



Original article

Assessment of Medicinal Plants used for the Treatment of Cough in Abeokuta- South Local Government Area of Ogun State

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ABSTRACT

Cough which is a symptom of respiratory illness affect people of all ages and medicinal plants have been used for treatment of various ailments for ages. However, indigenous knowledge about medicinal plants is slowly disappearing because of lack of documentation of these precious endowments. This study was carried out to document medicinal plants that are used for cough in Abeokuta-South local government of Ogun State. Fifty respondents which comprised the herb sellers and traditional healers were interviewed on plants, plants parts and mode of preparation of the plants use for cough. Data obtained was subjected to ethno-botanical indices which are Relative Frequency of Citation (RFC) and Use value (UV). A total number of 25 plants from 19 families were used for the treatment of cough. The RFC for all plants species ranged from 0.04 – 0.38. The most frequently mentioned plants were *Anacardium occidentale* (0.38), *Cola acuminata* (0.30) and *Garcinia kola* (0.28). Other plants recorded in this study are *Abrus precatorius*, *Aframomum melegueta* and *Ficus exasperata*. The highest use value was recorded in *Adansonia digitata* (0.16), *Allium sativum* (0.12) and *Alstonia boonei* (0.12). Leaves were the dominant part used for the treatment of cough. The modes of preparation were concoction, decoction and maceration while the mode of administration is orally. The represented plant species belong to family Amaryllidaceae, Malvaceae, Apocynaceae and Fabaceae. This study revealed the diversity of plant species used for the treatment of cough and the inventory contributes to database of valuable plant resources in Nigeria.

Keywords: Cough, Maceration, Ailments, Plants, Administration

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INTRODUCTION

Cough is a reflex action that helps in the removal of foreign agents and clearance of airways. In spite of this, it can also aid in the spread of infections (1). Almost every human being has an episode of cough in their lifespan. It can be caused by infections, allergies, or respiratory conditions. Cough can be classified into either chronic or acute. Acute cough is short-lived, self-restricting and could be cleared up within three weeks. However, chronic cough is long-lived and has been reported in approximately 10-20% of the general population. It has been associated with morbidities such as sleep disturbance, absenteeism at schools and work, cough syncope, social embarrassment and urinary incontinence (2, 3).

Medicinal plants have been utilized for the treatment of various ailments since the dawn of humanity. People and medical professionals all around the world are now beginning to substitute herbal remedies for therapy that have been scientifically proven (4). One of the main reasons why medicinal plants are valuable in healthcare is their accessibility. These plants can be easily grown in our neighbourhood, which make them affordable and available to a larger population. This accessibility is particularly beneficial in regions where conventional healthcare may be limited or costly. Medicinal plants empower individuals to take control of their health and well-being by providing them with natural remedies that can be prepared at home (5).

Some plants are known for their antitussive properties, which could be explored in the management of cough. For instance, Licorice root has been traditionally used to alleviate coughing. It

contains compounds like glycyrrhizin and liquiritin, which have antitussive properties (6). Some other plants also contain mucilage, which forms a protective coating in the throat and can help to reduce coughing (7). The recognition and preservation of these medicinal plants are crucial not only for the well-being of the communities but also provides insights to incredible healing potential of nature that can complement modern medicines. Hence, this study investigated the plant species utilized for the treatment of cough.

MATERIALS AND METHODS

Study Area

The study was conducted in Abeokuta-South local government area of Ogun State. The survey was carried out at Kuto Market and Itoku Market in Abeokuta, Ogun State (Figure 1).

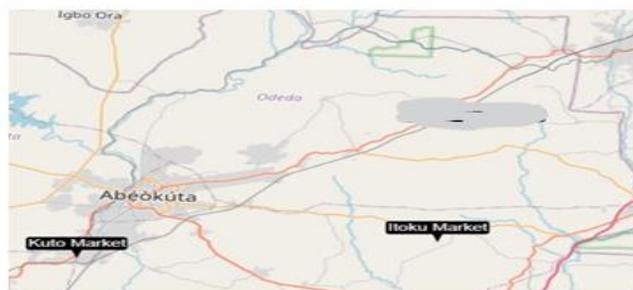


Figure1: Map showing the study areas in Abeokuta

Research Design

The study used was descriptive survey design to determine plants used for the treatment of cough.

Data collection

Semi- structured questionnaire was used to gather information from fifty participants on plants, plant parts used, methods of preparation and mode of administration of the plants for the treatment of cough in the study areas. Before the questionnaire was

administered using interview method; the purpose of this study was explained to the participants and those that gave their consent were used for the study. The participants who were purposely selected comprised mainly the herb sellers and traditional healers. The demographics of the respondents such as age, occupation and years of experience were also recorded.

Data Analysis

The demographic information of the respondents was analyzed using descriptive statistics, while the information gathered on the plants was subjected to quantitative indices such as Relative Frequency Citation (RFC) in equation 1 and Use value (UV) in equation 2 (8).

$$RFC = \frac{FC}{N} \dots\dots\dots\text{Equation 1}$$

Where FC (Frequency of citation) = number of informants who mentioned the use of the species, N = total number of informants that participated in the survey.

$$UV = \sum Ui / N \dots\dots\dots\text{Equation 2}$$

Ui = number of uses mentioned by each informant for a given plants, N =total number of informants.

RESULTS

Out of 50 respondents, 74 % were females while 26 % were males (Table 1). The herb sellers constituted 76% of respondents, while 24% were traditional healers. The majority of the respondents fell between 51-60 (50 %) years of age, 40% have 21-30 years of experience and 56% of the respondents claimed that they were trained by skilled personnel (Table 1). A total of 25 plants were mentioned as medicinal plants used for the treatment of cough in the study area (Table 2). The Relative Frequency of Citation (RFC) for all plants species recorded in this study ranged from 0.04 – 0.38. The most frequently mentioned plants were *Anacardium occidentale* (0.38), *Garcinia kola* (0.28), *Cola acuminata* (0.28) and *Allium ascalonicum* (0.26) (Table 2). The methods of preparation are maceration, infusion chewing and decoction while the route of administration is orally (Table 3). The participants used different parts of plants for the treatment of cough in the study area (Figure 2). The most frequently used plant parts are leaves (32.5%) followed by bark (20%) and stem (15%) respectively. The most represented plant species used for cough belong to family Amaryllidaceae, Malvaceae, Fabaceae and Apocynaceae (Figure3).

Table1: Demographic Characteristics of the Respondents

Parameter	Categories	Number	Percentage
Gender	Male	13	26
	Female	37	74
Age	21 – 30	2	4
	31-40	5	10
	41-50	13	26
	51 – 60	25	50
	61-70	5	10
Occupation	Herb seller	38	76
	Traditional Healer	12	24
Acquisition of knowledge	From Parent	22	44
	Trained by skilled Personnel	28	56
Years of Experience	0-10 years	15	30
	11-20 years	6	12
	21-30 years	20	40
	31 years and above	9	18

Table 2: Profile of plants used by the respondents for the treatment of Cough

S/N	Family	Scientific name	Local name	Common name	Plant Part Used for Cough	Duration of Treating Cough	Type of Cough	Frequency	RFC	UV
	Anacardiaceae	<i>Anacardium occidentale</i>	Kasu	Cashew	Leaves, fruit, seed stem, Bark	1-7 Days	Asthma, TB	19	0.38	0.04
	Amaryllidaceae	<i>Allium ascalonicum</i> L.	Alubos aelewe	Shallot	Whole plant	2-5 Days	Asthma, cough	13	0.26	0.04
	Amaryllidaceae	<i>Allium sativum</i> L.	Ayu	Garlic	Bulb	2-5 Days	Asthma, cough, TB	6	0.12	0.12
	Amaryllidaceae	<i>Crinum jagus</i>	Ogededo	Christopher's lily	Shoot, Bulb, roots	2-7 days	Asthma, Cough, TB	2	0.04	0.04
	Apocynaceae	<i>Alstonia boonei</i>	Ahun	God's tree	Stem, bark, leaves	3-7 days	Coughs including bloody cough	7	0.14	0.12
	Apocynaceae	<i>Calotropis procera</i>	Bomu-Bomu	Apple of Sodom	Leaves	5-7 Days	TB, Asthma	10	0.20	0.08
	Arecaceae	<i>Elaeis guineensis</i>	Ope	Oil palm	Roots	4-7 days	Asthma, bronchitis, chest pain, TB	2	0.04	0.12
	Asparagaceae	<i>Sansevieria liberica</i>	ola-koriko	Snake Plant	Root	3-5 days	Cough	5	0.10	0.12
	Clusiaceae	<i>Garcinia kola</i> Heckel	Orogbo	Bitter kola	Fruit	2-7 Days	Asthma, Coughs including bloody cough	14	0.28	0.08
	Convolvulaceae	<i>Ipomoea batatas</i>	Anomo, Odunkun	Sweet potato	Leaves	3-5 days	Asthma	2	0.04	0.12
	Costaceae	<i>Costus afer</i>	Irekeo mode	Ginger lily, bush cane	Stem	2-5days	Cough	3	0.06	0.08
	Euphorbiaceae	<i>Bridelia feruginea</i> Benth	Iralodan	Bridlia	Bark, Stem	2-5 days	Asthma whooping cough	4	0.08	0.06
	Fabaceae	<i>Abrus precatorius</i> L.	Omisin misin, ojuologbo	Jequirity bean, Crab's eyes	Leaves	3-5 days	Asthma, Bronchitis, TB	5	0.10	0.08
	Fabaceae	<i>Erythrina senegalensis</i>	ologun sheshe	Coral Flower, parrot tree	Bark	5-7 days	bronchial infections, coughs,	2	0.04	0.10

Liliaceae	<i>Aloe barbadensis</i>	Aloe vera	Aloe vera	Latex	4-7 days	Asthma	2	0.04	0.08
Lythraceae	<i>Lawsonia inermis</i> L.	Laali	Henna	Leaves	3-7 days	Asthma	4	0.08	0.04
Malvaceae	<i>Adansonia digitata</i>	ose, oske	Baobab. Magic tree, chemist tree,	Seeds	5-7 days	mild asthma,	2	0.04	0.16
Malvaceae	<i>Hibiscus sabdariffa</i> L.	Amukan, Isapan,	Roselle, red sorrel, zobo	Leaves	3-7 days	Cough	2	0.04	0.08
Malvaceae	<i>Cola acuminata</i>	obi abata	Kola nut	Fruit	2-3 days	Cough, Asthma	15	0.30	0.08
Meliaceae	<i>Azadirachta indica</i>	Dogoyaro	Neem	Leaves, stem, bark, fruit	3-7 days	TB	3	0.06	0.08
Moraceae	<i>Ficus exasperata</i> Vahl	Eweepin	Sandpaper leaf	Leaves, stem, bark, roots	5-7 days	Coughs including bloody cough	6	0.12	0.04
Myrtaceae	<i>Psidium guajava</i> L.	Gilofa	Guava	Leaves	2-4 days	TB	8	0.16	0.04
Sapotaceae	<i>Chrysophyllum albidum</i>	Agbalumo	Star apple	Bark, root, Leaves	2-7 days	Asthma	5	0.10	0.08
Solanaceae	<i>Datura stramonium</i> L.	Gegemu	Green thorn-apple	Leave	3-7 days	Asthma	6	0.12	0.04
Zingiberaceae	<i>Aframomum melegueta</i>	Ataare	Aligator pepper	Seeds, leaves	2-7 days	Asthma, Cough, bronchitis,	10	0.20	0.08

RFC- Relative Frequency of citation UV- Use Value TB-Tuberculosis

Table 3: Method of Preparation and Mode of Administration of the Plant used for Cough

S/N	Scientific name of Plant for Cough	Method of Preparation	Mode of Administration	Other Medicinal Uses
	<i>Abrus precatorius</i>	Decoction	Oral	Treat Tetanus. Prevent rabies , Fever
	<i>Adansonia digitata</i>	Infusion	Oral	urinary tract disorders, fatigue,
	<i>Aframomum melegueta</i>	Concoction	Oral	Stomach ache, Diarrhea, measles,
	<i>Allium ascalonicum</i>	Concoction	Oral	Skin disease, wound
	<i>Allium sativum</i>	Concoction	Oral	Treatment of Wound, malaria, diabetes, kidney and liver problem
	<i>Alstonia boonei</i>	Maceration	Oral	Treatment of Malaria, Fever, Insomnia, chronic diarrhea, rheumatic pain
	<i>Anacardium occidentale</i>	Decoction	Oral	Treatment of Cardiovascular problems, Respiratory tract dysfunctions
	<i>Aloe barbadensis</i>	Blend the leaves and drink	Oral	Cold, Flu, Skin disease
	<i>Azadirachta indica</i>	Concoction	Oral	Malaria, Fever, skin disease, dental disorder
	<i>Bridelia feruginea</i>	Maceration	Oral	Managing arthritis, dysentery,Diarrhea, skin disease,
	<i>Calotropis procera</i>	Decoction	Oral	Antidote for snake bite, rheumatism, burn injuries, and body pain
	<i>Chrysophyllum albidum</i>	Decoction, Boiling	Oral	Malaria, Sleeping sickness and yellow fever
	<i>Crinum jagus</i>	Decoction	Oral	Fever, Wound
	<i>Cola acuminata</i>	Chewing	Oral	Ring worm, scabies, gonorrhoea, dysentery
	<i>Costus afer</i>	Decoction	Oral	Treat and manage diabetes, stomach ache, arthritis, gout
	<i>Datura stramonium</i>	Maceration	Oral	Treatment of stomach and intestinal pain
	<i>Elaeis guineensis</i>	Concoction	Oral	Treatment of Gonorrhoea, menorrhagia and abdominal pain
	<i>Erythrina senegalensis</i>	Maceration	Oral	Malaria, wound, body pain (chest pain, back pain, abdominal pain etc.)
	<i>Ficus exasperata</i>	Decoction	Oral	Treatment of inflammatory disorder
	<i>Garcinia kola</i>	Decoction, Chewing	Oral	Diarrhea, hepatitis, Gonorrhoea
	<i>Hibiscus sabdariffa</i> L	Decoction	Oral	toothache, boils, toothache, to ease childbirth
	<i>Ipomoea batatas</i>	Decoction	Oral	Burn, catarrh, bug bites, fever, nausea
	<i>Lawsonia inermis</i>	Infusion	Oral	Leprosy, skin disease
	<i>Psidium guajava</i>	Maceration	Oral	Treatment of wound
	<i>Sansevieria liberica</i>	Decoction	Oral	Gonorrhoea, ulcer, convulsion , ear-ache and toothache

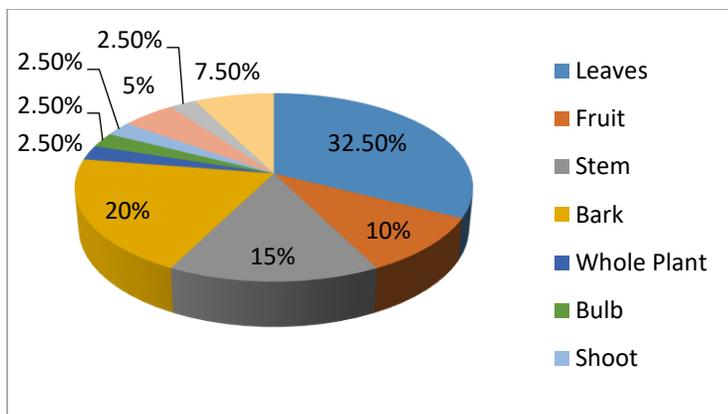


Figure 2: Plant parts used for the treatment of cough in the study area

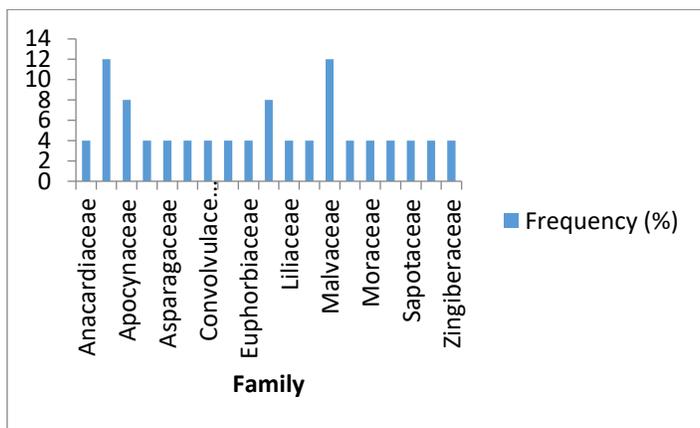


Figure 3: Distribution of plant species among Family

DISCUSSION

Plants have been used for centuries in traditional medicine to treat various ailments, including cough. These plants offer a natural and potentially effective alternative to synthetic medications. Also, the investigation of these medicinal plants could lead to the discovery of new antitussive that are urgently needed in less developed areas (9).

A Large number of participants in this study are between 51-60 years. This is an indication that majority of younger generations do not have interest in traditional medicine. This is in line with the study of Lawal *et al.*, (10) whose finding showed that traditional healers and herb sellers in their study area are between 51 – 60 years. It was also observed that majority

of the respondents were females. This is an indication that females are into herbal medicine than their male counterparts. This is consistent with the study of (11) who reported in their studies that women were the dominant gender among traditional healers and herbal sellers.

In this study, 25 medicinal plants from 19 families were recorded for the treatment and management of cough in Abeokuta. This is an indication that rich flora are used in cough management in the study area. This is in consonance with the findings of (10, 12) who recorded different plant species when the studies were carried out in Akinyele Local Government Area, Oyo State, and Ede-South Local Government Area of Osun State, Nigeria respectively.

The respondents reported diverse plant parts such as leaves, stem, seeds, roots, and bark were utilized for managing cough in

the study area. This indicates that cough can be treated with different plant parts. However, leaves were the major plant part used as a cough remedy. This could be as a result of its accessibility, availability and relative abundance of leaves. Harvesting leaves for medicinal use still allows the existence and continuity of the plant unlike the roots that may threaten its continuity unless a sustainable harvesting method is developed (13, 14). The study revealed that family Amaryllidaceae, Malvaceae, Apocynaceae and Fabaceae were frequently used by the respondents. This is in line with findings of (10, 12), who reported that Amaryllidaceae, Malvaceae, Fabaceae and Zingiberaceae were used for the treatment and management of cough associated with respiratory diseases in Ede South Local Government Area of Osun State and Akinyele Local Government Area, Oyo State respectively.

Conclusion

This study has identified the plants and plant parts used in Abeokuta-South local government, Ogun State for the treatment of cough. The plants listed have been reported by the respondents to be safe when used as herbs in right proportion. However, the study revealed that *Anacardium occidentale*, *Garcinia kola* and *Cola acuminata* are mostly used by the herb sellers for the treatment of cough. The modes of preparation in the study are concoction, decoction and maceration. Thus, in the face of growing unaffordable synthetic drugs, these findings provide baseline information for future validation of the plant species and possible isolation of bioactive compounds for the treatment of cough.

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