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UTILIZATION OF SELECTED FOREST SPICES AMONG DIFFERENT ETHNIC GROUPS IN IBADAN, NIGERIA

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ABSTRACT

Despite the numerous uses and properties of many forest spices available in Nigeria, some of the forest products used as spices were neglected and underutilized by the human populace. The study focused on the utilization of ginger and negro pepper for variety of purposes by different ethnic groups in Ibadan, Nigeria. Multi – stage sampling technique was adopted to obtain data from one hundred and twenty (120) respondents from prominent ethnic groups (Yoruba, Igbo, Hausa Efik and Ebira) found in the study area. Primary data were collected with the aid of structured questionnaires and interview guide. Data were subjected to descriptive statistics and Ordinary Least Squared regression model. The result showed that 61.7% of the respondents were female, most of the respondents (47%) fell within the age range of 31-40 years, with about 40% of the respondents having secondary education. The regression analysis showed that factors affecting the utilization of ginger and negro pepper in the study area were gender (ß= - 0.265; $p<0.01$), primary occupation (ß = 0.181; $p<0.1$), household size (ß = 0.293; $p<0.01$), level of education (ß = -0.403; $p<0.05$) and respondents' tribe (ß = -0.091; $p<0.05$). The result also showed that the tribe that utilized ginger and negro pepper most were the Yorubas (62%) and the Efik (2%) tribe utilized it the least. The study therefore recommends that people of diverse ethnic groups should be encouraged to utilize ginger and negro pepper because of its effectiveness in combating minor ailments and also seek proper knowledge about the spices in other to promote its utilization.

Keywords: Ginger, Negro Pepper, Utilization, Spices

Introduction

Spices are popular among Nigerians, although most of the spices are obtained from the wild (Awasthi and pandey, 2016). The bulk of the spices identified in Nigeria are found in southwestern rain forest zone while others such as garlic and ginger are found predominantly in the northern zone (Olife *et al*., 2013).Spices are generally in four agro ecological zones of Nigeria namely; Mangrove and Rain forest, dried Savanna, guinea savanna and Sudan savanna(Adelaja, 2005). They are among the most versatile and widely used ingredients in food processing. Spices stimulate appetite, add flavour and texture to food, create visual appeal in meals and they have other uses such as religious activities, cosmetic and perfume production (Olife *et al*., 2013). In addition to their traditional role in food flavouring and colouring, they are increasingly used as natural preservatives in active packaging (Mubeen *et al.*, 2009).

Spices also play a key role in nutrition as good sources of micronutrients and macronutrients. Ogunka-Nnoka and Mepba (2008) conducted a proximate analysis of some Nigerian spices and found them to be fairly rich in nutrients. Many spices are good sources of calcium, phosphorus, magnesium,

and micronutrients such as zinc (Adelaja, 2005).There are numerous advantages of spices which include health benefits such as speeding up of metabolic rate and mitigating of risks of chronic inflammation. Also various spices have medicinal value for the treatment of various ailments including the treatment of stomach aches, cut/wounds, malaria, diarrhea, ulcer and others. Some of the spices used in Nigeria for food and medicine are the following; *Parkia biglobossa, Alligator pepper, Ginger, Garlic, Uda, (zylopia) Uwoi, Uziza (piper guinensis*) among others (Odukoya *et al*., 1999).

Despite their numerous uses and properties, many of the plants used as spices were neglected and endangered, even though spice consumption in Nigeria and other West African countries has increased in recent times because of increasing awareness of the importance of forest resources. Although documentation of the utilization of forest spices in some parts of Nigeria was made by (Awasthi and Pandey, 2016) that forest spices are mostly used to enhance taste, improve nutritional content and at the same time perform some medicinal functions, very few studies have been conducted on the utilization of spices (ginger and negro pepper) in Oyo state, Nigeria. This study therefore attempts to assess the utilization of selected forest spices among different ethnic groups in Ibadan, Nigeria.

Ginger (*Zingiber officinale*)

Ginger *(Zingiber officinale)* is a member of the family of plants that includes cardamom and turmeric. Ginger (fig 1) is a perennial herb native to China and India. The spicy aroma of ginger is the result of pungent ketones including gingerol, the extract that primarily has been used in research studies (Brett- white, 2007). It is one of the most frequently used herbal supplements. Although frequently consumed for culinary purposes, its medicinal purpose is tapped by many patients to treat a variety of conditions.

The consumed portion of the ginger plant is the rhizome, often called “ginger root,” although it is not actually a root. Ginger is used in different forms such as fresh, dried, pickled, preserved, crystallized, candied, and powdered. The flavor is peppery and slightly sweet, with a strong and spicy aroma. Ginger is one of the most important and most widely used spices worldwide. It is valued for its medicinal properties and played an important role in primary health care. It is the most widely cultivated forest spices. The refreshing aroma and pungent taste makes ginger an essential ingredient of most world cuisine and of the food processing industry. It is used to get rid of bad breath. Recently, ginger was employed to combat the corona virus pandemic which shows its effectiveness in combating respiratory diseases. In western countries, ginger is used for example in gingerbread, biscuits, cakes, puddings, soups and pickles. Also, it can be taken as ginger tea when boiled with water.

Fig 1: Ginger (*Zingiber officinale*)

Negro pepper (*Xylopia aethiopica*)

Xylopia aethiopica (Annonaceae) (fig 2) commonly called negro pepper, African pepper, Guinea pepper and spice tree, is an ever green aromatic tree growing up to 15-30m high. It is called Eeru alamo in Yoruba, Uda in Igbo and Kimbaa in Hausa language. It is a very popular item of local trade throughout Africa as a spice and flavouring for food and for medicine. Traditional medicine claimed it to be useful as abortifacients, ecbolic as well as in the treatment of diarrhea, dysentery; stomach disorder, menstrual disorder, naso-pharyngeal infections, arthritis, rheumatism, infections, among others (Earnest and Goodies, 2014.). A decoction of the fruit or bark is useful in the treatment of bronchitis, asthma, stomach-aches and dysenteric conditions. The powdered root is used as a dressing for sores and to rub on gums for pyorrhoea and in local treatment of cancer in Nigeria.

Fig 2 : Negro pepper (*Xylopia aeathiopia*)

Materials and Methods

The study area

The study was carried out in Ibadan. It is the capital of Oyo State, located in south western Nigeria. There are 11 Local Government Areas (LGAs) in Ibadan metropolis comprises of Ibadan north, Ibadan North East, Ibadan NorthWest, Ibadan South West, Ibadan South East, Akinyele, Egbeda, Ido, Lagelu, Ona - ara and Oluyole. According to national bureau of statistics 2020, the population of Ibadan was estimated to be 3.552 million with total area of 3080km^2. Prominent crops grown in that area include maize, yam, cassava, cocoyam, plantain etc while forest spices utilized or consumed in the area include ginger, alligator pepper, negro pepper, garlic, turmeric, cloves, black pepper and many more.

Sampling Procedure and Data Collection

Multi – stage sampling procedure was employed for this study. The first stage was the purposive selection of Sabo, Sango, Mokola and Aleshinloye markets because of the presence of different tribes in these markets that use and sell forest spices. The second stage was the random selection of 5 prominent tribes in Ibadan which include Yoruba, Igbo, Hausa, Efik and Ebira ethnic groups in those markets who used and sold the selected spices. These are tribes found and interviewed in the course of questionnaire administration. The last stage was the random selection of forty (40) respondents from Aleshinloye, twenty (20) from Sabo, thirty three (33) from Mokola and the remaining twenty seven (27) respondents were selected from Sango markets to make a total sample size of 120 interviewed through structured questionnaires. This selection was based on proportionate to sample size. Primary data were collected on the socioeconomic characteristics of the respondents, utilization of ginger and negro pepper among different ethnic groups and factors affecting the utilization of ginger and negro pepper in the study area.

Data Analysis

Data obtained were subjected to descriptive statistics and Ordinary Least Squared Regression model. Descriptive statistics such as means, frequencies distribution and percentages were used to explain the socioeconomic characteristics of the respondents and to determine the various uses of ginger and negro pepper. Linear regression analysis was used to determine relationship between the factors affecting the use of ginger and negro pepper among different ethnic groups in the study area. The implicit form of linear regression model for this study is given as $Q= f(X_1,X_2,X_3,X_4,X_5,X_6,X_7.....U)$ where Q is the frequency of spices utilization, X_1 = age (number of years of the respondents), X_2 = gender (male =1 or otherwise =0), X_3 = primary occupation(trading =1 or otherwise = 0), X_4 = educational level (number of years spent in school), X_5 = income(monthly income in ₦), X_6 = tribe (ethnic group of the respondents), X_7 = Household size (number of persons in the household), U = error term.

Results and Discussion

The result in Table 1 shows the socio-economic characteristics of the respondents in the study area. Majority (62%) of the respondents were female while 38.3% accounted for the male. This implied that female utilized ginger and negro pepper for various purposes more than male. This corroborates the findings of Jimoh and Haruna (2007) where 63% of the respondents were female. This may be as a result that

female had traditional knowledge about the utilization of forest spices than their male counterpart. Age class of the respondents showed that most (47%) fell within the age range of 31 and 40 years while very few (1.75%) of the respondents were above 50 years of age. The mean age was 52 years.

This implied that majority of the respondents were in their active ages which makes the utilization of ginger and negro pepper more interesting to them. In other words, most of the respondents of diverse age range used ginger and negro pepper for variety of purposes. This result aligns with the findings of (Amusa *et al*., 2013) where majority of the respondents fell between 31and 40 years of age. About 40% of the respondents passed through secondary school education level, 31.7% had primary education, 17.5% had no formal education and 10.8% went through tertiary education. This is an indication that majority of the respondents were literates and this might be a reason for them to be enlightened about the significance of utilization of ginger and negro pepper for variety of purposes. This negates the findings of (Ayanwuyi *et al*., 2013) where 45% of the respondents had primary education. Regarding the household size of the respondents, 47.4% of the respondents had between 1-5 members, 44.2% had 6 – 10 members and 8.4% accounted for those that had above 10 members in their households. The mean household size was six.

This implied that the utilization of ginger and negro pepper for various purposes increases along with household size. This result supports the findings of (Mulenga *et al*., 2011) where 6 was reported as the mean household size. The monthly income of the respondents showed that highest percentage of the respondents (36%) earned between ₦10,001 and ₦20,000 while 6.7% earned above ₦40,000. The mean monthly income was ₦21, 833. This is an indication that majority were in the low income class and this may be as a result that most of them were petty traders selling herbs and forest spices in smaller quantities. This corroborates the findings of (Famuyide *et al*., 2013) where 62% earned between ₦10,000 - ₦30,000.As regards the respondents' tribe, Yoruba tribe accounted for the highest percentage (37.5%), the next tribe was Hausa being 35%, 11.7% of the respondents belong to Ebira tribe, while 11% were Igbos and 5% were Efik. This is an implication that Yoruba tribe constituted the largest population and this may be as a result that the study was carried out in Yoruba speaking environment. In other words, the use of ginger and negro pepper for variety of purposes cuts across different ethnic groups in the study area.

Table 1: Socio-economic characteristics of respondents

Socio economic	Frequency	Percent
Gender		
Male	46	38.3
Female	74	61.7
Age		
< 30	33	27.6
31- 40	56	46.6
41-50	29	24.1

>51	2	1.7
Mean = 51.5		
Level of education		
No formal education	21	17.5
Primary	38	31.7
Secondary	48	40
Tertiary	13	10.8
Household size		
1 – 5	57	47.4
6 – 10	53	44.2
>10	10	8.4
1 – 5	57	47.4
Primary occupation		
Trading	54	45.0
Civil service	25	20.8
Artisan	20	16.7
Private business	18	15.0
Others	3	2.5
Monthly income (₦)		
<10,000	42	35.0
10001 – 20,000	43	35.8
20,001 – 30,000	14	11.7
30,001 – 40,000	13	10.8
>40,000	8	6.7
Mean = 21,833		
Tribe		
Yoruba	45	37.5
Hausa	42	35
Igbo	13	10.8
Ebira	14	11.7
Efik	6	5.0

Factors affecting utilization of Ginger and Negro pepper in the study area

The regression analysis as shown in Table 2 presents the factors affecting the utilization of ginger and negro pepper in the study area.

Gender: gender of the respondents is significant at 1% level, showed that the utilization of ginger and negro pepper for different purposes is not gender biased. In other words, the frequency of utilization of ginger and negro pepper for different purposes is not affected by gender. This aligns with the findings of (Bolaji-olutunji *et al.*, 2017) in their research on determinants of willingness to pay for forest spices in Ibadan where gender had an indirect relationship with amount spent per week on forest spices.

Educational level: the coefficient for educational level of the respondents was

negative but significant at 5% level, implying that educational level of the respondents is inversely related to the utilization of ginger and negro pepper for different purposes. The educational level of the respondents does not affect the frequency of utilization of ginger for different purposes in the study area. In other words, the respondents in the study area were short of knowledge or proper information on the significance of utilization of ginger and negro pepper for various purposes due to their low educational level.

Tribe : the coefficient for the respondents' tribe was negative but significant at 5% level, suggesting that the frequency of utilization of ginger and negro pepper for various purposes is not affected by tribe. In other words all the ethnic groups interviewed made use of ginger and negro pepper for one purpose or the other.

Household size: the coefficient for household size of the respondents was positive and significant at 1% indicating that the respondents' household size had a direct relationship with frequency of utilization of ginger and negro pepper for different purposes. This suggests that the utilization of ginger and negro pepper for different purposes among different ethnic group increases as the number of household size increases.

Primary occupation: the coefficient for primary occupation was positive and significant at 10% level, implying that respondents' primary occupation had a direct relationship to the frequency of utilization of ginger and negro pepper for variety of purposes. This could be as a result that some of the respondents were mainly traders selling different forest spices for human consumption**.** Similar report was made by (Bolaji- olutunji *et al*., 2017) in their study on determinants of willingness to pay for forest spices in Ibadan in which amount spent on forest spices had direct relationship with primary occupation.

The regression analysis coefficient is 0.628, implies that 62.8% of the independent variables, socioeconomic factors, explain the dependent variable, utilization of ginger and negro pepper in the study area.

Table 2: Regression Analysis Showing the Factors Affecting the Utilization of Ginger and Negro Pepper

Variables	Coefficient	Standard error	t- values
Age	-0.072	0.0824	-0.873
Gender	-0.265	0.1052	-2.519***
Educational level	-0.403	0..3415	-1.180**
Primary occupation	0.181	0.0937	1.930*
Tribe	-0.091	0.0893	1.019**
Income	0.073	0.1002	0.728
Household size	0.293	0.1036	2.827***
Constant	5.958	1.3114	4.543
R^2= 62.8			

Author's computation, 2019. **1 %, **5%, * 10% significant levels.

Utilization of Ginger by Different Ethnic Groups in the Study Area.

Result in Table 3 reveals the different ways of ginger utilization by different ethnic groups in the study area. Twenty one percent of the Yoruba tribe used ginger because of its characteristic taste, 3% used it for concoction, another 21% used it as seasoning, 5% used it to treat common cold, 12% used it to combat digestive disorders and majority (62%) of the total population of Yoruba tribe used ginger for various purposes such as seasoning and digestive disorders. As regards the Hausa tribe, 5% used ginger because of its taste, 0.8% used for concoction and about 14% of the respondents used it for seasoning and the total percentage of the Hausa tribe interviewed that used ginger for variety of purposes was recorded to be 20%. According to the Igbo tribe, only 3.3% and 0.8% used ginger because of its taste and concoction respectively and about 4% of the total population of the Igbo tribe interviewed used ginger for different purposes. Only 1.7% of the Efik tribe used ginger because of its taste. Lastly, 6.5% and 6% of the Ebira tribe consumed ginger because of its taste and also to make concoction respectively.

The percentage total of the respondents in the study area showed that 37.5% of the respondents used ginger because of its taste, 11% used it for concoction, 35% of the respondents used it for food seasoning, 5% used for common cold treatment and about 12% declared that it was used for treatment of digestive disorders. This is an implication that Yoruba tribe accounted for the largest distribution of respondents of ginger utilization and were able to avail the researchers needed information as regards its uses for a variety of purposes as the study was carried out in their environment and moreover all other tribes were able to explain the different uses of ginger according to the ethnic group they belonged.

Table 3:Cross Tabulation of Uses of Ginger by Different Ethnic Groups

Tribe	Taste	Concoction	Seasoning	Cold	Digestive	Total
Yoruba	25 (20.8%)	4 (3.3%)	25(20.8%)	6 (5.0%)	14(11.7%)	74(61.7%)
Hausa	6(5.0%)	1(0.1%)	17(14.2%)	0 (0.0%)	0(0.0%)	24(20.0%)
Igbo	4 (3.3%)	1(0.8%)	0(0.0%)	0(0.0%)	0(0.0%)	5(4.2%)
Efik	2(1.7%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	2(1.7%)
Ebira	8(6.5%)	7(5.85%)	0(0.0%)	0(0.0%)	0(0.0%)	15(12.5%)
Count % total	45(37.5%)	13(10.8%)	42(35%)	6(5.0%)	14(11.7%)	120(100%)

Author's computation

Utilization of Negro pepper by different Ethnic Groups in the study Area

Result in Table 4 shows the utilization of negro pepper by the respondents in the study area. About 10% of the Yoruba tribe used negro pepper for fever/malaria treatment, 4.2% used it for skin disease, another 5% used it for post natal treatment, 4.2% used it for both measles and toothache treatment while 8% used for pile treatment and very few of them (2.5%) declared that it is used for the treatment of common cold. Altogether, about 38% of the total population of Yoruba tribe in the study area used negro pepper for various purposes in the study area. As regards the Igbo tribe, very few (2.5%) used negro pepper for fever/malaria and skin disease treatment while 2.5% used it for post natal and pile treatment, 0.8% used it for measles treatment and 1.7% used it for common cold treatment and about 12% of the total population of the Igbo tribe interviewed utilized negro pepper for variety of purposes.

As for the Hausa tribe, 5% used negro pepper for fever/malaria treatment, 7% used it for the treatment of skin disease, 2.5% used it for post natal treatment, another 3.4% used it for measles treatment, about 9% used it for toothache treatment , 0.8% of them used it for treatment of pile and 7.6% opined that it is being used for common cold and about 35% of the total population of Hausa tribe in the study area used negro pepper for different purposes. The Efik tribe was another tribe interviewed in the study area and 0.8% used negro pepper for fever/malaria treatment, skin disease, post natal treatment, measles and toothache treatment respectively and very few (4.2%) of the total population of Efik tribe interviewed used negro pepper for variety of purposes. Regarding the Ebira tribe, 1.7% used negro pepper for fever/malaria treatment, 0.8% used it for skin disease, post natal and measles treatment respectively while 2.5% used it for both toothache and pile treatment, another 2.5% disclosed that it is used to treat common cold and about 12% of the total population of the Ebira tribe in the study area utilized negro pepper for various purposes. Twenty percent of the respondents in the study area used negro pepper for fever/malaria treatment, 15% used it for the treatment of skin disease, 12% used it for post natal treatment, another 10% used it for measles treatment 17% used for toothache treatment, 13% used for pile treatment and the remaining 14% used it for the treatment of cold. This is an indication that a good number of Yoruba tribe (62%) accounted for the highest distribution of negro pepper utilization, followed by the Hausa tribe .all other tribes had very low utilization and this could be as a result that they were unable to express themselves or lack proper knowledge as regards its utilization.

Table 4: Cross Tabulation of Uses of Negro Pepper by Different Ethnic Groups

Tribe / uses	Fever/ malaria	Skin disease	Post natal	Measles	Toothache	Pile	Cold	Total
Yoruba	12(10.1%)	5(4.2%)	6(5.0%)	5 (4.2%)	5(4.2%)	9(7.6%)	3(2.5%)	45(37.8%)
Igbo	3(2.5%)	3(2.5%)	3(2.5%)	10(0.8%)	0(0.0%)	2(1.7%)	2(1.7%)	14(11.7%)
Hausa	6(5.0%)	8(6.7%)	3(2.5%)	4(3.4%)	11(9.2%)	1(0.8%)	9(7.6%)	42(35.3%)

Efik	1(0.8%)	1(0.8%)	1(0.8%)	1(0.8%)	1(0.8%)	0(0.0%)	0(0.0%)	5(4.2%)
Ebira	2(1.7%)	1(0.8%)	1(0.8%)	1(0.8%)	3(2.5%)	3(2.5%)	3(2.5%)	14(11.8%) 11.8%
Count % total	24(20.2%)	18(15.1%)	14(11.7%)	12(10.1%)	20(16.8%)	15(12.6%)	17(14.3%)	120(100%)

Author's computation, 2019.

Conclusion

Based on the findings of this study, it can be concluded that majority of the respondents were female, within the economic and active age, and were moderately literate. This is because women most times are decision makers on what is eaten in the household and in the process they make use of these spices. The selected spices are effective in treating minor ailments such as malaria/fever, common cold, skin diseases and also for food seasoning. The empirical study found that tribe, household size, gender, educational level and primary occupation influence the ginger and negro pepper utilization.

Policy Recommendation

The study therefore recommends that different ethnic groups should be encouraged to utilize ginger and negro pepper more because of its effectiveness in combating minor ailments and also seek proper knowledge about the spices in other to promote its utilization. Forestry Research Institute of Nigeria through its extension services should encourage farmers in the planting of ginger and negro pepper, and all forest spices to prevent them from going into extinction.

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