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ETHNOBOTANICAL SURVEY OF MEDICINAL PLANTS USED IN THE MANAGEMENT OF GASTROINTESTINAL INFECTION IN UNGOGO, KANO STATE

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ABSTRACT

*Gastrointestinal infections are major health problem in developing countries, leading to morbidity and mortality especially in rural communities. Drug resistance to human pathogenic bacteria has been commonly reported all over the world. This study was aimed at providing inventory for the plant species used in management of gastrointestinal infections among the indigenous people of Ungogo, Kano State-Nigeria. A semi-structured questionnaire was administered to individuals with history of gastrointestinal infections, local people with traditional medicinal knowledge and traditional medicine practitioners across eleven (11) wards of Ungogo local government area. A total of 118 respondents were obtained, 100 with history of gastrointestinal infections and 18 are traditional medicine practitioners from 33 communities of Ungogo, Kano. Socio-demographic information of respondents was evaluated. Responses indicated that, twenty six (26) plant species, belonging to sixteen (16) families were often used for the treatment of gastrointestinal infections. Majority of plant species are of family fabaceae. *Anogeissus leiocarpus*, *Boswellia dalzielli* and *Vitex doniana* were the most frequently plant species mentioned. Method of preparation and mode of administration are maceration and oral respectively. Majority of plant species were wild and usually used for treatment of diarrhea and pile. The study revealed 26 plant species were used for management of gastrointestinal infections and *Boswellia dalzielli*, *Anogeissus leiocarpus* and *Vitex doniana* were frequently used plant species. Conservation and sustainable use of plant species should be embraced in order to ensure they don't extinct due to excessive use.*

Key words: Survey, Plant, Gastrointestinal, Infection, Management

INTRODUCTION

Plant diversity plays a vital role in serving the ecosystems and in maintaining and preserving ecological balance and stability in the whole world. Different plant species have been used in ethnomedicine since ancient times (Polat *et al.*, 2015; Akgül *et al.*, 2016). Medicines of the Egyptians (3000 BC; pharaohs), the Greeks (400 BC; Hippocrates), and the Romans (37 BC; Dioscorides) have a longstanding history. Plants have been used as the richest and valuable sources for traditional as well as modern medicines in Asia and Africa. The medicinal plants are good sources of drugs in traditional system for the cure of diseases (Kaleeswaran *et al.*, 2019). Various societies that make up the Nigerian State have for long relied on the indigenous health system which was developed as a response to their prevailing environmental conditions and it

involves the use of locally available resources to prevent and cure diseases. It is a natural health care system which many generations of Nigerians have used. The practice transcends the maintenance of good health of the people as it also protects them from the menace of wild animals, evil spirits, accidents, provide bountiful harvest, good luck and other human activities (Roan, 1999; Toyin 2011). Medical practice in Hausa locality is dominated by herbal practitioners that includes several hundred plant species available in the immediate environments, as well as a smaller number of plants imported from other parts of Nigeria and abroad. Elements of animal and mineral origin are also part of the practice. Another very imperative method of therapy is traditional Islamic treatments, invocations of Allah through prayer (Stock, 1985; Wall, 1988). The major concerns of human life throughout the

Data Collection

A semi-structured questionnaire was administered to herbal traditional medicinal practitioners and local people with traditional medicinal knowledge to the eleven (11) wards of Ungogo Local Government Area (LGA). At first stage, Ungogo LGA was purposively selected from the 44 LGAs of Kano State because of its multiple traditional settlements and preponderance of renowned traditional healers within its locality (NPC, 2006). At the second stage, three communities each from the 11 wards of Ungogo LGA were randomly selected and surveyed.

RESULTS AND DISCUSSION

In this study, the use of medicinal plants and their potential applications in the treatment of gastrointestinal disorders reflect the practice of ethnomedicinal knowledge within Ungogo, Kano. Traditional medicine remains the major resource of phytotherapy to the people of Ungogo, due to reasons related to improvement of health after treatment, low cost of drug, non-availability of synthetic drugs in some area and people have become more accustomed to and comfortable with traditional healing (Audu, 1995). The losses of valuable medicinal plants due to population pressure, agricultural expansion and deforestation have been widely reported (Abebe, 2001; Berhan and Dessie, 2002). Therefore, documenting indigenous knowledge becomes essential so as to preserve the traditional knowledge and valuable information passed verbally from generation to generation which can be lost whenever a traditional medical practitioner passes away conveying the said knowledge to the upcoming generations. Eighteen (18) traditional medicinal practitioners were interviewed, out of which 10 were herbalists, 5 hunters and 3 farmers. A total of 26 plant species, belonging to 16 families were identified. Local names of plant species were ascertained by respondents, while family and

botanical names were validated at the Herbarium of Plant Biology Department, Bayero University Kano and family fabaceae was the most frequently mentioned. *Boswellia dalzielii*, *Anogeissus leiocarpus* and *Vitex doniana* with frequency index of 15.49%, 8.45% and 8.45% respectively are the most frequently plant species used. *Sclerocarya birrea* and *Mangifera indica* are another two plants species often used by the practitioners with 7.04 % frequency each. However, *Moringa oleifera* and seven plant species were observed to be less used with 1.41% frequency index each. Studies of Awoyemi *et al.* (2012) and Abubakar *et al.* (2017) revealed 82% of the plants are used for treatment of various ailments which includes; stomach ache, diarrhea, measles, malaria, fever, nose bleeding, jaundice and pile were sourced from wild, while 18% were cultivated. These findings are in accordance with this study, 73.1% were sourced wild while 26.9% cultivated. In addition, Olajuyigbe and Afolayan (2012) reported the family fabaceae had the highest number of species being used for treating gastrointestinal disorders. Stem bark of *Boswellia dalzielii*, *Anogeissus leiocarpus* and *Vitex doniana* were the most frequently plant species used for the treatment of gastrointestinal infection. Sani and Aliyu (2011), Mudansiru *et al.* (2016) and Abubakar *et al.* (2017) reported *B. dalzielii* leaves, *B. odorata* and *A. leiocarpus* stem bark were used for the treatment of yellow fever, diarrhea and pile. This finding suggests the use of the plant species for management of gastrointestinal infection. Although, the plant parts and species used might not be the same as in case of *B. dalzielii* leaves and *B. odorata* but their efficacy was recorded in treatment of gastrointestinal infection. Majority of the traditional medicinal practitioners are within the age group of 30-40 and 41-50 with 27.78% each and mostly males (94.44%) with non-formal education (66.66%).

Table 1: Socio-Demographic Information of Patients with Gastrointestinal Infection in Ungogo LGA, 2019

Bio-data	Frequency
Sex	
Male	91
Female	9
Age group	
0-10	7
11-20	26
21-30	37
31-40	17
41-50	6
51-60	2
61-70	5
Educational Status	
Tertiary	20
Secondary	61
Primary	4
No Formal Education	15
Occupation	
Administrative Officers	8
Teachers	10
Traders	13
Tailors	2
Laborers	5
Drivers	4
Pharmacist	2
Farmers	20
Carpenters	4
Housewives	4
Students	22
Children	6

Table 2: Socio-Demographic Information of Traditional Medicinal Practitioners in Ungogo LGA, 2019

Bio-data	Frequency	Percentage (%)
Sex		
Male	17	94.44
Female	1	5.56
Age group		
30-40	5	27.78
41-50	5	27.78
51-60	4	22.21
61-70	3	16.67
71-80	1	5.56
Educational Status		
Tertiary	-	-
Secondary	5	16.67
Primary	1	5.56
Non formal education	12	66.66
Practitioners		
Herbalists	10	55.56
Farmers	5	27.77
Hunters	3	16.67

Table 3: Frequency index of plant species used, source and medicinal uses for the treatments of gastrointestinal infections in Ungogo, 2019

Botanical names	Frequency	Frequency index (%)	Source	Medicinal Use
<i>Sclerocarya birrea</i>	5	7.04	Wild	Pile and Diarrhea
<i>Erythrina senegalensis</i>	2	2.82	Wild	Diarrhea and Pile
<i>Chrozophora senegalensis</i>	2	2.82	Wild	Diarrhea
<i>Piliostigma reticulatum</i>	2	2.82	Wild	Diarrhea
<i>Parkia biglobosa</i>	4	5.63	Wild	Diarrhea
<i>Cochlospermum tinctorium</i>	2	2.82	Wild	Fever
<i>Boswellia dalzielii</i>	11	15.49	Wild	Pile, Diarrhea
<i>Citrus aurantifolia</i>	2	2.82	Cultivated	Pile
<i>Mangifera indica</i>	5	7.04	Cultivated	Stomach ache
<i>Vitex doniana</i>	6	8.45	Wild	Pile and Diarrhea
<i>Anogeissus leiocarpus</i>	6	8.45	Wild	Dysentery and Diarrhea
<i>Jatropha curcas</i>	2	2.82	Cultivated	Fever
<i>Moringa oleifera</i>	1	1.41	Cultivated	Diarrhea
<i>Azadirachta indica</i>	2	2.82	Cultivated	Diarrhea
<i>Khaya senegalensis</i>	1	1.41	Wild	Stomach ache and Diarrhea
<i>Prosopis Africana</i>	2	2.82	Wild	Pile
<i>Tamarindus indica</i>	1	1.41	Wild	Abdominal pain
<i>Ficus thonningii</i>	2	2.82	Wild	Diarrhea
<i>Detarium microcarpum</i>	1	1.41	Wild	Pile
<i>Ziziphus abyssinica</i>	1	1.41	Wild	Diarrhea
<i>Guiera senegalensis</i>	4	5.63	Wild	Diarrhea
<i>Hyphaene thebaica</i>	2	2.82	Wild	Diarrhea
<i>Commiphora kerstingi</i>	1	1.41	Cultivated	Diarrhea
<i>Faidherbia albida</i>	2	2.82	Wild	Diarrhea
<i>Ceiba pentandra</i>	1	1.41	Wild	Abdominal pain
<i>Adansonia digitata</i>	1	1.41	Wild	Diarrhea

Table 4: Names, parts, preparation and administration of medicinal plant species used for treatment of gastrointestinal infections in Ungogo, 2019

Botanical name	Family Name	Common name	Local name (Hausa)	Parts used	Method of preparation	Mode of administration
<i>Sclerocarya birrea</i>	Anacardiaceae	Nut/plum	``Danya``	Root	Maceration	Oral
<i>Erythrina senegalensis</i>	Fabaceae	Coral tree	``Minjirya``	Bark	Maceration	Oral
<i>Chrozophora senegalensis</i>	Euphorbiaceae	Arabic (Senegal)	``Damagi``	Whole plant	Maceration	Oral
<i>Piliostigma reticulatum</i>	Fabaceae	camel's foot	``Kalgo``	Bark	Decoction	Oral
<i>Parkia biglobosa</i>	Fabaceae	African locust bean	``Dorawa``	Seed pod	Decoction	Oral/bath
<i>Cochlospermum tinctorium</i>	Cochlospermaceae		``Rawaya``	Bark	Maceration	Oral
<i>Boswellia dalzielli</i>	Burceraceae	Frankincense/ olibanum-tree	``Ararrabi/ Hannu``	Bark	Maceration	Oral
<i>Citrus aurantifolia</i>	Rutaceae	Lime	``Lemon tsami``	Fruit	Maceration	Oral
<i>Mangifera indica</i>	Anacardiaceae	Mango	``Mangwaro``	Leaves	Maceration	Oral
<i>Vitex doniana</i>	Verbanaceae	black plum	``Dinya``	Bark	Maceration	Oral
<i>Anogeissus leiocarpus</i>	Combretaceae	African birch/Axle	``Marke``	Bark	Maceration	Oral
<i>Jatropha curcas</i>	Euphorbiaceae	physic nut	``Raidoree/ Binida zugu``	Root	Decoction	Oral
<i>Moringa oleifera</i>	Moringaceae	Moringa	``Zogale``	Leaves	Decoction	Oral
<i>Azadirachta indica</i>	Meliaceae	Neem	``Dogonyaro``	Leaves	Maceration	Oral
<i>Khaya senegalensis</i>	Meliaceae	African Mahogany	``Madaci``	Bark	Decoction	Oral
<i>Prosopis Africana</i>	Fabaceae	African mesquite	``Kirya``	Bark	Maceration	Oral
<i>Tamarindus indica</i>	Fabaceae	Tamarind tree	``Tsamiya``	Bark	Maceration	Oral
<i>Ficus thonningii</i>	Moraceae	Wild fig	``Chediya``	Bark	Decoction	Oral
<i>Detarium microcarpum</i>	Fabaceae	Sweet detar	``Taura``	Bark	Maceration	Oral
<i>Ziziphus abyssinica</i>	Rhamnaceae	Large jujube	``Magarya``	Leaves	Maceration	Oral
<i>Guiera senegalensis</i>	Combretaceae	Moshi medicine	``Sabara``	Bark	Maceration	Oral
<i>Hyphaene thebaica</i>	Aracaceae	Doum palm	``Goruba``	seed	Maceration	Oral
<i>Commiphora kerstingi</i>	Burseraceae	Myrrh	``Dashi``	Bark	Maceration	Oral
<i>Faidherbia albida</i>	Fabaceae	Apple ring	``Gawo``	Bark	Maceration	Oral
<i>Ceiba pentandra</i>	Malvaceae	Cotton tree	``Rimi``	Bark	Maceration	Oral
<i>Adansonia digitata</i>	Malvaceae	African baobab	``Kuka``	Bark	Maceration	Oral

CONCLUSION

The study revealed 26 plant species were used for the management of gastrointestinal infections in Ungogo and the most frequently used plant species are *Boswellia dalzielli*, *Anogeissus leiocarpus* and *Vitex doniana*. The study also indicates that the traditional medical practice by Hausa populace is dominated by males and most of the traditional medicine practitioners as well as patients with history of gastrointestinal infections are males who are mostly from rural areas.

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