LOCAL PRODUCTION OF MIXED SPICES (CURRY LEAF AND SCENT LEAF) AND SENSORY, PROXIMATE COMPOSITION

Makanjuola, Olakunle Mosses & Adeniji Azeez Adewale

Department of Science Laboratory Technology, the Federal Polytechnic, Ilaro, Nigeria

ABSTRACT

The study was conducted to locally produce and analyze the proximate composition of mixed spices using curry leaf (*Murraya Koenigii*) and scent leaf (*Occimum grattissium*). Mixed spices are commonly used in culinary practices to enhance the flavor and taste of various dishes. The study recorded moisture content for sample A, B and C to be 9.26%, 6.28% and 8.75% respectively. Protein was 8.53%, 5.49% and 12.39%, crude fiber content was 6.68%, 4.18% and 8.61%, fat/lipid was 2.39%, 2.04% and 2.28%, ash content was 5.43%, 7.20% and 3.32% and carbohydrate was 67.71%, 74.81% and 64.65% for sample A, B and C respectively. The sensory evaluation for sample A, B and C result revealed that most of the panelist liked the mixed spices. The study concluded that the produced mixed spices were accepted and displayed good and acceptable sensory attributes and could be utilized as spices for food and other uses. However, most commercially available mixed spices contain synthetic additives and preservatives, which may have adverse health effects. Therefore, exploring local alternatives using natural herbs like curry leaf and scent leaf could provide healthier options for consumers.

Keywords: proximate composition, mixed spices, Curry and scent leaf, flavor, taste

INTRODUCTION

The human diet includes food spices, which are pungent and fragrant dried vegetable materials that give food color, flavor, and scent (Gadekar and Yerramilli, 2006). Spices have several functions, including flavoring meals, preserving food, and providing medical benefits. Altemimi et al. (2017) state that there is evidence supporting the value of vegetable spice components, including seeds, fruits, roots, flowers, leaves, and barks, for a variety of culinary, medical, and industrial uses. Spices have a significant role in the nation's production system and foreign exchange gains. According to Dessalegn (2015), spices have a significant role in assisting farmers in transitioning from subsistence to market production. Spices have a significant role in Nigerian cuisine. Nigerians love spices, despite the fact that the majority of them are wild plants. While some spices, like ginger and garlic, are mostly found in the country's arid north, the majority of the spices that have been identified in Nigeria are located in the country's southern rainforest zone. Four agro-ecological zones in the nation—the forest (which includes mangrove and rainforest), the dried savanna, the Guinea savanna, and the Sudan savanna—are often home to spices (Adelaja, et al., 2008). *Aframonum longiscarpum* (*K. Schum*), *Allium cepa* L and *A. Sativum* L, *Anona senegalensis* Pers, *Arachis hypogeal* L, *Asystasia gagentica* (*T. Anders*), *Capiscum annum* L and *C. frutescens* L, *Cymbopogon critrates* L, *Diociecia reflexa*, *Gnetum africanum*, *Gongronema latifolium*, *Keayodendron brideliode*, *Mondora myristica*, *Ocimum gratissimum* L, *Parkia biglobose* L, and *Xylopia aethiopica* are among the indigenous spice resources found in Nigeria (Adelaja, et al., 2008). Spices grown by Nigerian farmers include guinea pepper (*Xylopia aethiopica*), African black pepper (*Piper guineense*), bushtea (*Ocimum gratissimum*), curry (*Murraya Koenigii*), sweet basil (*Ocimum basilicum*), ginger (*Zingiber officinale*), and turmeric (*Curcuma longa*).

It is a perennial herbaceous plant that is widely distributed, very scented, and profitable to grow.

Africa, Asia, and South America are home to this member of the Lamiaceae family (Tanko et al., 2008; Akara et al., 2021). The majority of frequently used vital spices are imported and not entirely natural due to extensive chemical preservation, which might have an impact on the body's systems when ingested. Nigeria is home to a large number of medicinal plants, thus it is important to promote the use of regional spices as well as the creation of novel and distinctive spices. Spices increase hunger, provide food flavor and texture, and enhance the presentation of meals. The demand for spices is enormous and is rising. Thus, the quest for novel and distinctive spice flavors must continue. The aim of this study is to produce local mixed spices using curry leaf (*Murraya Koenigii*) and scent leaf (*Occimum grattissium*)

MATERIALS AND METHOD

Materials

Scent leaves (*Ocimum gratissimum*), curry leaves (*Murraya Koenigii*), weighing balance, airtight plastic container, oven, distilled water, blender

Method

Sample Collection

Scent leaves (*Ocimum gratissimum*) and curry leaves (was gotten from Ilaro. The plants were taken to a botanisint the department of science laboratory technology, Federal Polytechnic Ilaro for identification.

Sample Preparation

The purchased spices were prepared accordingly; Sorting--washing--oven drying--grinding--dried leaf--packaging. They were washed, oven-dried at 50° C for 12 hours to remove inherent water molecules, and afterwards, pulverized to form powder. Each powdered sample was placed in an airtight plastic container, labeled, and kept at room temperature until usage.

Preparation of Mixed Sample

Mixed spice preparation was as follows: after the spices were in their dried and powdered forms, the mixed spices was prepared as follow;

Sample A: 50g of scent leaves + 50g of curry leaves

Sample B: 70g of scent leaves + 30g of curry leaves

Sample C: 30g of scent leaves + 70g of curry leaves

Proximate Analysis

Moisture Content

The method listed below was used to determine the moisture content:

1. To remove moisture from the plates, crucibles were dried in the oven for 30 minutes at 105 ± 5 OC.

2. After being placed in a desiccator, the crucibles were left to cool for around 20 minutes at room temperature.

3. The empty crucibles' weight was measured and recorded as W0.

4. To enhance the surface area, the samples were ground into a powder using a pestle and mortar or a high-speed blender mill.

Ash Content

The steps below were used to determine the ash content:

1. To remove any remaining moisture, empty crucibles were dried for 30 minutes at 130 ± 15 OC in the oven.
2. After being placed in a desiccator, the crucibles were left to cool for around 20 minutes at room temperature.
3. The empty crucibles' weight was measured and noted as W0.
4. To enhance the surface area, the materials were ground into a powder using a high-speed blender mill or a pestle and mortar.

Protein

The following steps were taken in order to assess the protein percentage:

1. Into a 250 ml digestion flask, 1 gram of a well-prepared sample was weighed with 0.1 mg precision.
2. Two Kjeldahl/selenium tabs were added (you may also use 1.5g CuSO4 and 2.5g K2SO4 /Na2SO4).

3. The sample was lightly moistened with acid by carefully adding 13 ml of concentrated H2SO4 and shaking it slightly.

% PROTEIN = %N X 6.25

W1 = Sample weight (mg)

T = Titration volume of sample (ml)

B = Titration volume of blank (ml)

N = Normality of acid to 4 decimal places (0.0001)

F = Conversion factor for nitrogen to protein = 6.25 for food & feeds

Fat/Lipid

1. Thimbles fitted with the adapters was placed on a balance, it was recorded and tarred.

2. A well-prepared sample weighing 1.000g was placed in the thimble.

3. The device for Soxhlet extraction was turned off.

Carbohydrate Content

The carbohydrate content was calculated by subtracting the sum of the percentages of moisture, total ash, crude fat, crude protein, and crude fiber from 100% Carbohydrate (Rampersad et al., 2003).

Carbohydrate= 100 - (% moisture + % ash + % protein + % lipids + %fibre).

Sensory Evaluation

5 untrained panelists at the Department of Science Laboratory Technology at Federal Polytechnic Ilaro, Ogun State, evaluated the sensory properties of the mixed samples on a 9-point hedonic scale (Ebuehi, Ikanone, and Nwamadi, 2004). Taste, odor, texture (mouthfeel and handfeel), flavor, color, and general acceptance were among the sensory qualities evaluated. The panelists were instructed to fill out a sensory evaluation questionnaire with their observations.

RESULTS AND DISCUSSION

Results

Mixed spices were prepared using scent leaves and curry leaves. Table 4.1 shows the proximate analysis of mixed spices of scent leaves and curry leaves. The result gotten for moisture content for sample A, B and C was 9.26%, 6.28% and 8.75% respectively. Protein was 8.53%, 5.49% and 12.39%, crude fiber content was 6.68%, 4.18% and 8.61%, fat/lipid was 2.39%, 2.04% and 2.28%, ash content was 5.43%, 7.20% and 3.32% and carbohydrate was 67.71%, 74.81% and 64.65% for sample A, B and C respectively.

Table 4.1: Proximate analysis of mixed spices of scent leaves and curry leaves

Parameters	A	B	C
Moisture content (%)	9.26	6.28	8.75
Protein (%)	8.53	5.49	12.39
Crude fiber content (%)	6.68	4.18	8.61
Fat/lipid (%)	2.39	2.04	2.28
ash content (%)	5.43	7.20	3.32

carbohydrate (%)	67.71	74.81	64.65

Key: A= 50g of scent leaves + 50g of curry leaves

B= 30g of scent leaves + 70g of curry leaves

C= 70g of scent leaves + 30g of curry leaves

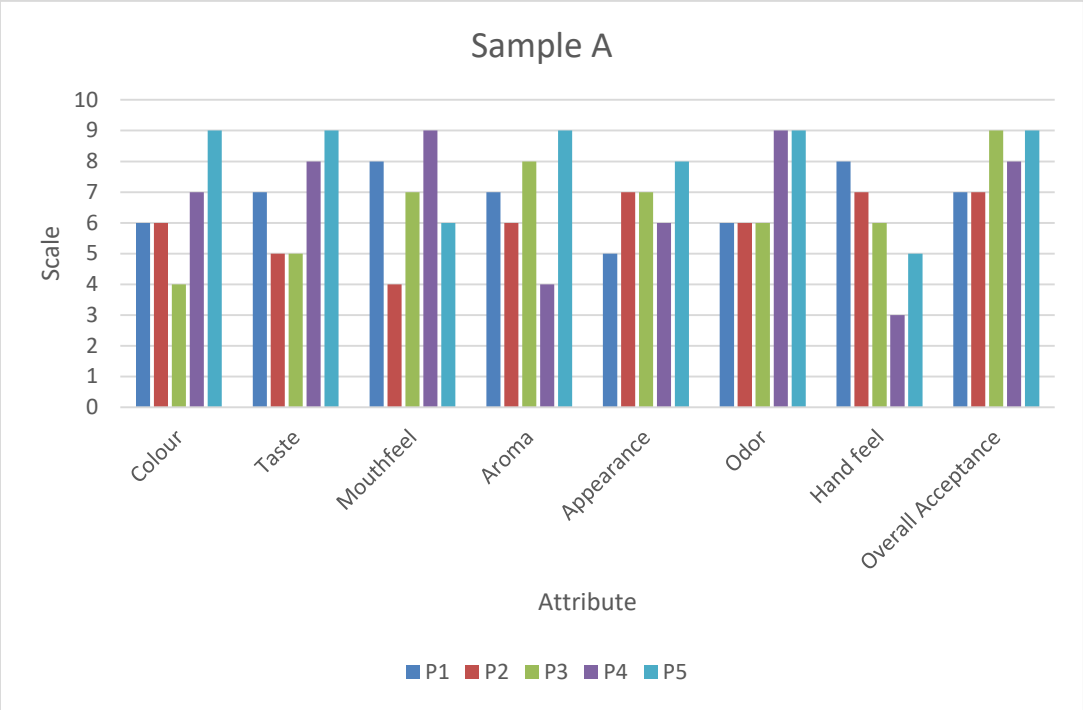

Fig 4.1: Sensory evaluation of A (50g of scent leaves + 50g of curry leaves)

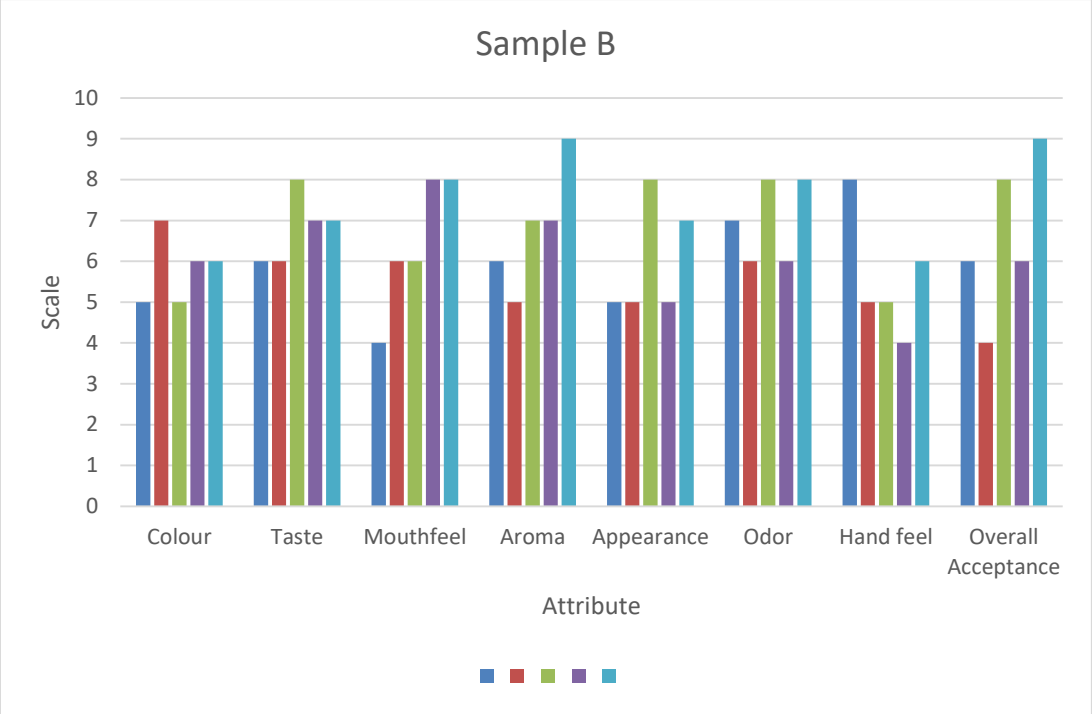

Fig 4.2: Sensory evaluation of sample B (30g of scent leaves + 70g of curry leaves)

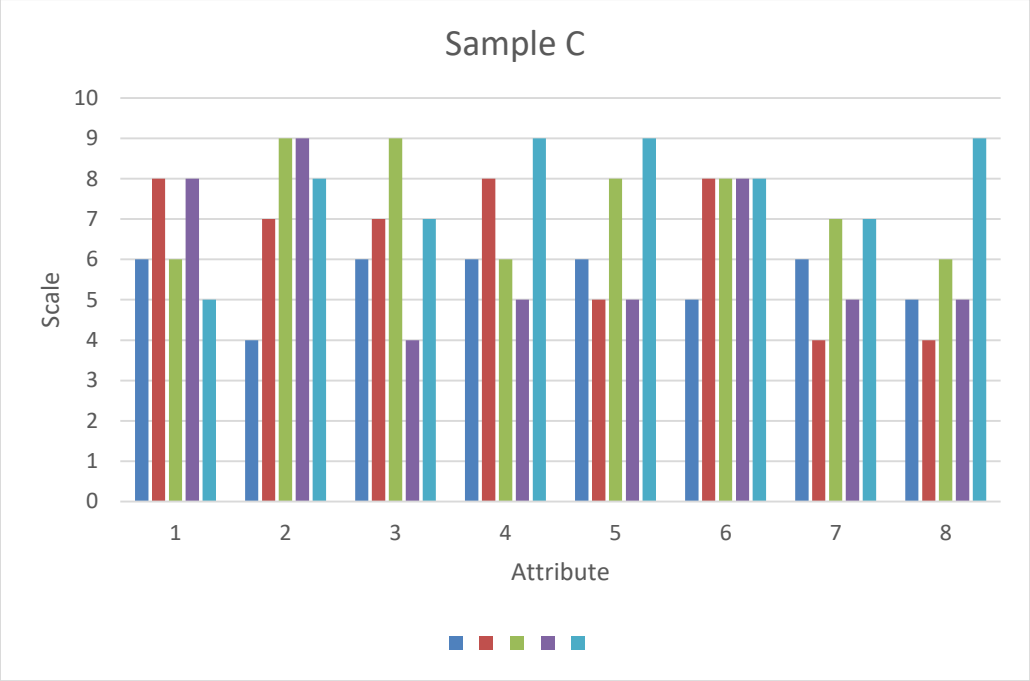

Fig 4.3: Sensory evaluation of sample C (70g of scent leaves + 30g of curry leaves.

DISCUSSION

Mixed spices were prepared using scent leaves and curry leaves. Table 4.1 shows the proximate analysis of mixed spices of scent leaves and curry leaves. The result gotten for moisture content for sample A, B and C was 9.26%, 6.28% and 8.75% respectively. Protein was 8.53%, 5.49% and 12.39%, crude fiber content was 6.68%, 4.18% and 8.61%, fat/lipid was 2.39%, 2.04% and 2.28%, ash content was 5.43%, 7.20% and 3.32% and carbohydrate was 67.71%, 74.81% and 64.65% for sample A, B and C respectively. The study revealed highest moisture and fat/lipid was in sample A, protein content and crude fiber was highest in sample C while ash content and carbohydrate was highest in sample B as shown in table 4.1. The moisture content, crude fiber content, protein, carbohydrate and ash value in this study is not in agreement with the study of Abu et al., (2023) that revealed a higher value than this study. The moisture content, ash, crude fiber and protein in the study of Abasiekong et al., (2020) that recorded higher values in their study but the carbohydrate content of the mixed spices in their study. The difference might be attributed to the types of leaves used and the quantity of mixture.

The prepared mixed spices were subjected to sensory evaluation using 9-point hedonic scale. Fig 4.1 to 4.3 shows the evaluation of the mixed spices. The sensory evaluation for sample A, B and C result revealed that most of the panelist liked the mixed spices. The study of Dawodu et al., (2023) assessed the production and sensory evaluation of mixed spices from selected local spices retailed in Ede, Nigeria. The study is in agreement with the study of Dawodu et al., (2023) that also revealed that the spices were liked by the panelists. The acceptability of the mixed spices in this study is in agreement with the study of Abasiekong et al., (2020). The study revealed that the produced mixed spices were accepted and displayed good and acceptable sensory attributes.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The aim of this study is to produce local mixed spices using curry leaf (*Murraya Koenigii*) and scent leaf (*Occimum grattissium*). The study recorded moisture content for sample A, B and C to be 9.26%, 6.28% and 8.75% respectively. Protein was 8.53%, 5.49% and 12.39%, crude fiber content was 6.68%, 4.18% and 8.61%, fat/lipid was 2.39%, 2.04% and 2.28%, ash content was 5.43%, 7.20% and 3.32% and carbohydrate was 67.71%, 74.81% and 64.65% for sample A, B and C respectively. The sensory evaluation for sample A, B and C result revealed that

most of the panelist liked the mixed spices. The study concluded that the produced mixed spices were accepted and displayed good and acceptable sensory attributes and could be utilized as spices for food and other uses.

Recommendations

Having concluded this study, below recommendations were made;

- More mixed spices should be formulated using other plant leaves
- Further research should compare individual spices with mixed spices
- Mineral content of the spices should be evaluated
- Usage of mixed wine should be encouraged

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