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Survey of Anti-Inflammatory Plants Sold on Herb Markets in Lagos Nigeria

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Abstract: Ethnobotanical survey conducted presents findings on medicinal plants commercialized and used for the treatment of inflammatory diseases in the major herb markets in Lagos metropolis. Data were collected through direct interview with traditional herb sellers using unstructured questionnaires. Study revealed a total of 41 plants species belonging to 23 families. Botanical and local names, plant part used, methods of preparation and administration are described. The part of the plants most frequently used was the leaves 55%, stem bark (14%), root (11%), whole plant (9%), sap (5%), aerial parts, flowers and fruits (2%) each. There was a high degree of informant consensus for the family Sapindaceae while oral and topical routes of administration are commonly employed.

Key words: Ethnobotany, medicinal plant market, traditional knowledge, inflammatory diseases, Lagos, Nigeria

INTRODUCTION

Approximately two thirds of the biological diversity of the world is found in tropical zones, mainly in developing countries.

Inflammatory diseases including arthritis and rheumatism continue to be a longstanding medical problem and a major cause of morbidity throughout the world. Since the discovery of aspirin from Willow's bark (*Salix alba*), more than 100 years ago, many steroidal, as well as non-steroidal anti-inflammatory drugs have been introduced. However, the prolonged use of most of these medications reportedly causes renal problems, gastrointestinal irritation and other adverse side effects (Bertolini *et al*., 2001). Thus, global interest has been aroused to discover potent anti-inflammatory molecules from plants which are traditionally used for aches, fever and rheumatic pain (Basu and Hazra, 2006).

Interviewing traditional healers for accurate information about medicinal recipes, their component herbs and their medicinal and other uses constitutes an important activity in ethnopharmacological field investigation (Lipp, 1989). The knowledge and experience of a traditional healer is considered valuable as it comes from thousands of years of trial and error and forms the basis of modern medicine and therapeutics. Majority of herbal ingredients used by traditional healers are collected from the wild directly by these healers or bought from market places.

Market places found in many cities and towns are rich sources of ethnobotanical information. They are places of intensive interaction between people (vendors and consumers) and plants (Nguyen, 2005). There are specific stalls for medicinal plants and even some markets are dedicated to the sale of fresh and dried herbs, mixtures and tinctures, as well as ritual and religious items. These special markets serve as herbal pharmacies for many people in the rural areas and cities of most African countries. In Nigeria and among the Yoruba speaking people, a group of herbal practitioners who deals with the collection and trade of herbs in these markets are referred to as Elewe Omo. They are often consulted by high and low income group for wide variety of illnesses and disease conditions. These are managed and treated using locally available medicinal plants.

Lagos is located in the south west geopolitical zone of Nigeria and is the country's largest city, chief port and principal economic and cultural center. It falls between Latitude 6.58°N and Longitude 3.33°E. The urban area of Lagos, called Metropolitan Lagos in Nigeria, extends over 16 of the 20 Local Government Areas of Lagos State (Fig. 1) and contains more than 90% of the population of Lagos State.

Considering the need to discover potent and safe anti-inflammatory chemical molecules, the popularity and the frequency at which these set of practitioners are consulted by the people, ethnobotanical information was sought among herb vendors in some major markets in

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Fig. 1: Lagos metropolis areas that patronize the markets covered by the survey

metropolitan Lagos for the treatment of inflammatory diseases, with the aim together information on plant species and plant parts used, their vernacular names, mode of preparations, methods of administration and to assess knowledge consensus among informants.

MATERIALS AND METHODS

Study design: Ethnobotanical data (local name, mode of preparation, medicinal uses) on plant species often found in the market and used for the treatment of inflammatory diseases were collected through oral interviews and discussions among 60 women herb vendors in Mushin, Oyingbo and Agege markets from June 2004 to March, 2005. The herb vendors to be interviewed were selected randomly and no appointments were made prior to the visits. Present study sought the definition of inflammation and inflammatory disorders, their perception of these conditions, descriptive responses on the plants, such as part of the plant used, local names, detailed information about mode of preparation (i.e., decoction, paste, powder and juice), form of usage either fresh or dried, mode of administration and specific complementary for the preparations of the remedies. Discussions were in Yoruba language (the local language spoken by the herb sellers in the study area) using unstructured questionnaires. Interviews were built on trust with the common goal to improve the health situation in the country and to preserve and increase the knowledge on medicinal plants. We bought the medicinal specimens in order to gain their confidence and to cooperate economically with them as earlier reported by Macia *et al*. (2005). The identity of these plants were confirmed by comparing with herbarium specimens at the Forest Research Institute of Nigeria, Ibadan courtesy of Mr. Wale Ekundayo and voucher specimens were deposited in the herbarium of Pharmacognosy department, University of Lagos, Nigeria.

RESULTS AND DISCUSSION

Popular markets known to house the trade of medicinal plants in Lagos metropolis are Mushin, Oyingbo and Agege. These markets are filled with traditional shops with stalls and shelves simply arranged. Customers to these markets are primarily traditional healers and sometimes patients seeking treatment from the traders that are traditional healers. On designated market days, farmers who serve as commercial collectors bring in fresh herbs to sell from neighbouring towns and villages outside the metropolis. Majority of the herb traders in these markets are women with little or no education.

This study revealed 41 plant species belonging to 23 families that are sold and used for the treatment of inflammatory diseases in three major herb markets in Lagos metropolis (Table 1). Of the 23 families the most predominant in terms of number of species was the Sapindaceae with five species (Table 1). The use of leaves accounted for 55%, while that of stem bark and root are 14 and 11%, respectively. In some cases the whole part of the plants is sold and used. Specific plant parts like sap are recorded for plants such as *Alstonia boonei* and *Chasmanthera dependens*.

Table 1: Medicinal plants sold and used in lagos metropolis markets for the treatment of inflammatory diseases

Botanical name	Family	Local name	Part used	Preparations
Acanthus montanus (Nees) T. Anderson	Acanthaceae	Ahon-ekun, Eekun-arugbo	Leaves	Infusion taken thrice daily
Achyranthes aspera Linn.	Amaranthaceae	Aboro, Ehimagbo	Whole plant	Boiled in water and used as a drink
Cythula prostrata (L.) Blume.	Amaranthaceae	Areyinkosun, Sawerepepe	Leaves	Crushed with alcohol and used as a poultice
Alternanthera repens (L.) Kuntze	Amaranthaceae	Dagunro	Leaves	Decoction used as tea
Monodara myristica (Gaertn.) Dumal	Annonaceae	Dario, Lakose	Leaves and barks	Chopped fresh leaves applied on inflamed sores.
Strophanthus hispidus Oliv.	Apocynaceae	Isagere	Leaves	Decoction taken as tea
Alstonia boonei De Wild.	Apocynaceae	Ahun, Awun	Leaves, sap and stem bark	Topical application of the latex on the swollen part and leaf infusion drunk as desired
Funtumia africana (Benth.) Stapf.	Apocynaceae	Ako-ire	Leaves	Decoction taken as tea
Ageratum conyzoides Linn.	Asteraceae	Imi-esu	Leaves and flowers	Infusion drunk twice daily and chopped fresh leaves applied on inflamed sores.
Ritchiea capparoides (Andr.) Britten var. *longipedicellata* (Glig) De Wolf	Capparidaceae	Logbokiya, Ologbe-kuyan	Leaves	Boiled in water and used as a drink
Salacia pallescens Oliv.	Celastraceae	Elewekan	Leaves	Crushed with alcohol and used as a poultice
Combretum racemosum P.Beauv.	Combretaceae	Ogan, Ogan pupa	Leaves	Leaf infusion administered orally
Terminalia ivorensis A.Chev.	Combretaceae	Epepe, Afara dudu, Ipepe	Bark	Extract of bark taken as tea
Aspilia africana (Pers.) C.D.Adams	Compositae	Ako yunyun, Yinrin-yinrin	Leaves	Chopped fresh leaves applied on inflamed sores.
Eclipta alba (Linn.) Hass K.	Compositae	Abikolo, Arojoku	Leaves	boil leaves and drink as desired
Hymenocardia acida (Tul.)	Euphorbiaceae	Orunpa	Leaves	Infusion taken twice daily
Alchornea cordifolia (Schmach. and Thonn.) Mull.Arg.	Euphorbiaceae	Ewe-ifa, Usin-in	Leaves	Ground leaves applied to the aching places and wounds
Terapleura tetraptera (Taub)	Fabaceae	Aridan, Aidan	Fruits	Decoction and infusion, drunk twice daily
Abrus precatorius Linn.	Fabaceae	Oju-ologbo, Omisinmisin	Leaves and stem	Decoction and infusion, drunk as desired
Icacina tricantha Oilv.	Icacinaceae	Gbegbe	Leaves	Infusion with *Lecaniodiscus cupanioides* drunk as desired
Ocimum basilicum Linn.	Labiatae	Efinrin-wewe	Whole plant	Infusion drunk once daily
Entadrophragma cylindricum Sprague	Meliaceae	Ijebo, papala	Bark	Macerated in alcohol and used as a drink
Ekebergia senegalensis A.Juss	Meliaceae	Orumu	Leaves	Infusion drunk as tea
Chasmanthera dependens Hochst.	Menispermaceae	Ato oloriraun	Leaves and sap	Decoction of leaves taken thrice daily or 2 weeks
Triclisia subcordata Oliv.	Menispermaceae	Alugbonron, Alugbin-rin, Osan-aparo	Leaves	Used as infusion with leaves of *Hymenocardia acida*
Microdermis puberula Hook. F.	Pandaceae	Esunsin, Osusun	Fruit and leaves	Boiled in water and used as a drink
Lonchocarpus cyanescens (Schum. and Thonn.) Benth.	Papilionaceae	Elu	Roots and stem	Macerated in Alcohol and used as a drink
Desmodium triflorum DC.	Papilionaceae	Atiponna	Whole plant	A powder is made and taken with pap
Dalbergia saxatilis Hook. F.	Papilionaceae	Ogundu, Paran	Leaves	Decoction used as tea
Parquetina nigrescens (Afzel.) Bullock	Periplocaceae	Ogbo	Sap and Leaves	Mixed with coconut oil and applied to inflamed joint
Pepperomia pellucida (Linn.) HBK	Piperaceae	Rinrin	Aerial part	Squeezed juice used for eye inflammation and headache
Plumbago zeylanica Linn.	Plumbaginaceae	Inabiri	Roots and leaves	Decoction with *Hymenocardia acida*
Carpolobia lutea G. Don.	Polygalaceae	Otupe, Osunsun	Stem-bark, leaves and roots	Boiled in water and used as a drink. Root powdered and drink with pap.
Securidaca longipedunculata Fres.	Polygalaceae	Ipeta	Leaves and root.	Paste of root bark and leaf is applied externally to cure rheumatism and sores
Chassalia kolly (Schumach.) Heppner	Rubiaceae	Isepe agbe, Tutugbo, Okun-adie	Leaves	Extract of bark taken as tea
Lecaniodiscus cupanioides (Planch)	Sapindaceae	Akika, Aka-isin	Roots and leaves	Two teaspoon extract prepared from the root bark is taken daily orally early in the morning for 15 days and up to 3months to cure arthritis and rheumatism

Table 1: Continued

Botanical name	Family	Local name	Part used	Preparations
Allophylus africanus P. Beauv.	Sapindaceae	Akanro, Akaraesu	Bark, root and leaves.	Boiled in water and used as a drink
Paullinia pinnata Linn.	Sapindaceae	Kakasenla, Ogbe-okuje	Leaves	Boil leaves and drink as desired
Cardiospermum grandiflorum Swart	Sapindaceae	Ako-ejirin	Whole plant	Leaves mixed with castor oil are administered internally to treat rheumatism and check lumbago
Zanha golungensis Hiern	Sapindaceae	Nago gorii raya	Leaves	Chopped fresh leaves applied on inflamed sores.
Schwenkia americana Linn.	Solanaceae	Igbale odan, Oju-isin	Whole plant	Crushed and used as a poultice

The vendors involved in this study are mostly illiterate and their perception of inflammatory diseases are classified under several folk categories, which according to the symptoms described, boils, skin infections, rheumatic pains and various swellings on the body are included. Most of the plants sold on these markets are gathered exclusively from the wild by the vendors. Generally, dried parts of the plants are found on sale except in few cases when the traders have just got them fresh from the wild or when specially requested by a buyer.

The methods of preparation vary. Decoctions and infusions are the most frequently used. Medical administration included oral administration, poultice and plant parts applied as paste. The prescriptions by the herb sellers are either preparation based on single plant part or a combination of several plant parts. The use of more than two species is however common. In this study for example, the leaves of *Hymenocardia acida* and the root of *Securidaca longepedumculata* are often used in more than one of the preparations. The herb sellers believe that combination of several plant parts cures diseases rapidly and that this takes care of other signs and symptoms of the disease. This observation is close to the report of the ethnobotanical survey of the Kani tribals in Kouth Alai of Tirunelveli hills, India (Ayyanar and Ignacimuthu, 2005).

The frequent mention on the use of *Lecaniodiscus cupanioides*, *Dalbergia saxatilis*, *Ekebergia senegalensis*, *Allophylus africanus* and *Hymenocardia acida* in the recipes given by the informants in the three markets visited was noted as a high level of fidelity.

A literature search on biological activity on most of the plants in (Table 1), revealed limited information on many of the plants, especially regarding their use as anti inflammatory. However, experimental evidence, that is the demonstration of anti- inflammatory activity in tested animals, has been reported for some species, including *Alstonia boonei* (Olajide *et al*., 2000); *Chasmanthera dependens* (Morebise, *et al*., 2001) and *Acanthus montanus* (Adeyemi *et al*., 2004).

A number of plants mentioned in the literature as having anti-inflammatory properties (Iwu and Anyanwu, 1982; Akah and Nwambie, 1994), were not mentioned by the vendors in our survey. To the best of our knowledge, this is the first time ethnobotanical investigation is carried out in the study area. This study has therefore revealed more medicinal plants used in the treatment of inflammatory diseases and that medicinal plant still play a very vital role in the primary health care of the people. Research is in progress on the phytochemical and pharmacological aspects of some of these plants.

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