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Commonly Bought Spices and Their Purposes of Use among Buyers and Sellers in Cape Coast, Ghana

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Abstract
Spices are essential in culinary and traditional practices across Ghana. This study identified the commonly bought spices and explored their purposes of use among buyers and sellers in the Cape Coast Metropolis. An exploratory sequential mixed-method design was employed involving 48 respondents (24 sellers and 24 buyers) from the Abura and Koto koraba markets. Semi-structured interviews and observations were used to collect data, analyzed using descriptive statistics and thematic analysis. Results revealed that ginger, garlic, chili pepper, and cloves were the most commonly bought and sold spices, followed by bay leaf, aniseed, grains of paradise, negro pepper, African nutmeg, and rosemary. The primary purposes for using these spices included culinary, health, preservative, and spiritual reasons. The findings underscore the importance of spices in local diets, health, and culture. Consumer education on safe handling and promotion of indigenous knowledge on spice use are recommended.

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1. Introduction

Spices play a central role in food preparation, preservation, and traditional medicine across the world. They are derived from various plant parts, including roots, seeds, bark, and fruits, and valued for enhancing the flavor, aroma, and colour of foods (Aberie, Sallilh, & Tarekegn, 2021) [1]. Beyond their culinary uses, spices contain bioactive compounds that offer antioxidant and antimicrobial benefits (Nordin & Selamat, 2013). In Ghana, spices such as ginger, garlic, and chili pepper are widely used in soups, stews, and beverages. However, limited research exists on the types of spices most frequently purchased and their perceived purposes of use, particularly within the Cape Coast Metropolis. Understanding these aspects provides insight into local consumption patterns and informs public health and consumer education strategies.

2. Literature review

Classification of Spices

Many classifications exist, however, for the sake of this work, that of Chhetri, Vijayan, Bhat, Gudade and Bora (2018) [10], and Raghavan (2007) have been merged as follows:
Classification based on plant part used
Aril: Mace and anardana are obtained from the aril that surrounds the nutmeg kernel.
Bark: Cinnamon and cassia are produced from the bark of spicy trees.
Bud: Clove and caper are produced from unopened flower buds.

Bulb: Onions, garlic, leeks and shallot fall within the bulbous spices.
Flower: Saffron, majoram, savory, caper, are produced from the flowers of spice trees.
Fruit: Allspice, cardamon, chilli and kokam are fruit spices.
Kernel: Nutmeg is obtained from the kernel enclosed in a pod of the nutmeg fruit.
Leaf: Leafy spices include mint, curry leaf, bay leaf, chive, rosemary, savory, parsley etc.
Rhizome: Spices that grow from the rhizome include ginger, turmeric and galangal fall under this category.
Seed: Spices produced from the seeds of aromatic plants include cumin, fenugreek, coriander, fennel, poppy, anise, mustard, and ajowan among many others.

Classification based on cotyledons
Cotyledon refers to the first leaves produced by a plant. The spices classified on cotyledons are based on the number of cotyledons and can further be either monocots/monocotyledonous, that is, having one cotyledon in the seed or dicots/dicotyledonous, that is possessing two cotyledons in the seed.
Spices found in these categories include; dicotyledoneae - chilli pepper, sesame, nutmeg, cassia, cinnamon, bay leaf, star anise and monocotyledoneae-onion, saffron, ginger, turmeric, vanilla, garlic, cardamom.

Classification based on climatic requirement
Spices can be grouped into three major categories based on suitable climatic conditions such as temperature, sunlight, humidity and air of a particular climatic zone.

Tropical spices
Spices that fall in this category require high temperature, and abundant humidity and easily get destroyed by low temperature. Spices in this category include ginger, turmeric, cinnamon, black pepper, clove and small cardamon.

Sub-tropical spices
Sub-tropical climate is characterized by three distinct seasons: winter, summer and monsoon. Low temperature occurs in winter and high temperature during summer. Spices found in this category usually require relatively low temperature during their vegetative or early growth stage and high temperature in their reproductive stage. Those grown during winter include cumin, fennel, coriander, fenugreek, onion and garlic whereas summer spices include ginger and turmeric.

Temperate spices
Spices in this category can survive in low temperature and frosty weather but are easily damaged by hot weather. They include spices such as thyme, savory, saffron, caraway etc.

Classification based on season of growth
Annual Spices
These are spices which complete their life cycle in one growing season. They include coriander, cumin, fennel, fenugreek, ajowan and black cumin.

Biennial Spices
This category of spices requires two growing seasons to complete their life cycle, and includes onion and parsley.

Perennial Spices
These are the kind of spices which live for more than two years. They include cardamon, turmeric, ginger, black pepper, saffron, clove, nutmeg and cinnamon.

Classification based on origin and flavour
Aromatic Spices
These include cardamon, aniseed, celery, cumin, coriander, fenugreek, cassia, nutmeg and cinnamon.

Pungent Spices
These include ginger, chilli, black pepper, mustard, onions, oregano, garlic etc.

Phenolic Spices
They include cloves and allspice.

Coloured Spices
They include turmeric, saffron, annatto and paprika.

Functions of Spices
Flavour, Taste, Aroma and Texture
According to Raghavan (2007), the effectiveness of a spice in a recipe or formula is determined by the overall taste, flavour, texture or colour it contributes to food or a beverage. Spices possess chemical components that are responsible for these sensual qualities. Thus, the characteristic flavour profile of a spice is as a result of balance of these chemical components. Six basic taste perceptions are given by spices, namely; hot, sour, bitter, salty, spicy, and sweet. Other descriptive terms including pungent, umami (brothy, MSG, or soy-sauce-like), cooling, and floral, earthy, woody or green also do exist. Most spices possess combined flavour profile. For instance, cardamon has woody and sweet notes, whereas fennel has both sweet and bitter notes. In terms of textural qualities, spices are described based on their specific physical characteristics, techniques used in its preparation as well as the form in which it is used in a recipe, be it ground or whole. Literature has it that, most textural qualities of spices are obtained through preparation and cooking techniques of spices.

Colouring
According to Peter (2006) [25], the food industry is presently following a trend back towards the use of natural colourants because of changes it is encountering in legislation and consumer preference, as food colourants from synthetic sources have been linked to health hazards such as asthma, cancer, allergy, thyroidism and hyperacidity. However, the poor stability to changes in pH, oxygen, heat and light, low solubility, low tinctorial power and high cost, place limits on the use of natural colourants. Thus, Raghavan (2007) asserts that, aside the flavour imparting qualities of spices, some others also provide colour to various foods and beverages. Typical colour-imparting spices include saffron, annatto, parsley, turmeric, curry and paprika. The components contained in spices which are responsible for the colour imparting abilities include curcumin, crocin, carotenoids, capsanthin, and bixin found in turmeric, saffron, paprika, chili pepper and annatto respectively.

Spices as anti-microbial agents
According to Raghavan (2007), before the days of refrigeration, people of the medieval times used spices either

alone or in combination with salting, smoking and pickling to inhibit the factors that promote food spoilage in order to preserve food. For instance, fish sauce was preserved with mint, dill and savory whereas meats and sausages with cumin and coriander by the Romans. Presently, natives of India, Africa, Indonesia and Thailand still use spices to preserve food. A study that was undertaken by Cornell University reported that spices such as onion, garlic, oregano, and allspice can kill all kinds of bacteria; thyme tarragon, cinnamon, and cumin can destroy up to 80% of bacteria; chilli up to 75% of bacteria; and black and white pepper, ginger, celery seeds and aniseeds up to 25%.

It is therefore recommended that for a more effective preservative effects, spices should be combined rather than using only a single spice. Bioactive principles that make spices effective against microbes include eugenol in cloves and cinnamon, carvacrol in oregano, thymol in thyme, allicin in garlic and linalool in coriander, capsaicin in red pepper, gingerol in ginger and piperine in black pepper, and anetol in anise (Raghavan, 2007).

Spices as Antioxidants

Raghavan (2007) claims that, through food, spices can be used to help fight toxins created in the human body. Radiation, tobacco smoke, alcohol, ultraviolet light for instance, are responsible for initiating the production and growth of free radicals in the human body which cause damages to our body cells and limit the ability to resist cancer cells formation, delay aging, and prevent memory loss. Thus, many known spices have components that have the capacity to protect cells from damages caused by free radicals by acting as antioxidants, however, a synergist effect is achieved when spices are combined with other spices or antioxidants-such as tocopherols and ascorbic acids. Rosmanol, myristphenone, eugenol, thymol, caffeic acid, curcumin, and sesaminol in rosemary, clove, thyme, oregano, ginger, turmeric, nutmeg, sage and sesame seed respectively are found to exhibit effective antioxidant properties.

Spices as Medicine

Spices have been used since time immemorial for their medicinal benefits to relieve ailments and to prevent illnesses. With great strides in research into their medicinal benefits in recent years, consumers all over the world are becoming attracted to spices not only for creating tasty low-fat or low-salt foods, but also as natural way of improving health and promoting wellness, as such it has also been speculated that more people are using spices as medicine compared to using pharmaceuticals prescriptions (Li, 2006) [28]. The active compounds in spices such as phenolic acids, flavonoids, coumarins, capsacinoids, triterpenoids, sterols, monoterpenes, polyacetylenes, phthalides, are effective components for promoting physical and emotional wellness. These chemical components are known to possess therapeutic values such as antiseptic, antioxidants activities, singlet oxygen quenching, enzyme inducers, reducing induction and advancement of cancer cell development (Raghavan, 2007).

Table 1: Therapeutic effects of some spices

Spice	Chemical components	Medicinal value
Chilli pepper	Capsaicin	Prevents blood clotting, enhances circulation
Garlic	Allicin, glutamyl peptides, diallyl sulfide, S-allyl cysteine	Breaks down blood clots, prevents heart attacks, prevents gastric cancer, treats cough, lowers blood pressure and blood cholesterol, inhibits platelet aggregation, hypertension
Ginger	Gingerol, gingeberane Shogaol	Digestive and anti-tumour, aids digestion, stomach aches and stomach ulcers, prevents bloating, inhibits cholesterol synthesis.
Star anise	Trans-anethole, 1,4-cineole, safrole, estragole	Anti-rheumatic, antiseptic, carminative, stimulant, vermifuge
Thyme	Thymol, tannins, carvacrol, saponins	Anti-oxidant, anti-spasmodic, anti-tussive, relieves cough
Cloves	Eugenol, sitosterols, stigmasterols, campesterol	Abdominal problems, cancer, cough, diarrhoea, gastritis, hernia, nausea, sores.
Bay leaf Tumeric	Cineole, linalool, eucalyptol Curcumin, curcumoids	Indigestion, astringent, carminative, stimulant Anti-inflammator, anti-tumour, anti-oxidant, carminative, improve liver function

Source: Raghavan (2007)

Brief Overview of Selected Spices

Chilli Pepper

According to Raghavan (2007), the 'mother chilli is believed to have originated from the Andean region of Bolivia, Peru, and Ecuador, however, it became widely cultivated when the Spanish first landed in the Americas. Thus, they are indigenous to the South and Central America, Mexico and the Caribbean but presently grown in India, China, United States of America, Japan, Africa and Southeast Asia. The fruits of chillis are used ripe and unripe, fresh, smoked or dried. They can be sweet, floral, fruity, earthy, hot and smoky with varying levels of heat (Madala & Nutakki, 2020; Saleh, Omer & Teweldemedhin, 2018) [29].

Scientifically, chilli pepper is known within the genus as *Capsicum(C)*, which originates from the Latin terminology *capsa*, meaning box or chest due to the nature in which the seeds are neatly enclosed in the fruit (Raghavan, 2007), or the Greek word *kapsimo*, which means to bite or burn (Pandit, Pandit & Bairagi, 2020; Mandala & Nutakki, 2020) [29]. There are about thirty-one species within the genus *Capsicum* (Raghavan, 2007), however, only five of them are domesticated and therefore cultivated, namely; *Capsicum annum, Capsicum chinense, Capsicum frutescens, Capsicum baccatum, and Capsicum pubescens*, with *C. annum* being the most widely cultivated species. Common names of chilli pepper include, spaanse peper (Dutch), piment (French), roter Pfeffer (German) and ata (Yoruba, West Africa), (Saleh *et al*., 2018; Pandit *et al*., 2020; Kumar, Kumar and Singh, 2006) [25].

Fig 1: Chilli pepper

Rosemary

According to Raghavan (2007), Rosemary is an evergreen perennial dicot shrub that is native to the Mediterranean region, Asia Minor and North Africa. During the medieval times, the name *Rosmarinus,* which is a Latin word meaning 'dew of the sea', was changed to *Rosa Maria* or 'Rosemary' in honour of 'Mary', the mother of Jesus. Scientifically, rosemary is known as *Rosmarinus officinalis* and belongs to the family *Lamiaceae.* Hamidpour, Hamidpour & Grant (2017) [21], and Labban (2014) [27], further add that rosemary can be used fresh or dried, chopped, whole or ground. The spice is small, narrow and needlelike with the fresh leaves being leathery, shiny and dark green in colour, while the dried ones are curved with dark green to brownish green colour.

Rosemary contains essential oils with principles mainly 1,8-cineol (30%) giving it a cool eucalyptus aroma, borneol (16% to 20%), camphor (15% to 25%), bornyl acetate (2% to 7%) and α-pinene (25%) with the different varieties possessing varied flavours based on their constituents (Kunnumakkara, Dey, Bicer & Aggarwal, 2009) [26]. Rosemary does not lose it flavour with long cooking, however it should be used sparingly due to its strong aroma. Literature further claims that, it contains active phenolic compounds such as carnosic acid, rosmanol, carnosol, isorosmanol,rosmadial and caffeic acid which have shown substantial antioxidant activity with *in vitro* studies (Parthasaranthy, Rethinam & Kandiannan, 2008; Malvezzi de Macedo *et al*., 2020) [30].

Fig 2: Rosemary

Anise/ Aniseed

Aniseed is an herbaceous annual plant that is native to the Mediterranean region. The spice is believed to be an indigenous to Greece, Egypt, Crete, Turkey and Lebanon, though it is also cultivated in Mexico, Chile, Argentina, Syria, Spain, Italy, India, Pakistan, China, Russia, Japan and Germany (Raghavan, 2007). Aniseed belongs to the family of *Apiaceae* and is known as *Pimpinella anisum* in botany. Sun, Shahrajaban & Cheng (2019), postulate that, the spice is a small, oval, greenish-gray to yellow brown dried seed, with a ridged surface. The spice is mainly sold whole or ground. It is known to lose its flavour quickly when milled into powder. Aniseed has a fruity, camphoraceous, warm and sweet licorice-like taste, with its flavour having a resemblance to that of star anise and fennel. Aniseed has 1.5% to 6% essential oil, with its major constituents being trans-anethole (80% to 90%). Other components of its essential oil include methyl chavicol (10% to 15%), iso anethole (2%), ketone and anis-aldehyde. Aniseed is known to contain iron, potassium, phosphorus and calcium (Anwar, 2017) [6].

Fig 3: Aniseed

Clove

Clove is a spice that is native to the Moluccas (Spice Island), Indonesia, but now widely cultivated in Brazil, Pemba, Madagascar, Malaysia, Sri Lanka, Zanzibar, Sumantra, Grenada and Jamaica. The name of the spice is derived from 'clavus', 'clavo' and 'clou', which are Latin, Spanish and French words respectively, meaning 'nail' due to its striking resemblance to a nail's shape. From the family of *Myrtaceae,* clove is known as *Syzygium aromaticum* (formerly *Eugenia caryophyllata* or *Eugenia aromaticus)* in botany (Raghavan, 2007). Clove is obtained from dried unopened flower buds, and is sold ground or whole and the buds are picked just before opening. It is characterized by a spicy, woody, burning, sweet and musty aroma with a sharp, pungent, and bitter taste and numbing feeling (Thakur *et al*., 2021; Kunnumakkara *et al*., 2009) [26].

According to Thakur *et al*., (2021), the clove bud has about 5% to 20% essential oils mainly composed of eugenol (81%),

the major bioactive compound, which is responsible for its characteristic pleasant and burning flavour. Other constituents of its essential oils include eugenyl acetate, caryophyllene, humulene, with traces of chavicol and benzaldehyde. Clove also has some tannins and fixed oils. Clove contains vitamin C, vitamin A, manganese, potassium and magnesium. The spice is a major source of phenolic compounds such as flavonoids, gallic acids, tannins, hydroxicinamic acids, hydroxibenzoic acids, and hydroxiphnyl propens (Cortes-Rojas, Fernandez de Souza & Oliveira, 2014) [11]. Others include caffeic, ferulic, elagic, and salicylic acids (Pulikottil & Nath, 2015).

Fig 4: Cloves

Negro pepper

Negro pepper, also known as 'Moor pepper' or 'kien' in West African regions is a popular spice used from Ethiopia, northeast Africa to Ghana, southwest Africa. It is a long slender bean pod in which are enclosed kidney-shaped seeds that has got a mixture of cubeb and mace-like notes. It is scientifically known as *Xylopia aethiopica* and belongs to the family *Annonaceae* (Raghavan, 2007). The spice is commonly known as grains of Selim, Ethiopian pepper, Moor pepper, Senegal pepper or Kani pepper. The aroma the spice imparts is dependent on the essential oils it contains whereas non-volatiles (piperine) provide the pungency or bite (Ezekwesili, Nwodo, Eneh & Ogbunugafor, 2010) [17].

Negro pepper contains about 2% to 4.2% essential oils, chief among them being β -pinene, γ-cineol, α -terpineol, paradol, linalool, β -ocimene and other terpenes with vanillin traces. The spice also has pharmaceutical active constituents such as alkaloids, tannins and flavonoids which account for its anti-inflammatory and anti-oxidant properties in treating diverse ailments (Oso & Oladiji, 2019; Ogbonna, Nozaki & Yaima, 2013).

Fig 5: Negro pepper

Grains of paradise

Scientifically known as *Afromomum melegueta* or *Afromomum grana paradisi*, grains of paradise belong to the family *Zingiberaceae* (ginger family). Other common names of the spice include, alligator pepper, Melegueta pepper, guinea grains or guinea pepper. The plant is a perennial deciduous herb native to the tropics and grows mainly on the swampy habitats of the coasts of West Africa. It produces trumpet-shaped, purple - coloured flowers which develop into long pods which contain reddish-brown seeds (Raghavan, 2007).

The West African country known to be a chief cultivator of the spice is Ghana and it is endemic in the Atiwa range in the Eastern Region, though others such as Ivory Coast, Benin, Nigeria, Sierra Leone, Ethiopia, Togo and Guinea also contribute significantly to its production in the region (Sarpong, 2018). According to Ogbunugafor *et al*., (2017), grains of Paradise are small dried, reddish brown, pyramid-shaped seeds with a shiny exterior, enclosed in a large pod. The seeds are either sold ground or whole, with the ground seeds having a greyish colour. With a whitish interior and a reddish-brown exterior, the seeds have a mild-pungent peppery taste with an accompanying bitter note and a faint cardamon-like odour. The spice has 0.5% to 1% yellow-coloured essential oil which contains chief principles such as humulene and caryophyllene. Shogaol, gingerol, paradol, and diarylheptanoids account for the mild pungency-peppery taste of the seeds (Toh, Lim, Ling, Chye & Koh, 2019; Osuntokun, 2020).

Fig 6: Grains of Paradise

Garlic

According to Raghavan (2007), garlic is one of the world's well-known spices used extensively across the globe. Tesfaye (2021) claims that, the spice is the second most used *Allium* after onion. The spice's name is derived from the term *garleac,* an Anglo-Saxon word which means 'spear plant'. Scientifically known as *Allium sativum*, garlic is a member of the onion family *Alliaceae*. Garlic is a spice which is indigenous to Central Asia. However, it is now cultivated in the United States, Asia, Europe, the United Kingdom, Mexico, Taiwan and Hungary, with China being both the largest consumer and producer of the spice of the world's output. It is on record that, there are about 200 different varieties of garlic with varying sizes, shapes, colours, and flavours, however, only two cultivated varieties exist (i.e. hardneck and softneck varieties). Within each garlic bulb is a plump and succulent egg-shapesd bulblets known as cloves, enclosed in an outer skin that is rose, buff, white or purple, depending on the variety. The spice comes in either the dried or fresh forms (Worku & Mehari, 2018; Fesseha & Goa, 2019) [18].

Jiang (2019) [23] adds that fresh whole garlic is odourless, however, when it is cut or bruised, it gives off a strong aroma as a result of the production of allicin, which occurs due to the action of the enzyme alliinase on alliin. When garlic cloves are crushed, cut or rehydrated, about 0.1% to 0.25% essential oil is formed enzymatically. Principles found in the spice's essential oils are sulphur compounds, chiefly, 60% diallylsulphide, 20% diallyl trisulphide, 6% allyl propyl disulphide and diallyl sulphide (Raghavan, 2007; Worku & Mehari, 2018; University of Carlifonia, 2016).

Fig 7: Garlic

Ginger

According to Raghavan (2007), ginger remains the most treasured spice in Asia as it is highly esteemed for its therapeutic effects and flavour. In botany, ginger is known as *Zingiber officinale* and belongs to the family *Zingiberaceae.* The spice obtained its name from the term *shringavera,* a Sankrit word which means 'shaped like the deer's antlers. Thus, different varieties of ginger exist, including Jamaican, Indian (cochin and Calicut), Chinese and African. Though it is an indigenous spice to southern India and Southeast Asia, major cultivating countries of ginger include Fiji, Hawaii, Sierra Leone, Nigeria, Jamaica, Japan, Mexico, Ghana, Costa Rica, among many others. Ginger is a rhizome, that is, a thick root-like underground stem which is available in many forms; fresh, dried, black, preserved, crystallized and pickled (Zadeh & Kor, 2014; Jahkribettu *et al*., 2017).

Bhatt, Waly, Essa & Ali (2013) [8] further add that, the properties of ginger such as colour and flavour vary depending on its form, origin, harvesting, storage and processing conditions. Fresh ginger has got a refreshing, juicy, spicy with slightly sweet, lemon-like aroma, strong bite and more aromatic. On the other hand, dried ginger is more fibrous with less pungency compared to fresh ginger. With respect to origin, Jamaican ginger has got a light tan colour with a delicate aroma and more pungency with fine-textured powder when likened to that of African origin, which has a darker colour with a weak aroma but a harsh flavour. Ginger originating from India has strong, aromatic, pungent qualities with a lemon-like aroma unlike Chinese and Japanese ginger which tend to have weak pungency and aroma, with the former being whiter in colour and fibrous, with slight bitter notes (Raghavan 2007; Jahkribettu *et al*., 2017; Zachariah, 2008).

Ginger contains 1% to 4% essential oils, known as sesquiterpenes, which are responsible for ginger's characteristic aroma; however, its bite or pungency is attributed to non-volatiles such as gingerol, shogoal, zingerone and paradol (Zadeh & Kor, 2014). Chief constituents contributing to ginger's aroma comprises zingiberene, curcumene, α-pinene, sabinene, limonene, boneol, linolool, farnesene, and citrol. Dried ginger has less pungency due to the conversion of gingerol in fresh ginger to shogaol, zingerone and paradol (Jiang, 2019; Bhatt *et al*., 2013) [23, 8].

Fig 8: Ginger

Bay leaf

According to Raghavan (2007), Greek history has reported that, many centuries ago, a beautiful nymph known as Daphne was turned into an evergreen laurel tree by the gods when she was fleeing from Apollo's love, hence the name daphnee in Greek for bay leaf. Thus, the Romans have since the ancient times used wreaths made with laurel leaves to honour their god (Apollo), and continue to use the leaves in their cuisines till date. The spice is native to the Mediterranean regions, the sub-tropics and Eastern Asia, as well as South and North America, Asia Minor and the Balkans.

Raghavan (2007) further add that, scientifically, bay leaf is known as *Laurus nobilis*, and it is an evergreen perennial shrub that belongs to the family *Lauraceae.* It is also known as sweet bay, true bay, Grecian Bay or bay laurel. The leaf of the laurel tree, is thick, leathery, and aromatic with a bright-green upper surface and a pale green colour beneath. Bay leaf is used whole, crushed in the fresh or dried form. The leaf has got a strong, spicy, bitter, yet pungent and cooling undertones. Bay leaf contains 0.8% to 3% essential oil with chief principles such as 1,8-cineole, α-terpineol, and σ-pinene. Others include cinnamic acid, eugenol, sabinene, methyl-eugenol, and methyl esters (Al-Hashimi & Mahmood, 2016; Batool, Khera, Hanif and Ayub, 2020) [5, 7].

Fig 9: Bay leaves

African nutmeg

In other words, known as calabash nutmeg or Jamaican nutmeg, African nutmeg belongs to the family *Annonaceae,* and scientifically called *Monodora myristica*. It is native to Central, West and East Africa, spanning from Sierra Leaone to Uganda, Congo, Kenya and Angola, though it is widely distributed from Africa to Asia, Central and South America and Australia. Enabulele, Oboh & Uwadiae, (2014). It is documented that, the fruit which is a berry measures about 18cm to 20cm in diameter, and has a sub-spherical, smooth appearance. The fruit is green and turns brown upon maturity. Inside each fruit are the oblong, pale brown seeds which are about 1.5 cm long, embedded in a whitish sweet-smelling pulp (Eli, 2015).

It is fur.ther asserted that, the seeds possess a pungent, peppery taste which is attributed to the presence of aromatic ketones such as gingerol and paradol (Agiriga & Siwela, 2017) [4]. The seeds also possess important pharmacological compounds such as vitamins A and E, alkaloids, flavonoids as well as several significant lipids. Essential oils contained in the seeds have chief principles such as eugenol, limomene, mycene, and thujene. The seeds are also rich sources of flavonoids, saponins, steroids, tannins and glycocides (Adewole *et al*., 2013; Ekeanyanwu, Ogu & Nwachukwu, 2010) [3, 16].

Fig 10: Africa nutmeg

2. Methodology

An exploratory sequential mixed-method design was adopted. The qualitative phase explored commonly bought spices and their uses, followed by quantitative analysis to describe frequency patterns. The study was conducted in the Cape Coast Metropolis, specifically at the Abura and Kotokoraba markets. A total of 48 respondents (24 sellers and buyers each) participated, selected through purposive and convenience sampling. Data were collected using semi-structured interview guides containing both open- and closed-ended questions. Quantitative data were summarized using frequencies and percentages, while qualitative responses were analyzed thematically following Braun and Clarke's (2006) [9] procedure.

The Study Area

The research study focused on the Cape Coast Metropolis. This is an area located in the Central Region of Ghana and is the regional capital. It is a coastal city with land size of nearly 122km2. It has an estimated population size of 169,800 (Ghana Statistical Service, 2013; Danso, Ma, Adjakloe & Addo, 2020) [19, 12]. Central Region is one of the regions in Ghana rich in cultural and historical heritage. In terms of educational purposes, it has some of the best schools and institutions in the country. It also has a diverse market system with the main commercial activities being fishing and trading. Others include services in commerce, education and tourism. Two vibrant market centres within the Metropolis (Kotokoraba and Abura markets) were used for the study.

Population

The population for the study included all sellers and buyers of spices in Cape Coast markets. However, with regards to sellers, the target population comprised all sellers of natural spices in the Abura and Kotokoraba markets in Cape Coast, which were 16 and 11 respectively. Hence, any of such sellers who were present at the market on the days of data collection and were willing to be interviewed were included. With regards to the buyers, the nature of the participants made it impossible to determine the target population. Participants in these two markets were used because these markets are included in the major markets in terms of size in the Metropolis, hence the researcher believed that valuable data could be obtained from these markets to help address the research objectives.

Sampling Procedures

The sample sizes for the sellers from Abura and Kotokoraba markets were therefore 14 and 10 respectively, which are acceptable for the populations 16 and 11 according to Krejcie and Morgan (1970) [24]. However, with regards to the buyers, 12 respondents each were selected from each of the two selected markets. The researcher's choice of 12 respondents from each market was based on an assertion by Guest, Bunce and Johnson (2006) [20]. A sample of 12 buyers per market was selected based on the principle of thematic saturation, which Guest *et al*. (2006) [20] suggests is often reached within 12 interviews."

Each of these participants was chosen as part of the sample size using the purposive sampling procedure. According to Tongco (2007), the purposive sampling is a non- random technique in which the researcher decides what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience. The researcher believed that this technique was suited for the study to provide the needed information to address the objectives of the study.

Research Instrument

The research instrument consisted of self-developed interview guides. They were used to collect data from the respondents (sellers and buyers of natural spices) in the markets for the study. The interview guides were designed to solicit information on the kinds of spices available on markets in Cape Coast and the spices which were mostly bought by consumers as well as the purposes for which they bought the spices. The data collection instruments were designed to consist of three open-ended questions each in order to give respondents the opportunity to express their views on issues where necessary. Again, the instruments were designed to cover two sections, that is theme A and theme B, consisting of questions suited to address the objectives of the study. The researcher's choice of the instrument was based on the fact that they are best suited for collecting qualitative data and also capable of providing enough and necessary information to address the research objectives though they are time consuming and tiring to conduct interviews.

Validity and Reliability of Instrument

The face validity of the interview guide was determined with the help of the researcher's Supervisor. All typographical errors and elements of ambiguity in the instrument were corrected by the help of the Supervisor before it was used. The content validity of the interview guide was done by the supervisor and the researcher together with other lecturers in the University of Cape Coast who are experts in the field. The reliability of the interview guide was checked by conducting a pilot test was conducted using 'Yawda Guam', one of the oldest and well-known markets in Cape Coast aside the two selected for the study. The questions were tried on participants (buyers and sellers of spices) from that market. Ambiguities, confusion and problems regarding the wording of the questions were looked at and corrected after the pilot test.

Data Collection Procedures

Before the conduct of the study, a research proposal was approved by the Vocational and Technical Education Department of the University of Cape Coast. Furthermore, an ethical clearance was obtained from the Institutional Review Board (UCCIRB/CES/2022/62) of the University of Cape Coast. Introductory letters were also obtained from the researcher's department, that is, the Department of Vocational and Technical Education and presented to the of the University of Cape Coast IRB for permission prior to the data collection.

In this study, the researcher approached both buyers and sellers of natural spices in the two markets for a face-to-face interview to seek their consent before the interview sessions were recorded using an audio device. Respondents were informed that the exercise was purely academic and that their responses would be highly confidential. The researcher expressed gratitude to the respondents concerned at the end of each interview session. For the sellers, the researcher walked to a stall and spoke to the seller concerning the research, if the seller accepted to be interviewed, the researcher proceeded with the interview. However, if the seller declined to grant the interview due to inconveniences that may be created for her as she sold, the researcher thanked her and moved to another seller, until the required number of respondents was attained.

Regarding that of the buyers the researcher waited at vantage points closer to some of the sellers so that buyers could easily be identified and approached. At any particular moment, any buyer who approached a spice seller to buy was requested to participate after she is done with her purchases, and the aim of the research was explained to her. Those who agreed to participate in the interview were finally thanked for their time. In the same vein, any buyer who was unwilling to participate was allowed to go without her participation. This same procedure was followed until the required number of buyers (respondents) was achieved.

Data Processing and Analysis

Data collected from the survey through the interviews were analyzed thematically. Hence, responses from the respondents were transcribed then grouped under themes for analysis and discussion in order to address research objectives.

Ethical Considerations

Ethical protocols for the general conduct of research as well as those pertaining to the University of Cape Coast were adhered to. Hence, before the collection of data, ethical clearance was sought from the UCC Institutional Review Board for the permission to be granted for data collection. Again, introductory letters were sought from the researcher's department to be taken to the IRB for permission before the data collection process begun.

Codes such as 'Market A' and 'Market K' were given to the markets for purposes of easy identification. In the same vein, sellers and buyers were given unique codes such as AS and AB were given to Abura sellers and Abura buyers respectively whiles that for Kotokoraba KS and KB for sellers and buyers respectively. Confidentiality, anonymity and privacy of both sellers and buyers of natural spices used as respondents for the study was also ensured. Their informed consent was sought before being asked to partake in the interviews.

3. Results

The results present the most commonly bought spices and the purposes for which they are used by sellers and buyers in Cape Coast. The quantitative findings are summarized in Tables 2 and 3.

Table 2: Most Commonly Bought Spices in Cape Coast Markets

Spice	Scientific Name	Frequency of Mention (%)
Ginger	*Zingiber officinale*	98
Garlic	*Allium sativum*	96
Chili pepper	*Capsicum annum*	90
Cloves	*Syzygium aromaticum*	82
Bay leaf	*Laurus nobilis*	68
Aniseed	*Pimpinella anisum*	63
Grains of paradise	*Aframomum melegueta*	57
Negro pepper	*Xylopia aethiopica*	50
African nutmeg	*Monodora myristica*	45
Rosemary	*Rosmarinus officinalis*	40

Source: Mensah (2024)

Table 3: Purposes for Using Spices among Buyers and Sellers

Purpose of Use	Percentage of Respondents (%)
Culinary (Flavour, Aroma, Colour)	95
Health/Medicinal (Treatment of ailments)	85
Preservative (Food preservation)	60
Spiritual/Traditional	30

Source: Mensah (2024)

4. Discussion

From Table 2, ginger and garlic were the most frequently bought spices, followed closely by chili pepper and cloves. As shown in Table 3, the main reasons for spice use were culinary and health purposes, with a smaller proportion citing preservative and spiritual uses.

The findings reveal that spice use in Cape Coast is both widespread and multifaceted. The predominance of ginger, garlic, chili pepper, and cloves aligns with national consumption patterns reported by Nkansah and Opoku Amoako (2010). These spices are integral to Ghanaian cuisine and are viewed as essential household ingredients. Their frequent use reflects cultural preferences for richly flavoured foods, as well as the accessibility and affordability of these spices in local markets.

Culinary uses dominated respondents' responses, consistent with studies by Peter (2006) [25] and Raghavan (2007), who note that spices enhance the sensory attributes of food. In the Ghanaian context, they form the foundation of most dishes such as soups, stews, and rice meals. Beyond flavour, their role in providing appealing aroma and colour reflects deeply rooted cultural culinary traditions passed down through generations.

The health-related uses identified support the findings of Nordin and Selamat (2013), who observed that spices possess therapeutic compounds such as eugenol and allicin. Respondents attributed medicinal properties to ginger and garlic, particularly in treating colds, hypertension, and stomach upset. This demonstrates the reliance on natural remedies and the integration of food and medicine in Ghanaian society.

The preservative role of spices also featured prominently, echoing Raghavan's (2007) observation that natural antimicrobials in spices contribute to food safety. Garlic and cloves were reported to prevent spoilage in soups and sauces—an essential benefit in tropical climates where refrigeration is limited.

Spiritual or traditional uses, though less frequent, reveal the cultural symbolism attached to certain spices. Cloves, bay leaf, and grains of paradise were mentioned in cleansing rituals and traditional ceremonies, reflecting the deep cultural interconnection between food, health, and spirituality in Ghanaian communities (Oso & Oladiji, 2019).

Overall, the findings affirm that spices in Cape Coast markets are not only commodities for flavouring but also cultural and health-related assets. The multifunctional roles they play underscore the need for consumer education on hygienic handling and the promotion of indigenous knowledge on spice use for sustainable health benefits.

5. Conclusion and Recommendations

The study concludes that spices remain integral to the culinary, medicinal, and cultural fabric of Cape Coast. Ginger, garlic, chili pepper, and cloves dominate local markets due to their versatility, affordability, and health benefits. Given their multiple uses, there is a need for intensified consumer education and improved market hygiene. The documentation of indigenous knowledge should also be supported to preserve traditional wisdom surrounding spice use.

References

1. Aberie M, Sallilh K, Tarekegn Y. Spices and their role in food preservation and health promotion. Journal of Food Science and Nutrition. 2021;9(3):145-158.
2. Adeoye RI, Joel EB, Igunnu A, Arise RO, Malomo SO. A review of some common African spices with antihypertensive potential. Journal of Food Biochemistry. 2021. doi:10.1111/fbc.14003
3. Adewole E, Ajiboye BO, Idris OO, Ojo OA, Onikan A, Ogunmodede OT, *et al*. Phytochemical, Anti-microbial and Gc-Ms of African nutmeg (*Monodora myristica*). International Journal of Pharmaceutical Science Invention. 2013;2(5):25-32. Available from: http://eprints.abuad.edu.ng/
4. Agiriga A, Siwela M. Monodora myristica (*Gaertn*). Dunal: A plant with multiple food, health and medicinal applications: A review. American Journal of Food Technology. 2017;12(4):271-284.
5. Al-Hashimi AG, Mahmood SA. The nutritional value and antioxidant activity of bay leaves (*Laurus nobilis* L.). Basrah Journal of Veterinary Research. 2016;15(2):246-259. Available from: https://www.cabidigitallibrary.org/doi/full/10.5555/20163325984

6. Anwar IB. Medicinal benefits of anise seeds (*Pimpinella anisum*) and thymus vulgaris in a sample of healthy volunteers. International Journal of Research in Ayurveda Pharmacy. 2017;8(3):91-95.
7. Batool S, Khera RA, Hanif MA, Ayub MA. Bay leaf. In: Hawaz H, Khan MM, Byrne HJ, editors. Medicinal plants of South Asia: Novel sources for drug discovery. 2nd ed. Elsevier Science; 2020. doi:10.1016/B978-0-08-102659-5.00005-7
8. Bhatt N, Waly MI, Essa MM, Ali A. Ginger: A functional herb. In: Food as Medicine. 2013. p. 51-71. Available from: https://www.researchgate.net/profile/Mostafa-Waly/publication/257416254_Ginger_A_functional_herb/links/0deec538e156f37e9a000000/Ginger-A-functional-herb.pdf
9. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative Research in Psychology. 2006;3(2):77-101. Available from: https://uwerepository.worktribe.com/index.php/preview/1043068/thematic_analysis_revised_-_final.pdf
10. Chhetri P, Vijayan SK, Bhat, Gudade BA, Bora SS. An overview of grouping of spices. Interdisciplinary Multi-Column Plant Sciences Portal, Gangtok, India. 2018. Available from: https://www.researchgate.net/profile/BharatGudade/publication/325216609_An_Overview_of_Grouping_of_Spices/links/5c471b69a6fdccd6b5c01b58/An-Overview-of-Grouping-of-Spices.pdf
11. Cortes-Rojas DF, Fernandez de Souza CR, Oliveira WP. Clove (*Syzygium aromaticum*): A precious spice. Asian Pacific Journal of Tropical Biomedicine. 2014;4(2):90-96. doi:10.1016/S2221-1691(14)60215-X
12. Danso SY, Ma Y, Adjakloe YDA, Addo IY. Application of an Index-based Approach in Geospatial Techniques for the Mapping of flood Hazard areas: A case of Cape Coast Metropolis in Ghana. Water. 2020;12(12):3483. doi:10.3390/w12123483
13. Darko A, Ayim G, Voegborlo RB. Determination of heavy metals in selected spices marketed in Ghana. International Journal of Food Contaminants. 2014;1(2):12-20. doi:10.5897/AJFS2013.1107
14. Eli OH. Use of African nutmeg (*Monodora myristica*) as an additive in broiler nutrition. Abraka (Nigeria): Delta State University; 2015.
15. Enabulele SA, Oboh FOJ, Uwadie OU. Antimicrobial, nutritional and phytochemical properties of Monodora myristica seeds. IOSR Journal of Pharmacy and Biological Sciences. 2014;9(4):1-6.
16. Ekeanyanwu CR, Ogu IG, Nwachukwu UP. Biochemical characteristics of the African nutmeg, Monodora myristica. Agricultural Journal. 2010;5(5):303-308. Available from: https://www.ajol.info/index.php/ijotafs/article/view/75979
17. Ezekwesili CN, Nwodo OF, Eneh FU, Ogbunugafor HA. Investigation of the chemical composition and biological activity of Xylopia aethiopica Dunal (Annonaceae). African Journal of Biotechnology. 2010;9(43):7356-7356. Available from: https://www.ajol.info/index.php/ajb/article/view/130385
18. Fesseha H, Goa E. Therapeutic value of garlic (Allium sativum): A review. Advances in Food Technology and Nutritional Sciences. 2019;5(3):107-117.
19. Ghana Statistical Service. 2010 Population & housing census; Regional analytical report (Vol.1). Accra (Ghana): Ghana Statistical Service; 2013.
20. Guest G, Bunce A, Johnson L. How many interviews are enough? An experiment with data saturation and variability. Field Methods. 2006;18(1):59-82.
21. Hamidpour R, Hamidpour S, Grant E. Rosmarinus officinalis (Rosemary): A novel therapeutic agent for antioxidant, antimicrobial, anticancer, antidiabetic, antidepressant, neuroprotective, anti-inflammatory and anti-obesity treatment. Biomedical Journal of Scientific and Technical Research. 2017;1(4):1098-1103. doi:10.21767/2472-0151.100028
22. Jakribettu RP, Baloor R, Ral M, Hanladka R. Ginger (*Zingiber officinale* R.) oil. In: Preedy VR, editor. Essentials oils in food preservation, flavour and safety. Academic Press; 2016. doi:10.1016/B1978-0-124166417.00050
23. Jiang TA. Health benefits of culinary herbs and spices. Journal of AOAC International. 2019;102(2).
24. Krejcie RV, Morgan DW. Determining sample size for research activities. Educational and Psychological Measurement. 1970;30(3):607-610.
25. Kumar S, Kumar R, Singh J. Cayenne/American pepper. In: Peter KV, editor. Handbook of herbs and spices. 3rd ed. Cambridge (England): Woodhead Publishing Limited; 2006.
26. Kunnumakkara AB, Koca C, Dey S, Gehlot P, Yodkeeree S, Danda D, *et al*. Traditional uses of spices: An overview. 2009. doi:10.1142/9789812837912_0001 Available from: https://www.researchgate.net/publication/242196392
27. Labban L. The effect of rosemary (*Rosmarinus officinalis*) leaves powder on glucose level, lipid profile and lipid peroxidation. International Journal of Clinical Medicine. 2014;5(6):297-304. doi:10.4236/ijcm.2014.56044
28. Li TSC. The range of medicinal herbs and spices. In: Peter KV, editor. Handbook of herbs and spices. 3rd ed. Cambridge (England): Woodhead Publishing Limited; 2006.
29. Madala N, Nutakki MK. Hot pepper-history-health and dietary benefits and production. International Journal of Current Microbiology and Applied Sciences. 2020;9(4):2532-2538. doi:10.20546/ijcmas.2020.904.303
30. de Macedo LM, Santos ÉMd, Militão L, Tundisi LL, Ataide JA, Souto EB, *et al*. Rosemary (*Rosmarinus officinalis* L., syn Salvia rosmarinus Spenn.) and Its Topical Applications: A Review. Plants. 2020;9(5):651. doi:10.3390/plants9050651

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