# ~~SURVEY OF~~ PLANTS USED IN THE TREATMENT OF RESPIRATORY TRACT DISEASES; A CASE STUDY OF ZURU LOCAL GOVERNMENT AREA OF KEBBI STATE, NIGERIA.


## ABSTRACT

Plants have played significant roles in production of drugs for Orthodox and traditional medicines. The practice of herbal medicines even with a particular plant in treatment of the same disease differs and their discovery for pharmaceutical uses is for eternity. This research aimed to survey plants used by the Zuru people for treatment of respiratory tract diseases using administering structured questionnaire methods. Three hundred (300) questionnaires were distributed in five different villages namely: Isgogo, Senchi, Dabai, Dankowasagu, and Yarali in Zuru Local Government Area to both sexes respondents that having the knowledge of traditional uses of plants for treatment of respiratory track and related infection between the ages of 40 and 60 years old. Two hundred and fifty-five (255) questionnaires were returned. A total of 15 plant species belonging to 10 different families were documented.Malvaceae and Combretaceaearethe most frequently listed families with 4 and 2 species each. Among the Fifteen (15) listed plants, *Sida cordifolia*were the most cited (25), followed by *Waltheria indica*, *Ficus glumosa* and *Cymbopogon citrates* appeared up to (20) times each. These findings therefore showed that, the above listed plants are of great pharmaceutical value if properly utilize for drug production in the treatment of respiratory diseases as the herbal medicine according to the respondents is effective to cure Diseases such as cough, asthma, sore throat, common cold, tuberculosis.



**KEY WORDS:**Plants, Respiratory track diseases, Zuru Kebbi**.**


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## INTRODUCTION

Ethno- botany is as old as mankind, as the tribes differs so is the art of traditional medicine and its practices. Green plants are capable of synthesizing different kinds of chemicals that are of great medicinal value (Tyler, 2000; Edeoga *et al.*, 2005). WHO, (1993), reported that 80% of the world's population depends on phyto-medicine. The challenge of pharmacist in medical Science Worldwide is discovery of new drugs that will inhibit growth of resistant microorganisms (Oseni*et al*., 2014). Somealready among the listed were exploited in production of drugs as shown by existing literature in Indian. Farming and hunting is an olden practiced profession of the People of Zuru land. These skills made them to have the good knowledge of both wild and cultivated plants that are edible, poisonous and the ones with medicinal properties. Within Kebbi State, Zuru traditional medicine is most acceptable and regarded by the people. Nigeria is known

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to have good documentation of traditional medicine of useful plants and drug discovery efforts (Ajaiyeoba *et al*., 2010). WHO has promoted ethnobotanical studies and pharmaceutical research to improve herbal medicines to promote their optimal use in health care delivery systems (Trabi *et al.*,2008).

Diseases caused by microorganisms have been treated using traditional medicine, which are plant extracts among which these include; Dysentery, Typhoid, Malaria, Cough, Common cold, Hypertension. Till date some people of Zuru depend on traditional medicine for their health issue that is why hardly they go hospital for treatment of diseases (Keta, 2016). According to WHO (2005), traditional medicine has fewer side effects, better patient tolerance, and acceptance due to long history of use, renewable in nature, the most affordable and available means of medical treatment to the rural people. However, the rapid increase in multiple drug resistant microorganisms associated with conventional agents has necessitated the search for new antimicrobial agents that are safe and less expensive (Ajaiyeoba *et al*., 2010). Respiratory tract diseases such as cough, asthma, tuberculosis and Covid -19 are mostly viral and bacterial related (Rihan and Al-Salti, 2018). Certain phytocompunds such as alkaloids, flavonoids, tannins and phenols that are of great medicinal importance were obtained by plants (Ghosal *et al*. 2011).This study was aimed to documenting plants use in treating respiratory tract related disease by the people of Zuru Local Government area of Kebbi State Nigeria.

## MATERIALS AND METHODS

### Study Area

Comment [U4]: Include a map of the study area

Zuru is a local Government area situated in Kebbi state, Northwestern Nigeria. The state has a total area of 36,800 km² with vegetation of short grass savanna that is drained southwest ward by the Niger River. The state is located on longitude 12°27′13″N and latitude 4°12′01″E

(Traditional States of Nigeria, 2010). The rainy period is between April to October annually. The month of September has the highest magnitude of rainfall. There is a wet season between May and July, with little rain in the remainder of the year. Mean annual rainfall is about 800 mm. Average temperatures are about 26°C, ranging from 21°C in Harmattan to 40°C between April and June (Physical Setting, 2010).

**Source of Data**

Data were collected from Dabai, Dankowasagu, Yarali, Isgogo and Senchi using 300 semi-structural Questionnairebetween May to June, 2020.The informants between the age 40 to 60 of both sexes with knowledge of medicinal plants and specialized traditional healers were elaborated the significant of this study before the commencement of interview. Field tour was made early morning to collect the cited plant species after taking the photographs of each listed plant species.

**Comment [U5]:** Was the questionnaire validated? Was a pilot test carried out?

**Collection and Identification of Plants**

All the plant species cited by the informants during the interview were collected from their natural habitants in a vacuum box and taken to the Herbarium section, Department of Plant Science and Biotechnology, Kebbi State University of Science and Technology Aliero. Plants were identified by taxonomist Prof. Dharmendra Singh and authenticated in Ethno medicinal uses of some plants species in Kebbi State, Northern Nigeria (Jibrin, 2016). The voucher numbers issued together with the plants were pressed, mounted and preserved in herbarium box for future reference.

**Comment [U6]:** Acronym of the herbarium in which the material was deposited

**Data Analysis**

Information gathered from the structured questionnaires was tabulated and analyzed using descriptive statistics with the aid of Microsoft excel computer software package version 20. The frequency index for each plant was calculated using the following formula;

Frequency index = n/N x 100

Where 'n' is total number of respondent who listed a particular plant species and 'N' is total number of respondents.

## RESULTS AND DISCUSSION

**Table 1:**Percentage used of sampled plants by the respondents

| S/N | Plant | Percentage% |
|---|---|---|
| 1 | *Sida cordifolia* L. | 10 |
| 2 | *Anogeissus leiocarpus* L. | 7 |
| 3 | *Psidium guajava L.* | 5 |
| 4 | *Slerocarya birrea* hochst. | 6 |
| 5 | *Vitellaria paradoxa* Gaertn F. | 6 |
| 6 | *Ficus glumosa* Del. | 8 |
| 7 | *Ceiba pentandra* L. | 6 |
| 8 | *Waltheria indica* L. | 8 |
| 9 | *Euphorbia hirta* L. | 7 |
| 10 | *Terminia mollis* Laws. | 6 |
| 11 | *Acanthopersum hispidum* DC. | 6 |
| 12 | *Urena lobate* L. | 7 |
| 13 | *Cymbopogon citrates*(DC. ex Nees) | 8 |
| 14 | *Scoparia dulcis*Linn | 4 |
| 15 | *DiospyrosMespiliformis* .Hochts | 6 |

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**Table 2:** List of Plants, their Common and Local Names, Family and Percentage Frequency of Cited by Respondents on the Plants used for treating Respiratory Tract Related Diseases by Zuru People**.**

| S/N | Scientific Name | Common Names | Hausa Names | Family | Number of Times Appeared | Percentage Frequency Index |
|---|---|---|---|---|---|---|
| 1. | *Sida cordifolia* L. | Flannel weed | Faringarmani | *Malvaceae* | 25 | 35.29 |
| 2. | *Anogeissusleiocarpus* L. | African Birch | Marke | *Combretaceae* | 18 | 25.42 |
| 3. | *Psidium guajava L.* | Guava tree | Guiva | *Myrtaceae* | 13 | 18.35 |
| 4. | *Slerocarya birrea* hochst. | Marula | Loda | *Anacardiaceae* | 15 | 21.18 |
| 5. | *Vitellariaparadoxa* Gaertn F. | Shea tree | Kade | *Sapotaceae* | 15 | 21.18 |
| 6. | *Ficus glumosa* Del. | Hairy rocky fig | Borai | *Moraceae* | 20 | 28.24 |
| 7. | *Ceiba pentandra* L. | Silk cotton tree | Rimi | *Malvaceae* | 15 | 21.18 |
| 8. | *Waltheria indica* L. | Sleepy Morning tree | Hankufa | *Malvaceae* | 20 | 28.24 |
| 9. | *Euphorbia hirta* L. | Asthma weed | Nononkurciya | *Euphorbiaceae* | 18 | 25.41 |
| 10. | *Terminiamollis* Laws. | Black Myrobalan | Baushe | *Combretaceae* | 17 | 12.04 |
| 11. | *Acanthopersumhispidum* DC. | Bristly Starbur | | *Asteraceae* | 15 | 21.18 |
| 12. | *Urena lobate* L. | Caesar weed | Garmani | *Malvaceae* | 18 | 25.41 |
| 13 | *Cymbopogon citrates* (DC. ex Nees) | Lemon Grass | Lemohaki | *Poaceae* | 20 | 28.24 |
| 14 | *Scoparia dulcis* Linn | Goat weed or lico rice | RumanFada | *Scrophulariaceae* | 11 | 7.78 |
| 15 | *Diospyros Mespiliformis*.Hochts | Jackaberry | Kaiwa | *Ebenaceae* | 15 | 21.18 |

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Table 3: Plants, Parts Used, Diseases and Methods of Preparation for Treatment of Respiratory Tract Related Diseases in Zuru Area

| S/N | Scientific Name | Parts used | Disease | Methods used and dosage |
|---|---|---|---|---|
| 1. | *Sida cordifolia* | Leaves | Sore throat and cough | Boiled and drunk a glass cup three times a day for one week. |
| 2. | *Anogeissus leiocarpus* | Leaves and bark | Common cold | Decoction added water, sieved the liquid content drink a glass cup three times a day for one week. |
| 3. | *Psidium guajava* | Leaves | Cough | Boiled and drunk warm a glass cup three times a day for one week. |
| 4. | *Slerocarya birrea* hochst. | Leaves | Sore throat | Boiled and drunk water a glass cup three times a day for one week. |
| 5. | *Vitellaria paradoxa* Gaertn | Oil | Sore throat | Applied on affected parts morning and evening. |
| 6. | *Ficus glumosa* | Leaves | Chest pain and Tuberculosis | Squeeze leaves with water sieve and drunk a glass cup three times a day for one week. |
| 7. | *Ceiba pentandra* | Leaves | Sore throat | Boil and drink the water warm drink a glass cup three times a day for one week. |
| 8. | *Waltheria indica* | Roots | Lung diseases | Boil and drink a glass cup three times a day for one week. |
| 9. | *Euphorbia hirta* | Stem and leaves | Asthma | Air dry and make powder mix with honey take one tea spoon three times a day. |
| 10. | *Terminia mollis* | Leaves | Cough and catarrh | Decoction mix with water sieve and drink half glass cup two times daily. |
| 11. | *Acanthopersum hispidum* | Leaves and roots | Whooping cough | Decoction mix with water sieve and drink half glass cup two times daily. |
| 12. | *Urena lobate* | Leaves | Goiter and cold | Decoction mix with water sieve and drink half glass cup two times daily. |
| 13 | *Cymbopogon citrates* | Whole plant | Sore throat and cough | Boil and drink a glass cup three times a day for one week. |
| 14 | *Scoparia dulcis* | Leaves | Cough and bronchitis | Boil and drink the water drink a glass cup three times a day for one week. |
| 15 | *Diospyros mespiliformis* | Leaves | Cough and Common Cold | Boil and drink the water one glass cup three times a day for one week. |

**Comment [U14]:** Unify the table, include the author in all species or eliminate all authors

**Comment [U15]:** correct

These findings document fifteen (15) different plants for the treatment of respiratory tract related diseases they are herbs, shrubs or trees of different families, although the families Malvaceae and Combretaceae were obtained with the highest number of plant species.This is somewhat aforementioned with the finding of (Aisha *et al.*, 2022). Also species of woody under

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Combretaceae family are the most distributed species in West Tangaza Forest Reserve, Sokoto State, Nigeria (Zhigila*et al*., 2015). These might not be surprised since Kebbi state shared the same geographical zone with Sokoto. In related study, Sarrafzadegan *et al.* (2013) listed plants of those families used for herbal medicine.

For treatment of respiratory tract diseases different plants include; *Sida cordifolia, Anogeissus leicarpus*, *Weltheria indica, Urena lobate* and *Ceiba pentandra*were used by the inhabitants for the cured of this problem.Similar findings were reported by Galal *et al.* (2015); Keta (2016); Aisha *et al*. (2022) on the plants used to manage respiratory disease.According to Bahorun *et al.* (2004), plants with antioxidant activity can inhibit the growth of pathogens responsible for respiratory diseases. Some of the listed plants in the report of Bahorun were documented in this study collaborating the present findings. *Sida cordifolia* is the most recurring or frequently mentioned plant mention in twenty-five places by the informants to be used for treatment of cough and sore throat, common cold among others. *Weltheria indica* is said to be documented as a highly reputable medicinal herb known for the treatment of several diseases including respiratory track related diseases (Halde, 2011). *Ficus glumosa, Waltheria indica* and *Cymbopogon citrates* were reported to have anti-microbial properties (Ogbole *et al*., 2013). The most common parts used are leaves, bark and the roots by decoction or boiled as stated by the respondents. Keta (2016), has observed the same in his book guide to Ethno Medicinal use of some plants species in Kebbi state Western Nigerian

**Comment [U17]:** Treatment of the disease?

**CONCLUSION**

The listed plants are therefore said to be used of treatment of respiratory track diseases which could be a good and good source of Phytochemicals for Pharmaceutical exploitation in drug production.

## SIGNIFICANT STATEMENT

This study has recorded medicinal plants, methods of preparations and plant parts used for treatments of respiratory track related diseases in the traditional way by Zuru People of Kebbi State Nigeria. This research paper should serve as a base line data for phyto-chemical and pharmacological studies of medicinal plants in the study area.

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