AN ANALYSIS OF COMPOSITION OF MELON SEED AND GROUNDNUT AS SOURCE OF MEAT PRODUCTION

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Abstract

The study looked at analysis of composition of melon seed and groundnut as source of meat production. Two research questions were used in the study. The study was limited to the use of melon seed and groundnut as source of meat production. The experimental design was used in the study. The sample of meat production was analyzed in the laboratory using simple percentages. Ash, fat and protein content were analyzed on melon and groundnut. The results obtained from the study revealed that protein content in melon was 43.97, milk in melon was 1.502 and residue in melon was 19.78. On the other hand, groundnut content in protein, milk and residue was in protein value was 36.34, 0.323 and 2.4321 respectively. The findings also showed that there is high percentage of protein value using meat production obtained from groundnut and melon seed. Finally, it was recommended that meat production through groundnut and melon should be encouraged for everyone.

Keywords: Melon Seed, Groundnut and Meat Production

Introduction

Egusi or melon seeds are fat and protein rich seeds of certain cucurbitaceous (squash, melon and gourd) plants. Authorities disagree whether the words is used more properly for seeds of the colocynth, those of the particularly large seeded variety of the water melon, or generically for those of any cucurbitaceous plant. The characteristics and uses of all these seeds are broadly similar. The egusi plant look so much like water melon plant that most botanists think it is one. However, on the inside of melon is neither red nor luscious, nor sweet indeed, it is white and dry and bitter enough to be repulsive. The seeds are eaten in various forms. Egusi is known for its seeds, which resembles large white, melon seeds. Generally the production of melon is not great due to its expensive way of cultivation. This has influenced the method of production and supply of melon thereby increasing the price value in the market.

Melon seed scientifically known as *citrullus colocynthis* has the appearance like water melon on the outside view but completely different on the inside with its bitter white flesh and seeds. It grows in warm and arid region of Africa and Asia. The people of Nigeria and Congo call it wild water melon. Egusi melon can grow just about anywhere: humid gullies, dry savannahs, tropical highland. This makes it a great source of food for farmers in even the worst conditions. The melon plant is also easy to grow. It is extremely resilient to pests and diseases and because it blankets the grounds as it grows, it can help suppress weeds. Because of this farmers often inter crop with other crops including sorghum, cassava, coffee, cotton maize or bananas. Mature egusi melon can also remain in the field for a long time without rooting, so crop less and waste is rare. Once the seeds are harvested they can be reliable source of food throughout the year.

The egusi is filled with very dry bitter flesh, the seeds are the true delicacy of this melon, composed of nearly 50 percent edible oil and another 30 percent pure protein. These litter seeds pacts a lot of nutrition into a small package. In many parts of Africa, where farmers lack access to meat dairy the high oil and protein content can make an excellent dietary supplement.

The seeds are often shelled and eaten individually as a snack. Many processed forms of the seeds have made their way into common cooking practice. After soaking, fermenting or boiling, the seeds take on different flavors and are frequently added to thicken soups and stews. On their own the seeds can also be roasted and ground into a spread like peanut butter with further preparation of egusi seed meal can pressed into patties to be used like a meat substitutes and its oil can be used for cooking. The egusi can also be an important supplementary baby food, helping prevent malnutrition. Blending the seeds with water and honey produces a milky liquid that can be used as formular if breast milk is unavailable; making the plants as diverse in its uses as it is easy to grow. In West Africa, a region where soups are integral to life, they are major soup ingredient and a common component of daily meal. Coarsely ground up, they thicken stews and contribute to widely enjoyed steam dumplings. Some are soaked, fermented, boiled and wrapped in leaves to form a favorite food seasoning. Families in Cameroon can eat the crops year round and it is high demand from countries in the central Africa sub-region and Nigeria.

Egusi is very high in nutritional value, rich in protein, fat and vitamins A, B_2 and C. It is made up of 30-40% protein and about the same proportion of oil. The oil is cholesterol free. In terms of vitamins, it contains alpha-tocopherol a component of vitamin E. it also contains palmic, stearic, linoleic and Oleic amount of carbohydrate and calcium.

Observation shows that 78% of fat is made up of unsaturated fatty acid, which is protective to heart. The alpha-tocopherol found in egusi is a component of vitamin E that helps in maintaining smooth young skin and good fertility. It also contains palmic, stearic and oleic acids important in protecting the heart. The egusi can also be an important supplementary baby food, helping prevent malnutrition. Blending the seed with water and honey produces a milky liquid that can be used as formula if breast milk is unavailable.

Groundnut also known as Arachis hypogaea is a legume species, an annual herbaceous plant that grows almost to ground level with very slender stems, leaves that are opposite each other with four leaflets, flowers that are pea shaped and fruits (legumes) that are basically seeds that sprout and mature underground. Presently, it's cultivated world over

in climate that is favorable to its growth, long warm periods and plenty of rain. As the stalk grow, they begin to grop to the ground, when the pods begin to form, they slowly force their way underground, ultimately maturing under the soil, forcing the farmer to dig the netted, tan collared pods up. It is possible that groundnut develop their growth habit as a method of protection from hot tropical sun. They have thin pods; once the peanut pods are harvested, the plant is removed and typically used for animal fodder.

Despite their names peanut are not actually nuts, they are legumes. In most culinary uses, peanut are classified as nut because they behave more like nuts in kitchen than other legumes such as lentils and beans. For people with nut allergies the distinction is particularly important, since many individuals with nut allergies can eat peanut safely conversely, people who are allergic to peanut can often eat nuts. In many parts of Africa, peanuts are more commonly known as groundnut, a reference to the underground location favored parts of Africa, peanuts represent a substantial percentage of the protein available for consumption. In the American south, peanuts are called Goobers, a variant of a Kikongo word, Nguba.

There are several important roles for peanuts in many areas of the world. A large percentage of the annual peanut harvest is pressed to yield peanut oil, a pale yellow, neutrally, flavored oil with a very high smoking point. Peanut oil is ideal for frying and is widely used in many countries for this purpose. The nuts are also ground into peanut butter, a creamy spread which is popular with people of all ages. Peanut can be found for sale whole as well, to be eaten plain, sprinkled into food, or included in various dishes.

Peanuts are rich in nutrients and phytonutrients. Peanuts are good source of niacin, folate, fiber, vitamin E, magnesium and phosphorus. They also are naturally free of trans-fat and sodium, and contain about 25% protein a higher proportion than in any true nut. Groundnuts are a good source of niacin, and thus contribute to brain health and blood flow. Groundnut is a significant source of resveratrol, a chemical associated with but not proven to cause a reduction in risk of cardiovascular diseases and cancer (Sanders, et al, 2000). Peanut are a source of co-enzyme Q10, as are oily fish, beef, soya bean and spinach (Lock Wood, et al., 1994).

Purpose of the study

The study was based on the analysis of composition of melon seed and groundnut as source of meat production. Specifically, the study is aimed at:

1. Finding approximate composition of melon seed meat production.
2. Finding out the approximate composition of groundnut meat production

Research questions

The following research questions guided the study:

1. What is the approximate composition of melon seed meat production?
2. What is the approximate composition of groundnut meat production?

Scope of the study

The study is limited to the use of melon seed and groundnut as source of meat production. The analysis was limited to the use of ash, fat, M.C. and protein content.

METHODS

Procedure adopted for meat production using groundnut and melon

The following procedures were observed in the production of meat using groundnut and melon:

1. Remove dirt from melon and groundnut.
2. Soak sample for 3 to 4 hours.
3. Ground the sample using a neat machine to avoid impurities.
4. Filter the roughages and subject to approximate analysis.
5. Further heat the sample through boiling and process the meat using groundnut and melon seed.

Analysis of ash and mineral matters

1. Place the required number of silica dishes (crucible) into muffle furnace for 16 minutes or more.
2. Remove the dishes, cool in a desiccator for at least 45 mins and weigh.
3. Weigh into the dish 3g of the test material.
4. If the sample is a liquid, pre-dry on a steam bath to prevent spitting during the charring stage.
5. Place the dishes on a not plate under a fume chamber and slowly increase the temperature until smoking ceases and the sample become thoroughly charred.
6. Place the dish at the center of the muffle furnace and ash until fully ashed. Notice grey color of ash.
7. If ashing is incomplete as evidenced by traces of carbon after reasonable period (8-9hrs) remove dish, cool.
8. Cool the dish with ash in a desiccator and weigh.

Fat or oil (liquid)

1. Weigh out 10g sample in a beaker and carefully transfer into the reparatory funnel.
2. Add 1ml of 0.87 ammonia solution and mix, then add 10 ml of alcohol (90%) and again mix well.
3. Add 25ml diethylether stopper and shake vigorously for 1 minute. Add 25ml of light petroleum spirit. (40^0C – 60^0C) and shake vigorously for 30 seconds.
4. After separation is complete transfer the fat solution into a suitable flask previously, weighed, dried and weighed.
5. Distill of the solvent from the flask, dry in an oven at 105^0c for 30 minutes, cool in the dessicator and weighed.

Data analysis

Research question 1

What is the approximate composition of melon seed meat production?

Table 1: Approximate composition of melon seed meat production

Item sample	% ash	% fat	% protein content
Melon (protein)	4.98	44.98	43.97
Melon (milk)	0.2068	1.68	1.502
Melon (residue)	1.4223	12.98	19.78

The result obtained from table 1 revealed that melon (protein) had 4.98% of ash, 44.98% of fat and 43.97% of protein content. Melon (milk) had 0.2068% of ash, 1.68% of fat and 1.502% of protein content. Also, melon (residue) had 1.4223% of ash, 12.98% of fat and 19.78% of protein content.

Research question 2

What is the approximate composition of groundnut meat production?

Table 2: Approximate composition of groundnut meat production

Item sample	% M.C	% fat	% protein content
Groundnut (protein)	12.04	33.90	36.34
Groundnut (milk)	98.11	0.64	0.323
Groundnut (residue)	79.34	3.3242	2.4321

The result obtained from table 2 revealed that groundnut (protein) had 12.04% of M.C, 33.90% of fat and 36.34% of protein content. Groundnut (milk) had 98.11% of M.C, 0.64% of fat and 0.323% of protein content. Also, groundnut (residue) had 79.34% of M.C ash, 3.3242% of fat and 2.4321% of protein content.

Discussion of Results

The result obtained from the study showed that there is high protein content contained in Melon and groundnut. The result also revealed high percentage of fat in melon and groundnut. This implies that when groundnut is used as a substitute for meat, it would be able to produce high percentage of fat and protein at consumption level.

Conclusion

In all, the result was able to explain that meat substitute is achievable in using processed groundnut and melon or egusi. The work also revealed high percentage of protein level obtained from processed meat substitute of groundnut and egusi.

Recommendations

From the study of the research, it would be recommended that meat production through groundnut and melon should be encouraged for everyone.

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