. U77 The plants were recognized using their common names, and their scientific names were discovered and recorded. With the help of a book on the trees of Nigeria (Soladoye

etal 2012), herbs were identified and their uses were noted as the inventory of accessible herbs was kept. To support the claims made by the traditional healers, the literature on medicinal plants was researched. Additionally, piece medicinal herbs that were difficult to identify were transferred to the herbarium at the Federal University of Technology Akure's Department of Forestry and Wood Technology for accurate determination. For appropriate conservation, plant pieces, usually leaves, were placed in the press.

Statistical Analysis

The field survey data were input into an Excel (version 20) spreadsheet before both descriptive and inferential (tables, frequency, and percentage frequency, graph, pie, and bar charts). Plant species diversity indices were examined using the computer program PAST Model version 3.

RESULTS

The result indicates that the study area is in rich medicinal plant species used for the treatment of tropical diseases. In all, a total of 51 plant species belonging to 29 families were identified in the Data collected from the study area Table1. The family Bignonaceae has the highest number of plant species six (6) which is followed by with Rhizophoraceae and Rubiaceae with plant species of four (4) each Figure 2.The barks, flowers, fruits, Leaves, roots, and stem were the parts plant used. The leaves constitute the highest percentage of (48%), this is followed by barks (22%) and fruits (9%) Figure 3. The Shannon_H diversity index showed that it was higher the dry season 3.908 than wet season (3.806) Table 2.

Table 1: Medicinal plant species enumerated in the study area.

Name of plant species	Family	Parts used	Uses
Acrostichum aureum	Pteridineae	Leaves, sterm	worm infections, pertic ulcers
Aframomum melegueta	Zingiberaceae	Seeds	malaria
Alchornea cordifolia	Euphorbiaceae	Leaves	malaria
Alstonia capensis	Apocynaceae	Leaves, barks	typhoid fever, dysentry
Ananas comosus	Anacardiaceae	Leaves	typhoid fever n
Argemone mexicana	Papaveraceae	Leaves	Malaria, Laxative
Aspilia africana	Asteraceae	Leaves	Malaria
Avicennia africana	Acanthaceae	leaves, fruits	small pox lesions, boils
Avicennia alba	Acanthaceae	Leaves, Barks	Rheumatism, asthma
Avicennia marina	Acanthaceae	Leaves Barks	Dyspepsia, tumors
Bridelia ferruginea	Phyllanthaceae	Leaves	malaria
Bruguiera gymnorrhiza	Rhizophoraceae	Leaves, sterm	Diarrhea, TYphoidfever,
Canna indica	Cannaceae	Leaves	Typhoid fever
Ceriops decandra	Rhizophoraceae	Leaves, Barks	Gastrointestinal disorders, Snakebite
Chrysobalamus icaco	Chrysobalanceae	Leaves, barks, fruits, roots	Dysentry, diarrhoea
Combretum racemosum	Combretaceae	Leaves	Diahoea, skin diseases
Conocarpus erectus	Combretaceae	leaves,barks	Typhoid fever, Diabetes,
Dalbergia melanoxylon	Fabaceae	Leaves	Headache, stomachache
Dracaena arborea	Asparagaceae	Leaves	Headache, malaria
Fimbristylis ferruginea	Cyperaceae	leaves, flowers	typhoid fever
Laguncularia racemosa	Combretaceae	Bark	Dysentry,
Lecaniodiscus cupanioides	Sapindaceae	Leaves	healthy growth in babies
Marsdenia latifolia	Asclepiadaceae	Leavea	Stomachache
Monadora myristica	Annonaceae	Leaves, seeds	Typhoid fever,
Morinda lucida	Rubiaceae	Leaves, barks	Typhoid fever, malaria
Musanga cecropioides	Urticaceae	Barks	Asthenia cough
Musa paradisiaca	Asteraceae	Leaves	Malaria
Musa sapientum	Asteraceae	Unripe fruits	malaria
Mytragyna ciliata	Rubiaceae	Leaves	Malaria
Nauclea latifolia	Rubiacea	Leaves,fruits	Typhoid fever, malaria
Nesogordonia papaverifera	Malvaceae	leaves, barks	Toothache, Chewing sticks
Newbouldia laevis	Bignonaceae	Leaves, barks, roots	Rectum pains, pile malaria, measls
Nypa fruticans	Arecsceae	leaves,fruits	Ulcers, diabetes
Osbeckia tubulosa	Melastomataceae	Leaves	Liver tonic, diabetes
Pergularia daemia	Apocynaceaeb	Leaves, roots	Gastric ulcers,urine ,lepropsy
Physalis angulata	solanaceae	Leaves	hepartitis, malaria
Piliostigma thonningii	Caesalpinaceae	Leaves	Malaria

Pseudocedrella kotschyi	Rubiacea	Leaves	Malaria
Pycnanthus angolensis	Myristicaceae	Leaves, barks	malaria, toorhache
Rhizophora racemosa	Rhizophoraceae	leaves, barks, stem	sorethroat, syphilis, tuberculosis
Rhizophora mangle	Rhizophoraceae	Leaves, barks	boils, and fungal infections.
Scleria naumanniana	Cyperaceae	Whole plant	Toothache, Rheumatism,
Sida rhomboidea	Malvaceae	Leaves	Typhoid fever
Solanum lycopersicon	Solanaceae	Fruits	Typhoid fever
Syzygium guineense	Myrtaceae	Leaves, Barks	Cough, asthma
Tithonia diversifolia	Asteraceae	Leaves	Diahoea, mensuara pains, malaria
Trema orientalis	Cannabaceae	Leaves, Barks	sore throats, asthma, bronchiti
Vernonia amygdalina	Asteraceae	Leaves, sterm	Typhoid, Malaria
Vigneasu bterranea	Asteraceae	Leaves	Typhoid, Malaria
Xylocarpus granatum	Meliaceae	Leaves, barks	Typhoid fever, malaria
Xylopia aethiopica	Annonaceae	Leaves, Seeds	Typhoid fever, Malria

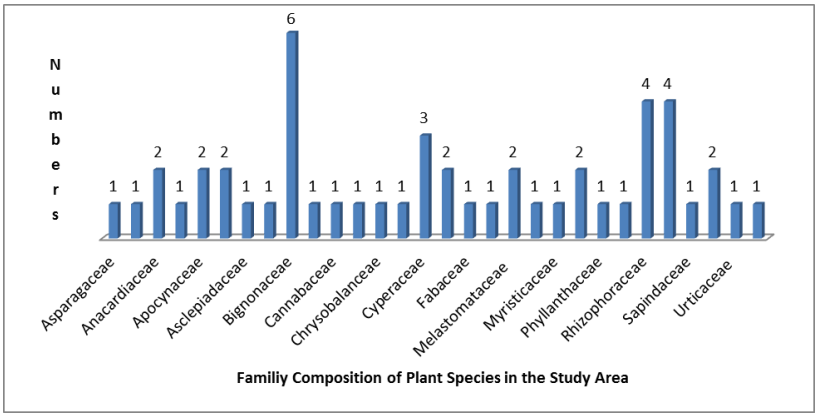

Figure 2: Family composition of plant species in the study area.

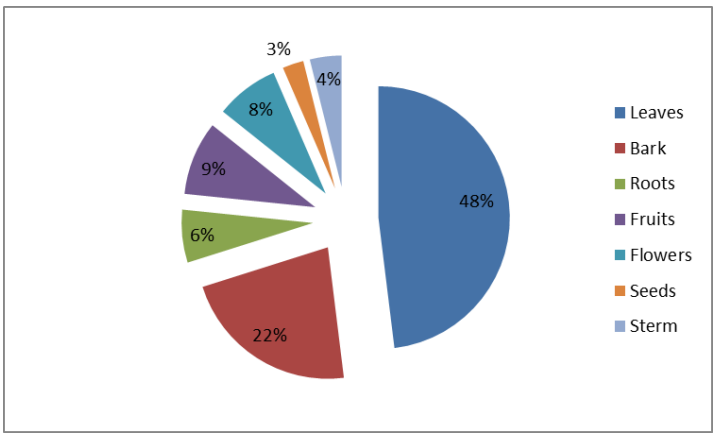

Figure 3: Part of plant species used for the treatment of tropical diseases in the study area.

Table 2: Diversity index of plant species for Dry and Wet season in the study area.

Diversity index	Dry season	Lower	Upper	Wet Season	Lower	Upper
Taxa_S	52	34	44	52	42	51
Individuals	58	58	58	73	73	73
Dominance_D	0.0214	0.02735	0.04281	0.02646	0.02458	0.03847
Shannon_H	3.908	3.363	3.693	3.806	3.53	3.818
Evenness_e^H/S	0.9577	0.8244	0.9262	0.8648	0.7977	0.9112
Brillouin	3.033	2.721	2.923	3.066	2.898	3.082
Menhinick	6.828	4.464	5.777	6.086	4.916	5.969
Margalef	12.56	8.127	10.59	11.89	9.556	11.65
Equitability_J	0.9891	0.9461	0.9794	0.9632	0.9404	0.9761
Fisher_alpha	242.4	34.43	83.14	80.75	41.19	75.11

DISCUSION

The indigenous populations employed a total of 51 medicinal plant species from 30 families to cure 28 human diseases. Rhizophoraceae and Rubiaceae came in second and third, with four and six species, correspondingly, behind Bignonaceae, which held the top spot. Similar research was done in Gosiling Gewog, Bhutan, by Chetri et al. (2018), who found that the genus Euphorbiaceae contains the greatest variety of medicinal plant species that are utilized by the local population. Giday et al. (2007), Soladoye et al. (2010), and Ibrahim et al. (2010) also noted this pattern in Nigeria, where they found that the Fabaceae family of herbs has the greatest diversity of medicinal species, closely by the Euphorbiaceae. The use of 26 tree species for the cure of typhoid fever and malaria has been recorded, indicating the value of these plant species in their natural habitat. In light of this, the capacity of those contacted throughout the duration of this research to prescribe at least a herbal remedy for malaria demonstrates both the frequency of the illness and how it has been treated over time. In light of these discoveries, it is possible to produce novel antimalarial medications from indigenous plants in Nigeria by using the natural resources used for different ailments in Okeigbo, Ondo State. This amount is comparable to the 18 species of medicinal herbs used to treat malaria (Dike and Obembe, 2010) and the 30 species used to treat diabetes mellitus (Arowosegbe eRt al., 2015). Although Afromomum melequeta, Khaya ivorensis, Alstonia boonei, An- thacleista djalonensis, Citrus limon, and Harungana madagascariensis had been documented for diabetes mellitus as in Harungana madagascariensis, and Harungana madagascariensis was reported for women-related disease in Nige ria More than 90% of the species that were noted were obtained from the wild, while the remaining 10% came from backyard gardens. According to studies by Hunde et al. (2006) and Regassa et al. (2017), in the Tehuledere and Halaba districts, respectively, roughly 54 and 49% of medicinal plants were harvested from the wild. The most frequently utilized plant components were found to be leaves (48%) and bark (22%), next by fruits (9%), flowers (6%), and seeds (3%), according to the results. The fresh or dried leaves of these plants were used alone or in conjunction with some other herbal elements, such as other herbal roots, flowers, or gum from other plant species. Most applications are made orally, either by drinking extracts or mixtures or by taking vapor baths. The dose amounts and the total amounts gathered at once are not monitored, though. According to Amjad et al. (2020), the most popular plant components utilized in herbal remedies are the leaves, the entire plant, and the roots. Findings were reached studies by Poffenberger et al. (1992) and Giday (2001), which are consistent with findings by Kumar et al. (2013), Hosseini et al. (2021), Urso et al. (2016), and Naghibi et al. (2014), as well as by Morshed and Nandni (2012). The rich flora of the Epe forest's wealth of medicinal and allied plants provides several opportunities for their practical use. But during the past several decades, thoughtless, reckless, and, most often, inexpert gathering of wild medicinal herbs has played a part in the extinction and over-reduction of countless important species in their native habitats. This may possibly be because stakeholders weren't included in the decision-making process. (2017) Samardi (2014).

CONCLUSION AND RECOMMENDATION

There are fifty one plant species that have been identified as having therapeutic properties. These species are divided into twenty-eight families. Malaria and typhoid fever were the two illnesses among those that were noted to have the greatest number of medicinal species indicated. Procedural plant usage came after this use. It was noted that roots, bark, and leaves were regularly employed. Alternative medical herbs and plant species are generally accepted by the populace in Asian and African nations; as a result, sustainable tourism might be generated via the usage of wild plants that are used to cure typhoid fever and malaria. Based on the findings of this study, the integral approach to managing the medicinal herb resources of the mangrove forest requires integrating those findings with the opinions and requirements of the local population, whose standard of living depends on the sustainability of the process of gathering and valuing this resource. As a result, efforts should be made to inform the locals about sustainable harvesting. Environmental and management issues, such as deforestation, barking of trees, defoliation of plant leaves, and overexploitation, are inevitable.

To lessen harm done to the mangrove forest, efforts should be made to establish implementation strategies with the locals on the necessity of cultivating the majority of these plants nearby their houses and farms. The government should establish a system to combine mainstream treatment with alternative medicine, which involves the utilization of wild plants. This will develop a more effective way of extract collection from the plant species and enhance the sustainable usage of these wild plants.

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