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The Use of Medicinal Plants in the Treatment of Diarrhoea in Nigeria: Ethnomedical Inventory of Abia State

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Abstract: Diarrhoea remains one of the most prevalent diseases in Nigeria, especially among children aged between 1 and 5. In this survey, an ethnomedical inventory was done to document the various plant families, species and plant parts used for the treatment of diarrhoea in Abia State of Nigeria. The outcome showed that a total of 51 plant species from 34 families mostly the Asteraceae, Euphorbiaceae, Lamiaceae were used to treat diarrhoea. Other families relatively used included Anacadiaceae, Apocynaceae and Malvaceae. The most plant parts used were leaves (50.9%), stem bark (14.54%), seeds (10.09%) and roots (9.09%). Other parts used were the aerial parts (7.27%), the fruits (5.45%) and the flowers (1.82%). Further research is required to isolate the active chemical constituents under clean and good hygienic environment and their mode of action investigated.
Keywords: Medicinal Plants, Treatment, Diarrhoea, Ethnomedical Inventory, Nigeria

INTRODUCTION

Diarrhoea is defined as an increase in the frequency, fluidity or volume of bowel movement and associated with increased frequency of bowel sound, wet stools and abdominal pain [1].Globally, 4 – 5 million death cases of human occur annually as a result of diarrhoea [2]. Diarrhoea is one of the leading causes of death in children below five years. Over 10% of death in children, about 800, 000 die each year as a result of diarrhoea [3].

Every child in African environment before the age of 5 years has had at least one case of diarrhoea with some having up to three per year [4]. Diarrhoea remains the number one killer disease among Nigerian children aged 1 – 5 years [1]. Diarrhoea kills about 194,000 children in Nigeria below five years annually [5].

Diarrhoea is closely associated with poor hygiene and under nutrition. To combat the damage of the disease in developing countries, the World Health Organization (WHO) has employed a programme for the control of the disease which include the use of traditional herbal plants and most of the herbal drugs have reduced the effect and have proved to be safe, effective and less expensive [2].

Apart from the fact that the use of traditional medicine in the treatment of diseases is cheap, the side effect is relatively harmless. Their resistance by microorganisms is also quite reduced. The use of these plants in the treatment of diseases will help to explore underutilized plants for ethnomedicinal and other research purposes and to ensure their conservation.

The people of Abia State of Nigeria employ herbal remedies to their health challenges, though health centres and hospitals are located around the state. Proper inventory of plants used for the treatment of diarrhoea will assist in the conservation of these plants and can lead to the isolation of vital chemical compounds for the production of viable drugs.

METHODS

STUDY SITE

The survey was done in Abia State of Nigeria (Fig. 1). The population of the state is about 2, 845, 380 by 2006 population census estimate with an area of about 5, 243.7 sq km about 5.8% of the land area of Nigeria [6].

Fig-1: Map of Nigeria showing Abia State (shaded portion)

Abia State is found in the southeastern part of Nigeria, located approximately latitude 4°40' and 6°14' north and longitudes 7°10' and 8° east. There are 17 local government areas in the state with Umuahia as the state capital. Abia State is bounded at north by Ebonyi State, south and southeast by River State, east by Cross River, southeast by Akwa-Ibom State, west by Imo State and north west by Anambra State.

DATA COLLECTION

Data collection was done between July 2013 and August 2014. The names of the plants, plant part use for the treatment of diarrhoea were included in the information gathered from the field. Semi-questionnaires and conversation with traditional medicine practitioners aged between 35 – 66 years were done in three local government areas in the three senatorial zones of the state. Three different markets in each of the three senatorial zones of the state were also visited for the exercise. A total of 34 respondents were interviewed in the work.

The plants named were collected and identified in the plant taxonomy unit of the department of Plant Science and Biotechnology of Michael Okpara University of Agriculture, Umudike, Abia State.

RESULTS

A total of 51 plant species belonging to 34 families were identified (Table 1). The most used plant families were Asteraceae, Euphorbiaceae, Lamiaceae. Other families included Anarcadiaceae, Malvaceae and Apocynaceae. (Table 1).

The plant parts mostly used were leaves (50.90%), stem barks (14.54%), seeds (10.09%) and roots (9.09%). Other plant parts used were aerial parts (7.27%), fruits (5.45%) and flowers (1.82%) (Fig. 2).

DISCUSSION

Results from this survey depicts that herbal practitioners depend on different plant species for the treatment of diarrhoea in Abia State, which is not far from what is experienced in other parts of the country. Also, the knowledge of the therapeutic potential of these plant species by these practitioners differ from one individual to another and therefore demands harmonization for proper therapeutic value. Scientists should be involved in the extraction of chemical constituents of these plant resources for effective drug production.

The investigation shows that Asteraceae, Euphorbiaceae and Laminiaceae were the plant families mostly used in the treatment of diarrhoea in Abia State (table 1).These plants are usually found in Nigeria and have been reported to be used in the treatment of several diseases [7,8]. In a survey conducted among the Niger Delta region of Nigeria for 36 plants found among 26 families used in the treatment of sexually transmitted diseases, Euphorbiaceae was among the two families that produced the highest number of plant species used [9]. Traditional medicine have also been used by the Igbede people of Nigeria in the treatment of diarrhea [10].

Different plant species have been found useful in the treatment of diarrhoea which include *Garcinia cola* [11]. *Azardirchta indica* [12]. *Bryophyllum pinnatum* [13, 14]. *Physcalis bransilensis* [15]. *Mangifera indica* [16]. Other phytochemical research from traditional medicinal plants for the treatment of diarrhea has been done [17].

Several phytochemical work have been done on some of the plants investigated in this inventory and include: *Laportea aestuans* [18]. *Stereospermum colais* [19], *Piper carniconnectivum* [20], *Ocimum grassimum* [21,22], *Zingiber officinale*[23, 24, 25, 26] *Carica papaya* [27,28], *Pentaclethra macrophylla* [29,30].

This inventory has provided some ethnomedical basis for further investigation of these plants for drug production for the treatment of infections and other health challenges.

Table-1: Plants used for the treatment of diarrhoea in Abia State.

s/n	Family	Botanical name	Common name	Part used
1	Asteraceae	*Ageratum conyzoides* L	Billygoat weed, goatweed	Infusion of leaves
2	Asteraceae	*Achyrocline saturieodes* Lam D. C	Macela	Leaves
3	Asteraceae	*Acanthospermun hispidum* D. C	Goat's head	Aerial part
4	Asteraceae	*Vernonia amygdalina* Del. Cent	Bitter leaf	Root
5	Euphorbiaceae	*Securinega virosa (*Roxb ex Willie) Baill	Common bush weed	Decoction of leaves and stem bark.
6	Euphorbiaceae	*Riccinus commumis* Linn	Castor oil plant	Oil extracted from the seed
7	Euphorbiaceae	*Acalypha arvensis* Poepp. And Endl	Field copper leaf	Leaves
8	Euphorbiaceae	*Alchormia cordifolia* (Schum and Thonn) Muell Arg.	Christmas bush	Infusion of the leaves
9	Lamiaceae	*Ocimum gratisimum* L.	African Basil, Clove Basil	Leaves
10	Lamiaceae	*Ocimum basilium* L.	Sweet basil, basil	Seeds
11	Lamiaceae	*Vitex doniana* L.	Wild African Black Plum	Leaf
12	Lamiaceae	*Ocimum amenicnum* L.	Lime hairy, hoary basil	Leaf
13	Apocynaceae	*Holarrlena floribunda* (G. Don) Dur. And Schinz	Conessi.	Seed
14	Apocynaceae	*Picralina nitida* Stapf. Th. And H. Dur.	Akuamma	Seeds are crushed and taken orally
15	Apocynaceae	*Ervatamia divaricata* (L) Burkill	Erchagouyanua	Root
16	Malvaceae	*Sida acuta* Burm	Broom weed	Aerial part
17	Malvaceae	*Gossypium herbaceium* L.	Levant cotton	Aerial part
18	Malvaceae	*Hibiscus sabdariffa* Linn	Zobo	Infusion of calyx of the flower
19	Anacardiaceae	*Anaerdium occidentale* L.	Cashew	Decoction of leaves
20	Anacardiaceae	*Spondia mombin* Linn	Yellow mombin, hog plum	Infusion of leaves
21	Anacardiaceae	*Mangifera indica* Linn	Mango	Decoction of the bark.
22	Fabaceae	*Piliostigma thonnigii* (Schum) Miln-Rodh	Camel's foot, monkey bread	Decoction of the bark
23	Fabaceae	*Pterocarpus erinaceus* Poir	Barwood, munings	Bark
24	Caesalpiniaceae	*Daniella oliveri (Rolfe)* Hutch and Dalz	Daniella	Infusion of leaves and bark
25	Caesalpiniaceae	*Anthonotha macrophylla* P.Beauv	African rose wood	Leaves
26	Solanaceae	*Solanum erianthum* D. Donl	Potato tree	Infusion of root
27	Bignoniaceae	*Crescentila cujete* Linn	Calabash tree	Leaves
28	Crussulaceae	*Bryphyllum pinnatum* (Lam) Oken	African never die, resurrection plant	Leaf
29	Lauraceae	*Cassytha filiformis* Linn	Love vine	Stem
30	Lecythidaceae	*Napoleona vogelii* Hook and Planch	Napoleonaea	Leaves
31	Papilionaceae	*Pherania phaseolodes* (Roxb) Benth	Tropical Kuduzu	Leaves
32	Liliaceae	*Aloe barteri* Miller	Aloe vera	Leaves
33	Amaryllidaceae	*Allium sativum* L.	Garlic	Bulb
34	Combretaceae	*Terminalia catappa* L.	Tropical almond, sea almond	Leaves
35	Clusiaceae	*Garcinia cola* Heckel	Bitter kola, African wonder nut	Seed and leaves
36	Plantaginaceae	*Plantago major* (Linn)	Plantain	Infusion of plant
37	Connaraceae	*Byrosocarpus coccineus* Schum and Thonn	Huntsman's pepper	Infusion of leaves
38	Loganiaceae	*Antocleista djalonensis* A chev.	Cabbage tree	Infusion of leaves
39	Santalaceae	*Viscum album* L.	Mistletoe	Leaves
40	Myrataceae	*Pisidium guajava* L.	Guava	Infusion of leaves
41	Ebenaceae	*Disopyros mespiliformis* L.	African Ebony	Infusion of leaves
42	Myristicaceae	*Myristica fragrans* (HOUTT)	African nutmeg	Seed
43	Zingiberaceae	*Zinfiberaceae officinale* Roscoe	Ginger	Stem
44	Musaceae	*Musa sapinetum* Ivan A. Ross	Banana	Fruit
45	Apiaceae	*Daucus carota* Schubl and G. Martens	Carrot	Tap root
46	Leguminosae	*Sutherlandia frutescens* L.	Cancer bush	Leaves
47	Plumbaginaceae	*Plumbago zeylnica* L.	Ceylon leadwork	Root
48	Zygophyllaceae	*Larrea tridentate* (DC) Coville	Chaparel	Aerial part
49	Rutaceae	*Murraya koenigai* (L) Sprengel	Curry leaf tree	Leaf
50	Sterculiaceae	*Cola nitida* (Vent) Schott and Endl	Kola nut tree	Stem bark
51	Solanaceae	*Schwenkia americana* Linn	Mullein	Aerial part

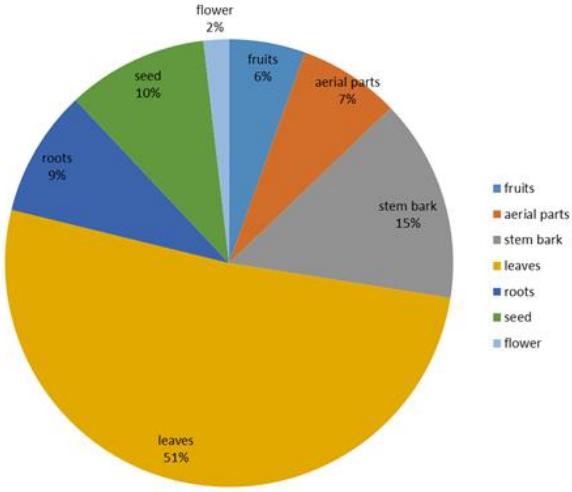

Fig-2: Percentage of plant parts used

REFERENCES

1. Praveen S, Gali V, Sunder S, Santosh G, Bimlesh K; Antidiarrhoeal activity of leaf extract of *Celosia argentea* in experimental induced diarrhoea in rats J. Adv. Pharm Technol. Res., 2010;1(1): 41 – 48.
2. Sani CA, Dzenda T, Suleman MM; Antidiarrhoeal activity of the methanol stem bark extract of *Annona senegalensis* Per (Annonaceae). J. of Ethnopharmaceology, 2008; 116: 125- 130.
3. WHO; World Health Organization. Diarrhoea: why children are still dying and what can be done, 2009.
4. Okoro BA, Itombra – Okoro J; Childhood morbidity from diarrhoea and its home management. Nig. J. Paediator., 1996; 23: 85.
5. UNICEF; United Nations Children's Fund. Joint UNICEF and World Health Organization's report of 2012.
6. UNFPA; United Nation Population fund –Nigeria. Population projection, 2013.
7. Federal Ministry of Health; Nigeria herbal pharmacopeia 1st edn. Nigeria. Federal Ministry of Health, Nigeria, 2008.
8. Ajibesin KK, Ekpo BA, Bala DN, Essien EE, Adesanya SA; Ethnobotanical survey of Akwa Ibom state of Nigeria. J. Ethnopharmacol, 2008; 115:387–408.
9. Ajibesin KK, Bala DN, Umoh UF; The use of medicinal plants to treat sexually transmitted disease in Nigeria. Ethnomedicinal survey of Niger Delta Region. Int. J. Green Pharm, 2011; 5: 181-91.
10. Igoli JO, Ogaji OG, Tor – Anyin TA, Igoli NP; Traditional medicine practice amongst the Igede people of Nigeria, Part II. African Journal. Traditional, Complementary and Alternative Medicine, 2005; 2(2) 134-152.
11. Iwu MM; Handbook of African Medicinal plants Boca Raton. CRC Press INC, 1993; 223 – 224.
12. Schmutterer H; The Neem tree, In: Schmutterer H, Ascher KRS, Isman MB, eds. The Neem tree: Azadirachta indica A Juss and other Meliceous Plants. Weinheim, Germany, 1995; 1–3.
13. Agoha RC; Medicinal plants of Nigeria offset Drakkerij. Faculfcilder Wiskunde in Naturwetenschappen, the Netherlands, 1974; 33 and 41.
14. Ofokansi KC, Esimone CO, Anele CK; Evaluation of the in vitro combined antibacterial effects of the leaf extracts of *Bryophilium pinnatum (*Fam: Crassulaceae*) and Ocimum gratissium* (Fam: Labiatae). Plant prod. Res., J., 2005; 9: 3–27.
15. Gills LS; *Ethnomedical uses of plants in Nigeria.* University of Benin Press. Nigeria, 1992; 276.
16. NNMDA; Medicinal plants of Nigeria, South-east Nigeria Vol 1. The Nigeria natural medicine Development Agency (Federal Ministry of Science and Technology), 2008; 35-125.
17. Palombo EA; Phytochemicals from traditional medicinal plants used in the treatment of diarrhea: modes of action and effects on intestinal function. Phytother. Res., 2006; 20(9):717-24.
18. Oloyede GK, Ayanbadejo OE; Phytochemical, Toxicity, Antimicrobial and antioxidant screening of Extract obtained from *Laportea aestuans* (Gaud). Journal of Medical Sciences, 2014; 14: 51-59.
19. Prema S, Saraswathy A, Chitra K, Gopal V; Preliminary phytochemical evaluation and quantification of metabolites of *Stereospermum colais* Bark. The Journal of Phytochemistry. Photon, 2014; 115:253-260.
20. Freitas GC, Batista JM Jr., Franchi GC Jr., Nowill AE, Yamaguchi LF, Vikachagua JD, et al.; Cytotoxic non-aromatic B- ring flavanones from *Piper carniconnectivum* C. DC, Phytochemistry, 2014; 97; 81-87.
21. Okwu DE; The potential of *Ocinuim gratissimum, Pengluria extensa* and *Tetrapleura tetraptera* as spice and flavouring agent Nig. Agric J., 32003;4: 143–148.
22. Edeoga HO, Omosun G, Uche LC; Chemical composition of *Hyphs suaveolens and Ocimum*

gratissimum hybrids in Nigeria. African Journal of Biotechnology, 2006; 5(10):892–895.
23. Sekiwa Y, Kubota K, Kobayashi A; Isolation of novel glycosides from ginger and their antioxidative activity. J. Agric. Food Chem., 2008; 8: 373–379.
24. Kamtchouing P, Mbongue-Fandio GY, DimoT, Jasta HB; Evaluation of androgenic activity of *Zinger officinale* extract in male rats. Asian J. Androl, 2002; 4: 299 – 301.
25. Al-Amin ZM, Thomson M, Al-Qattan KK, Peltonen-Shalaby R, Ali M; Antidiabetic and hypolipidemic properties of ginger (*Zinger officinale*) in streptozotocin induced diabetic rats Br. J. Nutri., 2006; 96(4): 660 – 664.
26. Eleazu CO, Eleazu KC, Awa E, Chukwuma SC; Comparative study of the phytochemical composition of the leaves of five Nigerian medicinal plants. Journal of Biotechnology and Pharmaceutical research, 2012; 3(2): 42-46.
27. Mc Langhlin JL, Ratangyake S, Rupprecht JK, Potter WM; Evaluation of various parts of the pawpaw tree, *Asimina triloba* (Annocaceae) as commercial source of the pesticidal annonaceous acetogenins J. Econ. Entomol., 1992; 85:2353–2356.
28. Mantok C; Multiple usage of green papaya in healing at Tao Garden. Tao Garden Health Spa and Resort. Thailand, 2005.
29. Kingsley MO; Effect of processing on some antinutrient and toxic compounds of the African oil bean seed (*Pentaclethra macrophylla* Benth*).* Journal of the Science of Food and Agriculture, 1995; 68(2): 153–158.
30. Alinnor IJ, Oze R; Chemical evaluation of the nutritive value of *Pentaclethra macrophylla* Benth (African oil bean) seeds. Pakistan Journal of Nutrition, 2011; 10(4): 355–339.