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## ETHNOBOTANICAL SURVEY OF ANTI-ASTHMATIC PLANTS IN SOUTH WESTERN NIGERIA

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### Abstract

The paper presents the results of an ethnobotanical survey of plants used in the treatment of asthma in Ogun, Osun and Oyo states. Twenty markets were visited and forty-six plants belonging to thirty-three different families were collected. The plants' families represented in the collection include, Amaryllidaceae, Apocynaceae, Combretaceae, Euphorbiaceae, Moraceae, Solanaceae, Zingiberaceae and others. Most of the herbs were prescribed along with other recipes, mono-prescription was rare. Modes of administration of the phytomedicines were concoction, decoctions and powdered ash residue.

**Keywords:** Asthma, ethnobotanical survey, phytomedicines, Southwestern Nigeria.

### Introduction

Asthma is one of the most problematic diseases of the bronchial tubes. It is estimated that asthma affects approximately 10% of the population in Britain (Howell, 2000). In Nigeria, asthma affects both adult and children with greatly diverse symptoms. However, there is no statistical record of the frequency of occurrence amongst the populace. During asthmatic attacks, the patient's body is deprived of oxygen because he cannot inhale sufficient air. He feels tightness in his breathing. Asthma is considered to be a syndrome or symptom complex characterized by increased responsiveness of the tracheobronchial tree in the wide-spread swelling and narrowing of the tracheobronchial tree (Aguwa, 1986). Many things can trigger off an attack in the asthmatics. Of particular note are inhalations of dust, especially when sweeping an enclosure, of smoke from frying or the burning of dried or wet grass. It has been noted that asthmatic patients suffer more during the wet season in our geographic zone suffering from cough and cold that are the natural twin companions of the ailment.

The symptoms of persons with asthma differ greatly in frequency and degree. Some have episode that is mild and brief, otherwise they are symptom-free. Others have mild cough and wheezing much of the time, punctuated by severe increased breathlessness following exposure to known allergens, viral infections, exercise, or non-specific irritants. Children, in particular, may notice an itching sensation over the anterior neck or upper chest as an early sign of an impending attack, and dry cough, particularly at night. The cough during an acute attack sounds tight and is generally non-productive of mucus (Aguwa, 1986). The orthodox treatment for the management of acute attack and day to day therapy of asthma may involve the use of bronchodilators, expectorants and corticosteroids.

Traditionally, a number of herbs that are good for the respiratory organs are good for asthma. They can be used singly or combined. Coltsfoot (*Tussilago farfara*), Comfrey (*Symphytum officinale*),

Duckweed (*Stellaria media*), thyme (*Thymus serphyllum*) and many others are in use. *Euphorbia hirta* L. is another asthma herb. In East and West Africa, extracts of the decoction of the plant collected in the flowering and fruiting stages are used in asthma and respiratory tract inflammations and are sometimes combined with bronchial sedatives like *Grindelia robusta* in preparation for inhalation (Oliver, 1959, Kokwaro, 1976).

This study aims at providing information on the available local remedies for asthma as well as presents the mode of preparation and administration of these phytomedicines with a view to promoting further significant studies on the biological activity of the plants.

## **Materials and methods**

In the present study several herbalists and Traditional medical practitioners were visited in Ogun, Osun and Oyo states for anti-asthmatic plants. Recipes were also collected from herb sellers in various notable markets in these regions. The markets visited in Oyo state, in Ibadan town include Bode, Oranya , Ojaoba and Oremesi .In Iwo town, Idiomo and Araromi markets were visited. Markets visited in Oyo town include: Akesan market and Sabo market. In Osun state, markets visited in Ife town include: Ita-Akogun and Enuwa markets. In Ogun state in Ijebu-Ode town, Oke-Aje market was visited, in Ijebu-Igbo town, Station and Atikori markets were visited. Herb sellers and Traditional medical practitioners in these markets were questioned on their knowledge on the treatment and management of asthma disease. Most of the respondents were women and most of the recipes were only given with their known vernacular names. The herbs collected were identified and authenticated at the Forest Herbarium Ibadan (FHI) by Prof Gbile and also by comparing with herbarium collections. Voucher specimens were deposited at FHI.

## **Results**

Forty-six plants belonging to thirty-three Angiosperm families were collected as plants having anti-asthmatic properties (Table 1). Various plant parts were collected as recipes including stem, bark, fruits, leaves, bulb, seeds and flower. Generally stem barks were predominant in the prescription. Most of the herbs are prepared along with other herbs; monoprescription was rare in the data collected.

### **Enumeration of Recipes**

1. Recipes: *Olax subscorpioidea*, *Euphorbia hirta*, *Euphorbia lateriflora*, *Securidaca longipedunculata*, *Crinum jagus*, *Allium sativum*, *Tetrapleura tetraptera*  
Preparation: Washed and cut all the recipes into pieces, soak in water in a covered glass jar and leave for three days. For adult: a small tumbler-full is taken three times daily, Children: a small tumbler-full daily.
2. Recipes: *Olax subscorpioidea*, *Chasmanthera dependens*, *Calliandra portoricensis*, *Mimosa pigra*, *Securidaca longipedunculata*, *Crinum jagus*, *Allium ascalonicum*, *Tetrapleura tetraptera*  
Preparation and dosage as in 1
3. Recipes: *Chasmanthera dependens*, *Picralima nitida*, *Crinum jagus*, *Allium ascalonicum*, *Tetrapleura tetraptera*, Alum  
Preparation: Wash *Crinum jagus* and cut into pieces, mix with the scrapped portion of *Tetrapleura tetraptera* in a mortar. The mixed herbs are soaked in water with alum. The liquid extract is administered. Adult: one tablespoon-full daily. Children: (diluted form of the extract), a small spoon-full daily.
4. Recipes: *Olax subscorpioidea*, *Crinum jagus* *Tetrapleura tetraptera*, *Chasmanthera dependens*, *Gongronema latifolium*, *Xylopia aethiopica*, *Euphorbia lateriflora*, *Nauclea latifolia*, *Gossypium barbadense*, *Allium ascalonicum*.  
Preparation: Wash and cut into pieces all the herbs. A cold maceration of the ingredients is administered. Adult: a small tumbler-full once in three days. Children: one tablespoon-full once in three days.
5. Recipes: *Tetrapleura tetraptera*, *Chasmanthera depends*, *Crinum jagus*, *Allium ascalonicum*.  
Preparation: A concoction of the ingredients is made. The concoction is left for about ten hours

- for effective extraction. Adult: three tablespoons-full twice daily. Children: 1 tablespoon-full twice per day.
6. Recipes: *Tetrapleura tetraptera*, *Crinum jagus*, *Xylopia aethiopica*, *Gossypium barbadens*, *Olax subscorpioidea*, *Securidaca longepedunculata*.  
Preparation: Wash, cut into pieces and soak in water for three days, then administer. Adult: one small tumbler-full daily. Children: a small teaspoon-full daily.
  7. Recipes: *Crinum jagus*, *Chasmanthera dependens*, *Olax subscorpioidea*, *Tetrapleura tetraptera*, *Allium ascalonicum*.  
Preparation: Wash, cut into pieces and soak in water for a day, then administer. Adult: two tablespoon-full daily. Children: one teaspoon-full daily.
  8. Recipes: *Crinum jagus*, *Allium ascalonicum*, *Gossypium barbadense*, *Chasmanthera dependens*, *Olax subscorpioidea*, *Xylopia aethiopica*, *Tetrapleura tetraptera*, *Calliandra portoricensis*.  
Preparation: As in 7. Adult: a small tumbler-full once a day. Children: a tablespoon-full daily.
  9. Recipes: *Crinum jagus*, *Eugenia aromatica*  
Preparation: Washed, chopped ingredients are soaked in local gin. The preparation is left for a day before administering. Adult: 1 tablespoon-full twice daily, children: 1 teaspoon-full once in three days.
  10. Recipes: *Olax subscorpioidea*, *Calliandra portoricensis*, *Aristolochia ringens*, *Allium ascalonicum*.  
Preparation: Wash and cut the ingredients into pieces, soak in water for three days. Adult: 1 tablespoon daily, children: a small teaspoonful daily.
  11. Recipes: *Anacardium occidentale*, *Garcinia kola*  
Preparation: Extract the cashew juice and mix with sugar, cut the *Garcinia kola* into pieces and soak in the juice. Administer after a day. Adult: 1 tablespoon-ful daily, children: 1 teaspoon once in three days.
  12. Recipes: *Olax subscorpioidea*, *Mimosa pigra*, *Calliandra portoricensis*  
Preparation: The ingredients are chopped into pieces and soaked in water for three days. Adult: a small tumbler-ful daily, children: a small teaspoonful once in three days.
  13. *Khaya ivorensis*, *Terminalia ivorensis*, *Piliostigma reticulatum*, *Xylopia aethiopica*, *Uvaria chamae*, *Allium sativum*  
Preparation: As in 12. Adult: a glass cupful daily, children: half a glass cupful daily.
  14. Recipes: *Strophanthus hispidus*, *Kigelia Africana*.  
Preparation: The ingredients are chopped into pieces and soaked in warm water for three days. Adult: 1 tablespoon thrice a day, children: 1 teaspoonful once a day.
  15. Recipes: *Olax subscorpioidea*, *Calliandra portoricensis*, *Securidaca longepedunculata*, *Tetrapleura tetraptera*, *Allium ascalonicum*.  
Preparation: Chop the ingredients in pieces and soak in water. Adult: 1 tablespoon thrice a day, children: a small teaspoon once daily.
  16. Recipes: *Chrysophyllum abidum*, *Allium ascalonicum*, *Harungana madagascariensis*, *Oxytenanthera abyssinia*, *Aframomum melegueta*, *Garcinia kola*, *Acacia nilotica*, *Picralima nitida*.  
Preparation: Wash and cut into pieces the ingredients, soak in water for two days. Adult: 1 tablespoon twice daily, children: a teaspoonful daily.
  17. Recipes: *Abrus precatorius*, *Vitex doniana*  
Preparation: An infusion of *Abrus precatorius* is administered while the *Vitex doniana* is used as a rubifacient applied to the patient's chest. Adult: 1 tablespoon-ful thrice daily, children: a teaspoonful twice daily
  18. Recipes: *Bridelia ferruginea*, *Anogeissus leiocarpus*, *Anacardium occidentale*  
Preparation: Cut into pieces the ingredients and boil. Adult: a small tumbler-full thrice daily, children: a small teaspoon-full thrice daily.
  19. Recipes: *Zingiber officinale*, *Anacardium occidentale*, *Bridelia ferruginea*, *Allium ascalonicum*, *Terminalia glaucescens*, *Anogeissus leiocarpus*  
Preparation: Boil the ingredients for 30 minutes. Adult: a tumbler twice daily, Children: a teaspoon twice daily.
  20. Recipes: *Olax subscorpioidea*, *Calliandra pororicensis*  
Preparation: Cut into pieces the ingredients and soak in sugar water for three days. Adult: 1 tablespoonful once daily, children: a small teaspoonful once daily.

**Table 1:** Anti-asthmatic plants, families, local names and plant parts used

S/N	Botanical names	Family	Local names	Plant parts used
1.	<i>Abrus precatorius</i> Linn.	Papilionaceae	Omisinmisin	Leaf
2.	<i>Acacia nilotica</i> (Guill. Et. Perr.) O. Ketze	Mimosaceae	Booni	Fruit
3.	<i>Aframomum melegueta</i> K. Schum.	Zingiberaceae	Atare	Rhizome
4.	<i>Allium ascalonicum</i> Linn.	Liliaceae	Alubosa elewe	Leaf
5.	<i>Allium sativum</i> Linn.	Liliaceae	Ayuu	Bulb
6.	<i>Anacardium occidentalis</i> Linn.	Anacardiaceae	Kaju	Bark
7.	<i>Anogeissus leiocarpus</i> (DC.) Guill. & Perr.	Combretaceae	Ayin	Stem-bark
8.	<i>Anthocleista djalonensis</i> A.Chev.	Loganiaceae	Sapo	Bark
9.	<i>Aristolochia ringens</i> Vahl	Aristolochiaceae	Ako-igun	Root
10.	<i>Bridelia ferruginea</i> Benth.	Euphorbiaceae	Ira	Stem-bark
11.	<i>Calliandra portoricensis</i> (Jacq.) Benth	Mimosaceae	Tude	Root
12.	<i>Chasmanthera dependens</i> Hochst	Menispermaceae	Ato	Stem
13.	<i>Chrysophyllum albidum</i> Linn.	Sapotaceae	Agbalumo	Stem-bark
14.	<i>Cocos nucifera</i> Linn.	Arecaceae	Agbon	Fruit
15.	<i>Crassocephalum rubens</i> (Juss. ex. Jacq.) S. Moore	Asteraceae	Ebolo	Leaf
16.	<i>Crinum jagus</i> (Thoms.) Dandy	Amaryllidaceae	Ogede-odo	Bulb
17.	<i>Eugenia aromatica</i> (Linn.) Baill.	Myrtaceae	Kanafuru	Flower
18.	<i>Euphorbia hirta</i> Linn.	Euphorbiaceae	Emi-ile	Plant
19.	<i>Euphorbia lateriflora</i> Schum. et. Thonn.	Euphorbiaceae	Enu-opiri	Stem
20.	<i>Gambeya africana</i> Pierre	Sapotaceae	Baaka	Fruit
21.	<i>Garcinia kola</i> Linn.	Clusiaceae	Orogbo	Seed
22.	<i>Gongronema latifolia</i> Benth.	Asclepiadaceae	Madunmaro	Root
23.	<i>Gossypium barbadense</i> Linn.	Malvaceae	Owu	Seed
24.	<i>Harungana madagascariensis</i> Lam.	Hyperiaceae	Amuje	Bark
25.	<i>Khaya ivorensis</i> A. Juss.	Meliaceae	Oganwo	Bark
26.	<i>Kigelia Africana</i> (Lam.) Benth	Bignoniaceae	Pandoro	Stem-bark
27.	<i>Lactuca taraxifolia</i> (Wild.) Schum ex Horn Moore	Asteraceae	Yanrin	Leaf
28.	<i>Mimosa pigra</i> Linn.	Mimosaceae	Ewon agogo	Stem
29.	<i>Musa sapientum</i> Linn.	Musaceae	Ogede were	Fruit
30.	<i>Musanga cecropioides</i> R. Br.	Moraceae	Agbawo	Bark
31.	<i>Nauclea africana</i> Wild.	Rubiaceae	Egbesi	Root
32.	<i>Nicotiana tabacum</i> Linn.	Solanaceae	Taba	Leaf
33.	<i>Olax subscorpioidea</i> Oliver	Olacaceae	Ifon	Root
34.	<i>Oxytenanthera abyssinica</i> (Rich) Munro	Gramineae	Aparun	Root
35.	<i>Picralima nitida</i> (Stapf.) Th. & H. D	Apocynaceae	Erin	Fruit
36.	<i>Piliostigma reticulatum</i> (Stapf.) Th. & H. Dur	Leguminosae	Abafe, Abafin	Bark
37.	<i>Saccharum officinarum</i> Linn.	Gramineae	Ireke	Stem
38.	<i>Securidaca longepedunculata</i> Fres.	Polygalaceae	Ipeta	Root
39.	<i>Strophanthus hispidus</i> DC.	Apocynaceae	Sagere	Bark
40.	<i>Terminalia glaucescens</i> Planch. Ex Benth	Combretaceae	Idi-odan	Stem-bark
41.	<i>Terminalia ivorensis</i> Chev.	Combretaceae	Idigbo	Stem-bark
42.	<i>Tetrapleura tetraptera</i> (Schum. et. Thonn) Taub	Mimosaceae	Aidan	Fruit
43.	<i>Uvaria chamae</i> Linn.	Annonaceae	Gbogbonse	Root-bark
44.	<i>Vitex doniana</i> Sweet	Verbenaceae	Oori	Bark
45.	<i>Xylopia aethiopica</i> Linn.	Annonaceae	Eeru	Fruit
46.	<i>Zingiber officinale</i> Rosc.	Zingiberaceae	Ataile	Rhizome

## Discussion

Traditional medicinal practices are known to still be an important component of everyday life in many regions of the world (Bussmann, 2006, Bussman and Sharon, 2006, De Feo, 1992). Plants are known to provide a rich source of raw materials for traditional medicine in Africa and other parts of the developing world. There is hardly any need to stress that majority of Africans living on the continent are forced to resort to traditional practitioners and to use traditional medicine for the continued maintenance of their health and also to alleviate their diverse sufferings. This practice which has considerable economic importance within the cultural milieu of Africa has never been properly codified and standardized.

During the course of the ethnobotanical survey for anti-asthmatic plants, various plants were given as remedies for asthma with the supposedly enough volume / quantity for dosage. This problem of determining the right volume of the herbal preparation that will just be sufficient as remedy for the disease was much confronted during the surveys. There were diversities in the preparation and use of the herbal medicines in the different markets surveyed. For instance, the remedies given at Gate and Orita-Aperin markets in Ibadan were almost the same but there is a wide range of variation in the dosages given. Indeed one of the best-justified criticisms of herbal medicines is the difficulty in determining dosages of bioactive ingredients due to this inherent variation.

A number of medicinal plant species has been shown to be biologically active against various illnesses (Abena et al, 2007, Ajaiyeoba and Fadare, 2006, Ogundare et al, 2006, Neto et al, 2002; Vilegas et al, 1997). Some of the plants encountered in this survey have also been worked upon by Scientists. Odebisi and Sofowora (1978) reported alkaloids and tannins from the leaves of *X. aethiopica*; Puri and Talata (1964) reported essential oils and glycosides from the root, bark leaves and fruits of the same plants. Fruit extract of *Kigelia africana* was reported to have molluscicidal properties by Adewumi and Sofowora (1980). Several alkaloids were isolated from *Picralima nitida* (Oliver et al., 1965, Pousset et al., 1965). Iwu and Igboho (1982) established the chemical constituents from the extractive of *Garcinia kola* seeds as flavonoids namely apigenin fisetin and biflavanoid ametoflavone. Such findings have proved the efficacy of some of the plants already worked upon. However, there are some of the plants whose constituents have not been verified. From the general point of view, it has been observed that asthma patients, irrespective of their class in the society or social background avail themselves of the services of both the conventional doctors and the traditional medical practitioners. It would appear that more than ever before, the need for the two types of health care to exist will continue to increase.

Based on the findings on the chemical constituents of the various plant specimens collected, it has been discovered that all anti-asthmatic drugs took their origins from plants. Mineral resources are occasionally part of the herbal preparations. The standard attained in modern medical practice on the treatment of asthma is therefore as a result of continued scientific study and investigation which have thus produced a wealth of information about the nature and physiological activity of the many compounds extracted from plants. Much of the modern scientific medicines have evolved from traditional medicines and this is why in our present circumstances, we must give our traditional system an objective and critical examination.

## References

1. Abena, A. A., Gbenou, J.D., Yayi, E., Moudachirou, M., Ongoka R.P., Ouamba, J.M.,and Silou, T. (2007). Comparative chemical and analgesic properties of essential oils of *Cymbopogon nardus* (L.) Rendle of Benin and Congo. *Afr. J. Trad. CAM* 4 (2): 267-272
2. Adewunmi, C. O. and Sofowora, E. A. (1980). Preliminary screening of some plant extracts for molluscicidal activity. *Planta Medica* 39: 57-65.
3. Aguwa, C. N. (1986). Therapeutic basis of chemical Pharmaconosy (check title??) in the Tropics. Macmillian Publishers Ltd. London & Basinstocke.
4. Ajaiyeoba, E.A. and Fadare, D. A. (2006). Antimicrobial potential of extracts and fractions of the African walnut-*Tetracarpidium conophorum*. *Afr. J. Biotech.* 5 (22): 2322-2325
5. Bussmann, R. W. (2006). Manteniendo el balance de naturaleza y hombre: La diversidad floristica

- andina y su importancia por la diversidad cultural- ejemplos del Norte de Peru y Sur de Ecuador. *Arnaldoa* 13 (1-2): 382-397
6. Bussmann, R. W. and Sharon, D. (2006). Traditional plant use in Northern Peru: Tracking two thousand years of health culture. *J. Ethnobiology and Ethnomedicine* 2: 47
  7. De Feo, V. (1992). Medicinal and magical plants on Northern Peruvian Andes. *Fitoterapia* 63: 417-440
  8. Howell, J. (2000). Asthma: Clinical descriptions and definitions in Buse W., Holgate S. *Asthma and rhinitis*. Vol. 1. Oxford, Blackwell Science.
  9. Iwu, M. M. and Igboko, O. (1982). In Sofowora (1986). The state of medicinal plants research in Nigeria. University of Ife Press??pp. 39-85
  10. Kokwaro, J. O. (1976). Medicinal plants in East Africa. East African Literature Bureau Nairobi.
  11. Neto, C. C., Owens, C. W., Langfield, R.D., Comeau, A. B., Onge, J. S., Vaiseberg, A.J., and Hamond, G.B. (2002). Antibacterial activity of some Peruvian medicinal plants from Callejou de Huaylas. *J. Ethnopharmacol.* 79: 133-138
  12. Odebiyi, O. O. and Sofowora, E. A. (1978). Phytochemical screening of Nigerian medicinal plants II. *Lloydia* 41 (3): 234-246
  13. Ogundare, A. O., Adetuyi, F. C. and Akinyosoye, F. A. (2006). Antimicrobial activities of *Vernonia tenoreana*. *Afr. J. Biotech.* 5 (18): 1663-1668
  14. Oliver, B. (1959). Medicinal plants in Nigeria, Nigerian College of Arts, Science and Technology, Ibadan, Nigeria. Pp. 138
  15. Oliver, L. Levy, J. Le Men, J. and Janot, M. (1965) Structure et Configuration de picraline psudo-akuammigine, akuammine et akuammiline (dernes indolinques) Bulletin de la Societe Chimique de France, 868-876
  16. Poussset, J., Poisson, L., Oliver, L., Le Men, J. and Janot, M. (1965) Sur la structure de la desacetyl-et desfermo-akuammiline et de l'akuammiline (alkaloids indoliques). Comptes Rendus de l'Academie des Sciences 261, 5538-5541
  17. Puri, S. G. and Talata, D. (1964). A survey of some plants used in native medicine of West Africa of interest to India. Paper presented in A symposium on Recent Advances in the Development, production and utilization of medicinal and Aromatic plants in India. India. Pp. 35
  18. Vilegas, L. F., Fernandez, I. D., Maidonade, H., Tarres, R., Zavaieta, A., Vaiseberg, A. J. and Hammond, G.B. (1997). Evaluation of the wound-healing activity of selected traditional medicinal plants from Peru. *J. Ethnopharmacol.* 55: 193-200