

ASSESSMENT OF ACCEPTABILITY AND CONSUMPTION OF *SENECIO BIAFRE* (WOROWO) AMONG HOUSEHOLDS IN SOUTH WESTERN, NIGERIA

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Abstract

Several vegetable species abound in the world. Green leafy vegetables constitute an indispensable constituent of human diet in Africa generally and in West Africa in particular. Leafy vegetables are important items of diet in many Nigerian homes and they are valuable sources of nutrients as they contribute substantially to protein, mineral, vitamins, fiber and other nutrients which are usually in short supply in daily diets. *Senecio biafrae* is an indigenous leafy vegetable and occurs naturally in the forest zone of West Africa from Guinea to Uganda. It is cultivated on a small scale mainly in Nigeria and Cameroon. In Nigeria adequate attention has not been given to this important vegetable which has affected its consumption among households. This neglect has contributed in no small way to malnutrition problems in Nigeria.

This study was design to assess the acceptability and consumption of *Senecio biafrae* in South Western Nigeria. The specific objectives were ascertain the socio-economic characteristics of respondents, examine the production, acceptability, cultural belief about the vegetable, attitude towards it and income generating activities of the respondents. Simple random technique was used to select two out of the six states of the South Western Nigeria. A total of 120 respondents randomly selected for the study and frequency counts, percentages, mean, standard deviation and linear regression were used to analyze data. The study showed that many (60.8%) of respondents indicated that the vegetable is acceptable to them and that they consume it. The reasons for consumption were for nutritional purpose 45.0%, taste 10.0%, medicinal purposes 3.3% and Aroma 2.5%. Factors affecting consumption of the vegetable are tribe 26.7%, interest 21.7%, flavour 23.3%, cost 15.0% and availability 13.3%. Sex of the respondents can be used to determine people's attitude towards the consumption of the vegetable ($r = 0.286$, $p = 0.047$). That is male respondents have more positive attitude towards the consumption of the vegetable than their female counterpart.

Introduction

Vegetables are eaten as supplementary foods or side dishes in raw state or in semi-cooked form alone with meat or fish in stews, soups and various preparations (Rice et al, 1987 and Okigbo, 1999). *Senecio biafrae* (worowo) is a leafy vegetable. it is very essential to human life because it is a source of fibre, vitamins, carbohydrates and proteins. It is an affordable dish which can be obtained at a very little cost and effort to complement the starchy staple foods consumed, cassava and maize (Guarino, 1995). It supplies about 70% calories and the major nutrients required for a balance diet (Central Bank of Nigeria 1979). It is a very cheap source of important nutrients as supported by. Dairo and Adanlawo (2007) that reported that green leafy vegetables are one of the sources of nutrients for growth in man and animal. The limited protein they contain is however very useful for supplementing the high content of carotene often called vitamin A needed in the body. It also promotes the intake of essential nutrients from the other foods by making them more palatable (Thompson and Duckworth 1996).

The diet for most Nigerians is based on starchy foods like cereals (maize, rice, sorghum, millet) roots and tubers (yam, cocoyam, sweet potato, cassava) which are low in body-building proteins, minerals and vitamins. The health implication of this deficiency is protein and vitamin malnutrition that other sources must be sought out to supplement the low levels of these essential food nutrients. This brings about the importance of vegetables in human diet. A vegetable is an edible plant or part of a plant, but usually excludes seeds and most sweet fruit (Swedenborg, 2003; John, 1993). This typically means the leaf; stem or root of a plant. The non-biological definition of a vegetable is largely based on culinary and cultural tradition. In culinary terms, a vegetable is an edible plant or its part, intended for cooking or eating raw (Harri and Bianchini, 2003). In biological terms, "vegetable" designates members of the plant kingdom. Vegetables are most often consumed as salads or cooked in savoury or salty dishes.

Several vegetable species abound in the world. Green leafy vegetables constitute an indispensable constituent of human diet in Africa generally and West Africa in particular (Chyma and Igyor, 2007). Leafy vegetables are important items of diet in many Nigerian homes and they are valuable sources of nutrients especially in rural areas where they contribute substantially to protein, mineral, vitamins, fiber and other nutrients which are usually in short supply in daily diets (Mosha *et al.*, 1995). Although reliable statistics on production and consumption are scarce, the abundance of various types of vegetables in Nigerian markets is a pointer to their use in human diets (Dairo and Adanlawo, 2007).

Most Nigerian indigenous leafy vegetables often grow spontaneously and in very small areas and some of the vegetables are outright wild species which are not given any cultivation attention (Adebooye, 2004). However several studies have documented the role of the under- exploited leafy vegetables in human nutrition (Adebooye, 1996; Schippers, 2000; Adebooye and Phillips, 2005 and Adebooye *et al.*, 2005).

The indigenous leafy vegetables compete favourably with the routinely cultivated leafy vegetables both in terms of leaf yield and nutrient composition (Adebooye, 1996). Despite these, they are very scarce in most urban markets which is an indication that they are already being threatened into extinction and that they are under produced. One of these indigenous leafy vegetables is worowo (*Senecio biafrae*). *Senecio biafrae* occurs naturally in the forest zone of West Africa from Guinea to Uganda. It is cultivated on a small scale mainly in Nigeria and Cameroon.

Fresh succulent leaves of worowo are used as leafy vegetable in Sierra Leone, Ghana, Benin, Nigeria, Cameroon and Gabon. It is especially popular in south-western Nigeria (Adebooye, 2004). It is usually cooked with pepper, tomato and onions. In Sierra Leone, where it is called 'bologi', the leaves are eaten as steamed vegetable in combination with okra and fish. Worowo is marketed locally and there are no records of international trade. Due to the decline in cocoa trade majorly caused by abandonment and burning of cocoa plantations, this vegetable is becoming quite rare and is therefore several times more expensive than *Amaranthus*, *Celosia* or *Corchorus* leaves (Adebooye, 2004, Adebooye *et al.*, 2003). This is due to the fact that the vegetable is traditionally cultivated under cocoa shades in cocoa plantations consequently any reduction in cocoa production will result into reduction in its production and availability. Optimum utilization of this

indigenous vegetable will have significant influence on the income of farmers and traders, especially women, and thereby result in the economic growth of the communities and the nation as a whole.

The importance of *Senecio biafrae* is not only limited to human consumption alone, apart from eating it raw, or making it into soup, stew and sauce by steaming or boiling, it can be used for medicinal purposes. Adebooye (2000) reported that it can also serve as sustainable use of medicine from food plants. The wealthy few resort to taking it as delicacy while in the home of very poor Nigerians, who are the majority, it constitutes a constant integral part of their diets. To the farmers, it serves as additional source of income and nutrients among household members. It serves as a proteinous vegetable and is very nutritious, economical and as a sustainable use of indigenous food for medicinal purpose (Adebooye, 2001).

Nigeria is a tropical country with most of its land area in the low and middle level elevations, where there is no frost problem found in the temperate countries. Nigeria possesses favourable climatic conditions for its production, especially in the southern part where production can take place all year round. In the Northern part, irrigation can be provided for dry season production while in the south, planting is done mainly in the marshy lands, flood plains of rivers, inland valleys, swamps and fadama lands.

Senecio biafrae is traditionally produced in home gardens, market gardens, floody land and compound farms or as inter crop. Its production is usually a component of the predominant family systems in the different parts of the country. Mostly, when it is grown in home gardens, the output is for the consumption of the grower family. The provision of good production technique to farmers under favourable weather conditions, the right soil and adequate moisture can often ensure high quantity and quality production. The production which is currently done as a hobby can be taken as an enterprise with high income generating prospects.

Despite the fact that *Senecio biafrae* is common in South Western Nigeria, very little attention is been paid to its production, consumption and acceptability. This is because a substantial proportion of it comes from the wild and subsistence level of production.

Although it can constitute an important component in Nigerian diets, its production by local farmers who constitute bulk of its producers have not been

properly documented. This in fact is affecting both the acceptability and consumption rate among the people. Little or no attention has been given to it at both local and state levels in terms of resource allocation.

This neglect has contributed in no small way to malnutrition among Nigerians. To improve the cultivation of these indigenous vegetables with a view to making them available and be at affordable prices, there is need to investigate consumption and acceptability of these indigenous leafy vegetables.

There is need therefore to assess production, consumption and acceptability of this vegetable among household members in South Western Nigeria, thus, the focus of this study. Also the study evaluated attitude and beliefs vegetable as well as the income generating activities of the respondents.

Methodology

The study was carried out in Southwestern region of Nigeria. The region enjoys same tropical climate with two distinct seasons, rainy season (April-October) and dry season (November – March). Their temperature ranges between 21⁰C and 28⁰C, with high humidity.

Simple random sampling technique was used to select two out of six states. Four Local Government Areas were selected from the two states which are Ekiti and Ondo States. Two Local Government were selected from each State which covers Ikole Local Government and Irepodun/Ifelodun Local Government both in Ekiti State and Ileoluji/Oke Igbo Local government and Ondo Westt Local Government areas in Ondo State.

Two Communities were selected from each state and 30 respondents were selected from each community making a total of 120 respondents for the study. Interview schedule was used for data collection.

Data collected, was analyzed using descriptive statistics such as frequency count, percentage, meanwhile Chi-square and linear regression analyses were used for inferential statistics.

Results and Discussion

Socio-economic Characteristics of the respondents

Table 1 shows that 56.7% of the respondents are between 21 and 40 years of age. This implies that majority of respondents are in their active age. About 51.0% of the respondents are males while 49.2% are females. This shows that both sexes were adequately represented in the study. The Table also indicates that 60.0% are married while the remaining 40.0% are single.

This implies that most of the respondents are in position to give their opinion about the vegetable since married people are regarded as responsible and they have reasons why they take a particular meal unlike the single people who may not have choice about the meals they take. Mostly single people take what is available and not what they really want due to their status.

About 78.0% of the respondents have their household size between one and 6 people. This implies that most of the respondents have manageable household size which can also affect the type, quality and quantity of meals the households take. If the household size is too large, it will limit the type, quality and the quantity of meals taken. Many of the respondents (54.2%) have no formal educational certificate.

This implies that many of the respondents can only receive information about the meals they take in their local dialects and not in the official language of the nation, as they neither read nor write. Table 1 also indicates that 63.3% and 30.0% of the respondents belong to Christianity and Islamic religions respectively.

This implies that both popular religions in the country were well represented in the study as this can determine the type of meal consumed by the respondents. Also 45.0% of the respondents are farmers, 25.0% are traders while 18.4% are civil servants. This implies that most of the common income generating activities in the country are well represented in the study as this can determine the type of meals consume by the people.

Table 1: Frequency Distribution of Respondents' Socio-economic Characteristics

Socio-economic variables	Frequency	Percentages (%)
Age		
21 – 40	68	56.7
41 -60	33	27.5
60 and Above	11	9.2
Sex		
Male	61	50.8
Female	59	49.2
Marital Status		
Married	72	60.0
Single	48	40.0
Household size		
1 – 6	94	78.3
7 – 10	13	10.8
10 and Above	13	10.8
Educational status		
No formal education	65	54.2
Primary education	6	5.0
Secondary education	10	8.3
Tertiary education	15	12.5
Religion		
Christianity	76	63.3
Islam	36	30.0
Traditional religion	8	6.7
Income generating activities		
farming	54	45.0
Trading	30	25.0
Civil service	22	18.4
Artisans	7	5.8
others	7	5.8

Source: Field survey, 2013

Acceptability and Consumption of the Vegetable among the Respondents

The local names for the vegetable were sought from the respondents. About 43.0% of the respondents call it worowo, 38.3% call it rorowo while 18.4% have no local name for it. These local names are being determined by the dialects of the people. Table 2 indicates that 60.8% of the respondents consume the vegetable while 39.2% do not. Having this large proportion of the respondents not consuming the vegetable may be due to the fact that about 40.0% of the respondents are single and therefore do not determine what they eat but take whatever is available to them. Also 26.7% indicated that they consume it anytime it is available, 18.3% of the respondents consume it regularly and 16.7% consume it occasionally. Respondents identified factors that determine the consumption of the vegetables. About 27.0% identified tribe, 23.3%

identified flavour, 21.7% identified interest, 15.0% identified cost and 13.3% identified scarcity as factors that determine the consumption of the vegetable.

This result implies that the vegetable is seasonal and it thrives best under cool weather condition and can be very scarce and expensive during hot weather condition. Effort should be made towards all year round production through the use of irrigation.

Acceptability of the vegetable among the respondents was also measured. Table 2 indicated that 60.8% considers the vegetable as acceptable to them while 39.2 claim otherwise. Reasons for acceptability was measured and 39.2% does so for nutritional purpose, 10.0% it for taste, 3.3% for medicinal purpose and 2.5% for aroma.

Table 2: Distribution of Respondents Consumption and Acceptability of the Senecio biale (Worowo)

Variables	Frequency	Percentages
Local name		
Worowo	52	43.3
Rorowo	46	38.3
No name	22	18.3
Consumption		
Yes	73	60.8
No	47	39.2
Frequency of Consumption		
Not all	46	38.3
Anytime available	32	26.7
Regularly	22	18.3
Occasionally	20	16.7
Factors affecting consumption	32	26.7
Tribe	28	23.3
Flavour	26	21.7
Interest	18	15.0
Cost	16	13.3
Scarcity		
Acceptability	73	60.8
Yes	47	39.2
No		
Reason for acceptability	54	45.0
No consumption	47	39.2
Nutritious	12	10.0
Taste	4	3.3
Medicinal purpose	3	2.5
Aroma		

Source: Field survey, 2013

Relationship between Socio-economic Characteristics and Attitude towards Senecio biale (Worowo)

The R^2 of the linear regression was 66.0%, indicating that the variables considered in the study are responsible for the dependent variable. This implies that the socio-economic characteristics contribute 66.0% to the attitude toward the vegetable while the remaining 34.0% indicates influence from factors not considered in the study. Of all the socio-economic characteristics considered, only sex has significant ($t = 0.256$, $p = 0.45$) relationship with attitude

towards the vegetable at 5% level of significance. Since male sex is more than the female sex in the study and the coefficient of significance is positive. Male sex has more positive attitude towards the vegetable than female sex. This finding may be due to the fact that the vegetable is scarce and expensive and women spend more money and time to acquire it for their households' consumption, hence reduced their positive attitude towards the consumption of the vegetable. This stresses further the reason for more production of the vegetable and at all time.

Table 3: Relationship between Socio-economic Characteristics and Attitude towards the Vegetable

Variables	t	P value	Decision
Sex	0.256	0.047	Significant
Marital status	0.023	0.377	Not Significant
Age	0.03514	0.457	Not Significant
Educational background	0.231	0.686	Not Significant
Religion	0.570	0.572	Not Significant
Income generating activity	0.0424	0.913	Not Significant
Social Organization	-0.122	0.328	Not Significant

Source: Field survey, 2013

Conclusion

In conclusion, *Senecio bialfrae* is one of the indigenous vegetables which grow naturally in the forest zone of West Africa from Guinea to Uganda. Fresh succulent leaves are used as leafy vegetable in Sierra Leone, Ghana, Benin, Nigeria, Cameroon and Gabon. It is popular in South Western Nigeria. The vegetable is in the danger of extinction due to the dwindling production of cocoa in the zone. Both male and female sexes were well represented in the study and male respondents have more positive attitude towards the consumption of the vegetable. Local names of the vegetables in the study area are worowo and rorowo arising from the dialect of the people. This study showed that many people consume the vegetable for various reasons such as nutritional, taste, medicinal purposes and aroma. Factors affecting consumption of the vegetable are tribe, interest, flavour, cost and availability.

Recommendations

From the study it is recommended that efforts should be made towards increase the production of the vegetable all year round with the use of irrigation in the south western Nigeria. Since the vegetable is found more nutritional and medicinal it should be introduced to farmers in other ecological zones of the country for production and consumption as this will help in improving their nutrition and health. Efforts should also be made towards production in large quantity for export to other countries to enhance the foreign exchange earnings of the country.

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