



## MARKET SURVEY OF SPICES AND VEGETABLES OBTAINED FROM FOUR MARKETS IN LAGOS METROPOLIS



Aderopo Akinsoji

Department of Botany, University of Lagos, Nigeria

[drpknsj@gmail.com](mailto:drpknsj@gmail.com)

Received: May 27, 2017 Accepted: August 26, 2017

**Abstract:** A survey of spices and vegetables in four markets in Lagos metropolis was carried out. Sixteen species of spice plants belonging to nine Families were recorded. The Family Zingiberaceae had three species (18.75%). The Families Annonaceae, Liliaceae, Solanaceae, Lamiaceae and Piperaceae had two species (12.5%) each while Myristicaceae, Myrtaceae and Fabaceae Families had one species (6.25%) each. Nineteen species of vegetables belonging to ten Families were recorded from the markets. These were dominated by The Families Solanaceae and Cucurbitaceae with four species (21%) each. The Family Asteraceae had three species (15.7%) while Amaranthaceae had two species (10.5%). The Families Apiaceae, Cruciferae, Gnetaceae, Malvaceae, Portulacaceae and Tiliaceae had one species (5.2%) each. Most of these vegetables were leafy vegetables (52.6%) while 42.1% were fruits while 5.2% was a root tuber. One of the leafy vegetable *Gnetum africanum* is overexploited hence the need to domesticate and cultivate it. The medicinal properties are documented. Marketing of vegetables contributes to family upkeep as women dominate the processing and marketing. The increasing population of Lagos will result in higher demand and this requires that conservation action must be put in place to ensure future availability.

**Keywords:** Lagos, markets, medicinal, Solanaceae, spices, vegetables, Zingiberaceae

### Introduction

The history of culinary art has been accompanied by an increasing use of various vegetables and spices (Purseglove *et al.*, 1988) and modern dishes are being flavoured by materials from this group of substances (Manandhar, 1995). Spices are an important group of flavouring materials which also have medicinal values (Hocking, 1969). The first International Conference on the repression of fraud in Geneva in 1980 adopted the definition of spice as a vegetable substance of indigenous origin or exotic origin which is aromatic or has a hot, piquant taste used to enhance the flavour of foods or to add to the stimulant ingredients in them (Borgert, 1993). Spices are distinguished from condiments. While spices are derived from a single botanical species, condiments are a mixture of substances derived from more than one botanical species. Spices can be obtained from different parts of plants; thyme from leaves, chillies from fruits, nutmeg from kernel and clove from floral part. They are characterized by strong odour, sweet, bitter or pungent tastes and they are appetizers (Solomon, 1990). They add flavour to foods, stimulate appetite, increase flow of gastric juices, increase perspiration rate and cooling of the body (Kochlar, 1986). They contain essential oils and oleoresins which are used in making seasonings in food manufacturing industries, perfumery and cosmetics, hair oils and toothpaste (Ram and Ram, 1989). Macmillan (1984) associated the antiseptic and preservative properties of certain spices to these essential oils. Spices have been extensively used in history for flavouring and seasoning foods and medicines. (Stethberger *et al.*, 1960). They are also known to have curative values. For example, *Ocimum gratissimum* leaves are used for treating fever and kidney diseases (Simpson and Ogorzally, 1986, Akinsoji and Oke, 2010). Spices are also reported to be important in diets of post-partum women as an aid to the contraction of the uterus (Achinewuet *et al.*, 1995).

Vegetables are edible portions of herbaceous plants that are either eaten raw or cooked (Anon., 1987). They are eaten with main course of a meal as boiled or salted, or eaten as salads. Thus tomatoes, peppers, cucumber, okra and egg plants are referred to as vegetables even when they are botanically fruits. Some of them that are consumed as leaves such as *Amaranthus*, *sp.*, *Celosia* *sp.*, and *Corchorus* *sp.* are called leafy vegetables. Vegetables are nutritionally important because they supply many nutritive elements to make up a

balanced diet. Some of the nutritive elements include Iron (Fe), Calcium (Ca), Magnesium (Mg) and vitamins. Vegetables also act as roughages which aid in muscular activities in the alimentary canal thus preventing constipation. Spices and vegetables are nourishing and they contain a little of all substances that a human body needs such as proteins, mineral salts, aromatics and essential oils that increase resistance to diseases (Kochlar, 1986). Hence they are important in human health. Some of these plants occur in the wild and many are cultivated and brought to Lagos markets for consumers. This study was designed to document the spices and vegetables sold in Lagos markets and their importance.

### Materials and Methods

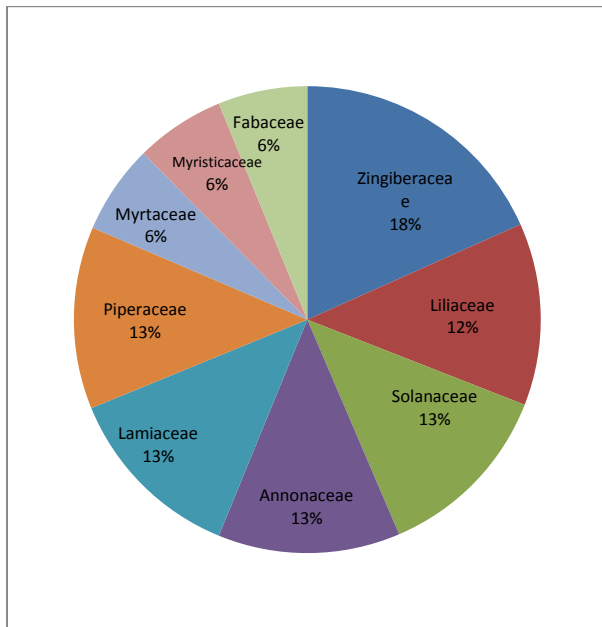
The survey was conducted in four selected markets in Lagos metropolis. These markets were Bariga, Mushin, Oshodi and Oyingbo markets. In each market, five traders to be interviewed were randomly selected. The traders were interviewed orally using a guided questionnaire adapted from Martin (1995). The interviews were conducted in Yoruba language hence the names of the plants were collected in Yoruba Language. The botanical names were derived from Gbile (1984). After the individual interviews, there was a meeting with all of them to review the information obtained from the interview and discuss other issues pertaining to their trade and the uses of the plants. The data for the four markets were then pooled and validity was verified by triangulation (Walter, 1998). In addition to information obtained from the traders, the medicinal values of the plants were obtained from Dalziel (1948), Adodo (2000), Schippers (2000), Bown (2013) and Orafidiya, (2013).

### Results and Discussion

Sixteen species of spice plants distributed in nine Families were recorded from the four markets (Table 1). The Family Zingiberaceae was represented by 3 species (18.5%), Families Liliaceae, Solanaceae, Annonaceae, Lamiaceae, and Piperaceae had 2 species (12.75%) each while Myrtaceae, Myristicaceae and Fabaceae had one species (6.25%) each (Fig. 1). The species are herbaceous except *Monodora*, *Syzygium* and *Tetrapleura* which are trees. Herbs have served as repository of healing materials and have been acknowledged to be safe without or with minimum side effects (Gbile and Adesina, 1986).

**Table 1: Spice plants recorded from Lagos markets**

Species	Family	Common Name	Medicinal Uses
<i>Aframomum melegueta</i> K. Schum.	Zingiberaceae	Alligator pepper	Antiviral, hypertension
<i>Alium cepa</i> Linn.	Liliaceae	Onion	Asthma, antibiotic, hypotension, cough, convulsion
<i>Alium sativum</i> Linn.	Liliaceae	Garlic	Malaria
<i>Capsicum annum</i> Linn.	Solanaceae	Cayenne pepper	skin diseases, hypertension, ulcers, Dysentery, malaria
<i>Capsicum frutescens</i> Linn.	Solanaceae	Chilli pepper	Malaria, fever, dysentery, carminative
<i>Curcuma domestica</i> Valetton	Zingiberaceae	Turmeric	Rheumatism, wound treatment, gonorrhoea
<i>Monodora tenuifolia</i> Benth.	Annonaceae	African nutmeg	Anti-inflammatory, antiseptic, blood purifier, anticancer
<i>Myristica fragrans</i> Houtt	Myristicaceae	Nutmeg	Dysentery, body itch, toothache
<i>Ocimum gratissimum</i> Linn.	Lamiaceae	Scent leaf/bush tea	Restoring overdue menstruation
<i>Piper guineense</i> Schum. & Thonn.	Piperaceae	Guinea pepper	Antiseptic, malaria, kidney disorder, cough, catarrh, diarrhoea
<i>Piper nigrum</i> Linn.	Piperaceae	black pepper	Antiviral, Stomach upset, antihelminthic
<i>Syzygium aromaticum</i>	Myrtaceae	Clove	Dyspepsia, pile, boils, rheumatism
<i>Tetrapleuratetrapetra</i> Schum & Thonn	Fabaceae		Cough, asthma, purgative
<i>Thymus vulgaris</i>	Lamiaceae	Thyme	Pile, waist pain, antitumor, molluscidal
<i>Xylopi aethiopica</i> (Dunal) A. Rich.	Annonaceae	Ethiopian pepper	Antiseptic, carminative, expectorant
<i>Zingiber officinale</i> Ross	Zingiberaceae	Ginger	Bronchitis, skin rashes, Sore throat, stomach problems, carminative, tooth ache, pile
			Stomach upset, small pox, Rheumatism, Anti-viral, diabetes

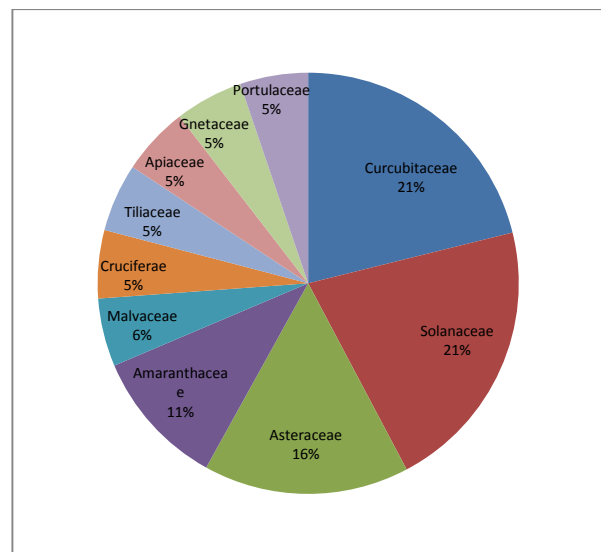


**Fig. 1:** Percentage occurrence of spice plants families recorded in Lagos markets

The parts of the plants used for medicinal purposes are presented in Table 2. The most common parts used for medicinal purposes are fruits and seeds (Ram and Ram, 1983). Table 2 also shows that the parts containing the medicinally active substances are storage organs such as fruits and seeds (*Alium*, *Piper*, *Xylopi a*, *Monodora*, *Capsicum* and *Myristica*); rhizome (*Aframomum* and *Zingiber*) and rarely leaves (*Piper*). Some spices are sold as whole parts (ginger, garlic and onion) while others are sold as dry powders and in dry forms they keep much longer on the shelves. Although Stethberger *et al.* (1960) stated that spices have been extensively used in history for flavouring and seasoning foods and beverages, this study showed that they are known more for their medicinal importance than culinary uses.

**Table 2: Parts of spice plants used for medicinal purposes**

Species	Parts
<i>Aframomum melegueta</i>	leaf, fruit, seed
<i>Alium cepa</i>	bulb
<i>Alium sativa</i>	bulb
<i>Capsicum annum</i>	fruit
<i>Capsicum frutescens</i>	fruit
<i>Curcuma domestica</i>	rhizome
<i>Monodora tenuifolia</i>	seed
<i>Myristica fragrans</i>	seed
<i>Ocimum gratissimum</i>	leaf, whole plant
<i>Monodora tenuifolia</i>	seed
<i>Piper guineense</i>	leaf, fruit
<i>Piper nigrum</i>	fruit, seed
<i>Syzygium aromaticum</i>	flower bud
<i>Tetrapleuratetrapetra</i>	fruit
<i>Thymus vulgaris</i>	leaf
<i>Zingiber officinale</i>	rhizome



**Fig. 2:** Percentage occurrence of vegetable plants families recorded in Lagos markets

Nineteen species of vegetables belonging to ten Families were recorded from the markets (Table 3). They were dominated by Families Curcubitaceae and Solanaceae with four species

(21%) and Asteraceae with three species (15.7%). The Family Amaranthaceae had two species (10.5%) while the Families Apiaceae, Cruciferae, Gnetaceae, Malvaceae, Portulacaceae and Tiliaceae had one species (5.2%) each (Fig. 2). Ten (52.6%) Of the vegetables are leafy vegetables, eight (42.1%) are fruits while one (5.2%) is a root tuber. Most of the vegetables are cultivated but *Gnetum africanum* and *Crassocephalum crepidioides* occur naturally in the wild. *Gnetum africanum* originally occurs as an evergreen vine in the Oban highlands of Cross River State of Nigeria. It is available all year round unlike the others that are available only during the rainy season. Thus there is widespread consumption of *Gnetum* in Nigeria and it is being exported to Cameroon. Even the dried leaves are exported to Europe and USA for consumption by Nigerians and Cameroonians in diaspora (Schippers, 2000). The increasing demand for

*Gnetum* has necessitated the need for its cultivation. However, large scale exploitation is not sustainable so horticulturist and scientists must adopt modern methods of propagation to ensure continuous availability of the vegetable. This may combine stem cutting propagation and possibly tissue culture methods. *Crassocephalum* grows in the wild during the rainy season (Schippers, 2000). Increasing demand may require domestication and alternative propagation methods. Most of the vegetables are sourced from nearby Ogun State but about 1 – 2% are sourced from the urban and peri-urban horticulturists who cultivate the more common vegetables such as *Amaranthus hybridus* and *Celosia argentea* in open places within the metropolis. Their supply to the market is higher in the dry season when it is said to go up to 5%.

**Table 3: Vegetables recorded from Lagos markets**

Species	Family	Common Name	Medicinal Uses
<i>Abelmoschus esculentus</i> Linn	Malvaceae	Okra	Increase sperm count
<i>Amaranthus hybridus</i> Linn.	Amaranthaceae	Amaranth	Antihelminthic, pulmonary problems, laxatives
<i>Brassica oleracea</i> Linn.	Cruciferae	Cabbage	Anticancer
<i>Celosia argentea</i> Linn.	Amaranthaceae	Lagos spinach	Diuretic
<i>Citrullus lanatus</i> (Thunbery) Matsum. Nakai	Curcubitaceae	Water melon	Malaria
<i>Corchorus solitarius</i> Linn.	Tiliaceae	Jute mallow	Laxative, blood purifier
<i>Crassocephalum crepidioides</i> (Benth.) S. Moore	Asteraceae	Wild lettuce	For indigestion, Nose bleeding, Stomach ache
<i>Cucumis sativus</i>	Curcubitaceae	Cucumber	Anticancer
<i>Curcubita maxima</i> Duch.	Curcubitaceae		Fever
<i>Daucus carota</i>	Apiaceae	Carrot	Diabetes, antioxidants, heart disease
<i>Gnetum africanum</i> Welw.	Gnetaceae	Afang/Okazi	High blood pressure
<i>Lactuca sativa</i> Linn.	Asteraceae	Wild lettuce	Chest pain, Laxative
<i>Lycopersicon esculentum</i> Mill.	Solanaceae	Tomato	Antifungal, Analgic, Antibiotic
<i>Solanum aethiopicum</i> Linn.	Solanaceae	Garden egg	Sedative, Vomiting
<i>Solanum melongena</i>	Solanaceae	Egg plant	
<i>Solanum macrocarpon</i> Linn.	Solanaceae	Egg plant	For boils and sore throat
<i>Talinum fruticosum</i> (L.) Juss.	Portulacaceae	Water leaf	Laxative, High blood pressure
<i>Telfairea occidentalis</i> Hook	Curcubitaceae	Fluted pumpkin	Anaemia
<i>Vernonia amygdalina</i> Diels.	Asteraceae	Bitter leaf	Pile, Diarrhoea, Hepato-protective, skin disease, haemorrhoids

Generally, income from vegetable marketing is perceived to be small compared to trading in other commodities whereas they are significant enough to contribute to family upkeep. It is also significant that women dominate the processing and marketing of vegetables. Over 80% of Nigerian population depends on traditional medicines (Akinsoji, 2003, Akinsoji and Oke, 2010) because of the high cost of orthodox health care delivery where available. The increasing population of Lagos will result in higher demand for spices and vegetables for medicinal purposes. The increased demand has led to rising cost of herbs (Akinsoji and Oke, 2010). As demands continue to increase there is need to put in place conservation action to ensure availability of these plants in future.

**Conclusion**

Spices are well known for flavouring foods but they possess medicinal properties which are due to bioactive substances in their storage organs. This is why the parts used for therapeutic purposes are the fruits and seeds. Similarly vegetables are known to have nutrients for the well-being of consumers. They are also known to have medicinal properties but the bioactive substances are located in their leaves. Marketing of spices and vegetables have become important as a source of income for mostly women that are involved. However, due to large scale exploitation which is becoming unsustainable, scientists must adopt modern methods of propagation of these plants.

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