Food Science and Quality Management
ISSN 2224-6088 (Paper) ISSN 2225-0557 (Online)
Vol.58, 2016

'Jenal Soy Shito' an Alternative Source of Protein

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Abstract
Today's companies need fresh thinking about how to operate and compete in the new economy. The hospitality industry operates within an increasing complex and competitive market environment. In Ghana there have been many debates on not using local ingredient to produce a recipe. Soybeans have been identified as the most nutritional of ingredient. The objective of this study is to use soybeans to prepare 'shito' to cater for vegetarians and non vegetarians. This product is known as 'JENAL Soy Shito'. Due to undesirable inhibitors mostly found in soybean, treatment such as sorting and picking was done to inactivate these inhibitors. After these treatments, the soybean was roasted and milled into flour, which was used to prepare the 'shito'. Data obtained from the sensory evaluation on the attributes of taste and aroma on shrimp and soy bean 'shito', was analysed using SPSS. The Kruskal Wallis test indicated that was no significant difference ($p > 0.05$) between the two samples in terms of taste. For aroma, the shrimp powdered 'shito' was preferred to the soy bean powdered 'shito'.
Key Words: Protein, 'Shito', Soybeans.

1. Introduction

Food plays an important role in the life of man. Food can be classified into groups such as protein, minerals, fats and oils, vitamins, carbohydrates, and water, which can either be eaten in their raw state like apples, carrots or can go through a process of cooking. Certain cooked foods such as plain rice, "banku", "kenkey", "fufu" have to be eaten with stew, soup, sauce or shito (pepper sauce) to mention but few.

Protein a macronutrient is composed of amino acids, some of which are "essential", meaning they cannot be manufactured by the human body and so need to come from diet. Meat, fish, eggs, cheese and some other dairy products contain all essential amino acids and are considered "complete" proteins. Plant sources such as buckwheat, quinoa and amaranth also contain nearly every essential amino acid. Though complete proteins provide all essential amino acids in a single food, they are not necessary for good health. In general, the variety of amino acids every human needs can be provided by eating a balanced, varied diet that includes a variety of protein sources.

The major source of animal protein comes mainly from livestock in the form of poultry, beef, mutton and pork (Fleck, 1951). The increasing growth of human population together with the rising standard of living has placed great pressure on the existing sources of animal protein. There is therefore the need to consider other sources of protein such as plant protein.

The efficiency for a protein source at building muscles and promoting tissue growth in the body is measured by a gauge known as biological value (BV). BV is measured on a scale from 1 to 100, with meat proteins scoring the highest. However, soy protein and other plant based proteins, such as corn and wheat, also posted notable BV scores of more than 50 (Schuna, 2014).

The major ingredient for the preparation of 'JENAL Soy Shito' is soybeans. Soybeans come from the legume family which contains protein, calcium, iron and vitamins. Soybeans is cultivated in Ghana but highly underutilised. Out of the 50,000 metric tons of soybeans produced annually, only about 15 metric tons are utilised (Ghana Export Promotion Council, 2002) while the remainder is woefully underutilised. The low patronage of the beans is due to the long cooking time and its unpalatability (Plahar. 2003).'JENAL Soy Shito' as an emerging sauce to food such as "banku", "kenkey", or plain rice to mention but a few which has its major ingredient as soy bean.

Soy protein has been proven to be a very beneficial addition to any diet because of the positive effect it has on the human body. In 1999, the Food and Drugs Administration in the United States let companies claim that foods containing soy protein "may reduce the risk of heart diseases" (Health Claims, 2001). The claim was based on

early research showing that soy protein lowered levels of LDL (bad) cholesterol.

Soy protein is a viable substitution for the protein normally gained by eating meat. While meat is normally associated with fat content, soy protein is not. Also, soy protein contains all the amino acids gained from eating meat, which are an important part of reducing fat and maintaining health muscles. These amino acids are also an integral part of insulin production in the body.

People have become conscious of nutrition and as such the awareness of the relationship between health and nutrition is on the increase. Due to this awareness, people are concerned about the choice of food that can be combined to achieve a balanced diet. Shito is the word for pepper in the Ghanaian native language (Ga). It is a spicy hot chilli pepper sauce compared to ketchup in the United States and salsa in Mexico. It can be served with foods such as "kenkey", steamed rice, "eba" or "waakye" (rice and beans) in Ghana (Gibbon, 2009).

Vegetarians and vegans are unable to enjoy this pepper sauce (shito) because currently, shrimp powder and sometimes addition of meat is being used in its preparation. Soybean flour can also be used for the preparation of shito. This is why it has become imperative to find an alternative and affordable intervention in the name of 'JENAL Soy Shito' for vegetarians and vegans as well as non vegetarians to be able to enjoy 'shito' which is prepared using soy beans as its major ingredient (substitute for shrimp powder).

2. Method and Preparation:

Soybeans flour was used as a substitute for shrimp powder in the 'shito' preparation. The ingredients for the preparation are as follows:

1. Roasted soybean flour (3kg)
2. Powdered pepper (0.5 kg, ½ quantity for mild and none for pepper free)
3. Tomatoes puree (1kg)
4. Onions (1½ kg)
5. Soya bean oil (5 Litres)
6. Ground ginger and garlic (2 tsp)
7. Salt (2 tbsp)
8. Natural spices (2 tbsp)

Soy beans was bought from the market and kept under ambient temperature. Sorting and picking was done to free the soy beans from foreign materials before roasting. The roasted soybean was milled into flour. Onions bought from the market was also kept at ambient temperature. Onions were washed, sliced and blended with soybean oil. Soybean oil was put on fire and blended onions was added and allowed to cook for one hour, using moderate heat. Tomato puree, ginger, salt, pepper (optional) and natural spices (garlic, bay leaf) were added, stirred and allowed to cook for one hour. Stirring continued until a brownish colour was obtained, indicating the absence of water. The roasted milled soybean flour was added and stirring continued for thirty minutes until a dark brown colour was obtained.

'Shito' samples were randomly presented to twenty (20) panellists, who regularly eat soybeans and shrimp. Attributes determined for the degree of preference (using the nine-point hedonic scale) were taste and aroma. The data obtained from the sensory evaluation were subjected to statistical analysis using SPSS for windows (version 16). The Kruskal Wallis test was used to ascertain whether there were significant differences ($p > 0.05$) in the various sensory attributes (taste and aroma) of the 'shito' samples using the responses of the panellists.

3. Results and Discussion

Sensory evaluation based on the paired preference test was conducted on the aroma and taste of the 'shito' samples and the results are shown in Table 1.

Table 1: Paired Preference Test Results On Shrimp Powdered 'Shito' Compared With Soybeans 'Shito' Samples.

Sensory attribute	Sample	p- value
Aroma	Soybean flour	*
	Shrimp powder	**0.034**
Taste	Soybean flour	**0.028**
	Shrimp powder	**0.026**

P- Value < 0.05 means most preferred
* Value > 0.05 and thus least preferred

In terms of aroma, the shrimp powdered product (shito) was preferred to that of the soy bean powdered product but there was no significant difference ($p > 0.05$) between the two samples in terms of taste. Thus, soy bean could serve as a cheap source of protein and a very good substitute for shrimp powder which is quite expensive in the production of 'shito' and other food products if the aroma is improved.
Soy bean oil was used to blend the onions because there was the need to use little water as must as possible the preparation of the 'shito' in order to increase the shelf life. In terms of the determining the shelf life of the 'shito', the 'shito' was kept at ambient temperature for two weeks. It was observed after the two weeks that the 'shito' which had much oil on it still tasted as it was first prepared, but another 'shito sample which had very little on top, had small amount of moulds starting to appear on it.

4. Conclusion

The study involved a simple overview of soybeans used to prepare 'shito'. It appears that there is no significant variation between the plant protein and animal protein 'shito'. The study highlighted on the observation that the total protein content remains similar and gives growth to the body. Soy 'shito' production can be relied upon as a means of livelihood and self-reliance if the government will help those who want to go into it to set up, expand and produce good quality of soy 'shito'. Government and skilled caterers can set up skill acquisition and training centres for soy 'shito' producers and the youth. Soybean farming should be encourage because soybean is much kinder to the environment because one acre of land devoted to the growing of soybeans produces about thirty times more protein than an acre of land devoted for the rearing of cattle for beef (Wardlaw, 1996)

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