

## **EFFECT OF VARIETY ON PROXIMATE COMPOSITION OF POTATO FLOUR**

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### **ABSTRACT**

*The proximate composition of two types of potato tubers commercially available within Ilaro metropolis were investigated in this research study. The results obtained showed that sweet potato had 10.34% moisture, 6.46% ash, 4.34% fat, 6.50% protein, 2.40 % crude fibre, 69.96% carbohydrate and 80.80k(cal) energy, while the red potato had 12.73% moisture, 4.20% ash, 12.70% fat, 8.23% protein, 2.00% crude fibre, 60.14% carbohydrate and 81.07% energy respectively. Sweet potato has more carbohydrate content than red potato while reverse is the case in terms of protein content. However, the two species has about the same energy values being a carbohydrates food, hence have the same nutritional status.*

*Keywords: Potato tuber, Red potato (RP), Sweet potato (SP), Proximate composition.*

### **INTRODUCTION**

Potato is a dicotyledonous plant belonging to the family called Convolvulaceae and it is a creeping plant that consists of perennial vines and adventitious roots (Kebede, Titus and Thomas, 2008). Potato (*Solanum tuberosum*) originated from Central America where it was found growing in the wild spreading across the pacific from central America and transported to warmer

regions of Asia and Africa by Spanish and Portuguese traders (Alleman, Stone and Charis, 2004). Potato is grown in more than 100 countries in tropical, subtropical and temperate climate (Alleman, Stone and Charis, 2004). It ranks as the world's seventh most important crop with an estimate annual production of approximately 121.52 million tons on 9.2 million ha with an estimate average yield of 13.2t/ha (FAO, 2005). Potato it's a crop that is well adapted to extreme environment condition, also it can be cultivated with other crops and can obtain a considerable amount of harvest if managed properly. Is a valuable food crop with the production of about 2.1kg/ha per day (Scott, Ruef, Mendeland Caronna, 2000). China is the largest producer of potato with 80% of annual world supply (FAO, 2008).

Sweet potato is most versatile for a snack food but it is used as staple food or as a rice substitute (Zuraida, 2003). It is a good source of vitamin C and E as well as dietary fiber, potassium, iron, they are low in fat and cholesterol. It serves as an important source of starch and carbohydrate that human body needs (Benjamin, 2007). The storage life of uncured potato roots is very short, but the cured roots can be as long as a year under optimum condition (Kleinkopf and Olsen, 2003). Traditional method of curing involves spreading the root in the sun for about one week, covering with waterproof protection during the night. Modern method includes storing in special constructed cold stores at 13-16<sup>0</sup>C and 80-85% relative humidity (Kleinkopf and Olsen, 2003). The main requirements for minimizing root losses are gently harvesting and careful handling at all time to avoid wounding, followed by curing at high temperatures and humidity and then storage at temperature above 12<sup>0</sup>C (Kleinkopf and Olsen, 2003). There are different types of potato red potato, russets potato, white potato, yellow potato, sweet potato and irish potato (Jemisom, Walter and Victor, 2008). Potatoes general are underutilized.

## **OBJECTIVES**

The objective of this research is to evaluate the proximate composition of different type of potato tubers commercially available in Ilaro metropolis with the view of knowing their nutritional status.

## **MATERIALS AND METHOD**

The raw potatoes were sorted to remove defective ones from the lot, graded according to size and cleaned with water. The potatoes were peeled with knife, kept in water to prevent enzymatic darkening. Peeled potato was cut to 2.3mm thickness was achieved with a stainless steel knife (Jangchud, Phimolsiripol, and Haruthaithanasan, 2003). The sliced potatoes were soaked in 0.2%(v/v) sodium metabisulphite for 15 minutes. The slices were drained and dried at 50<sup>0</sup>C for 5h ( Woolfe, 1992; van Hal, 2000) and the flour samples were packaged into polyethylene bag for storage prior to analysis (Olatunde, Henshaw, Idowu and Tomlins, 2016). All reagents used were of analytical grade.

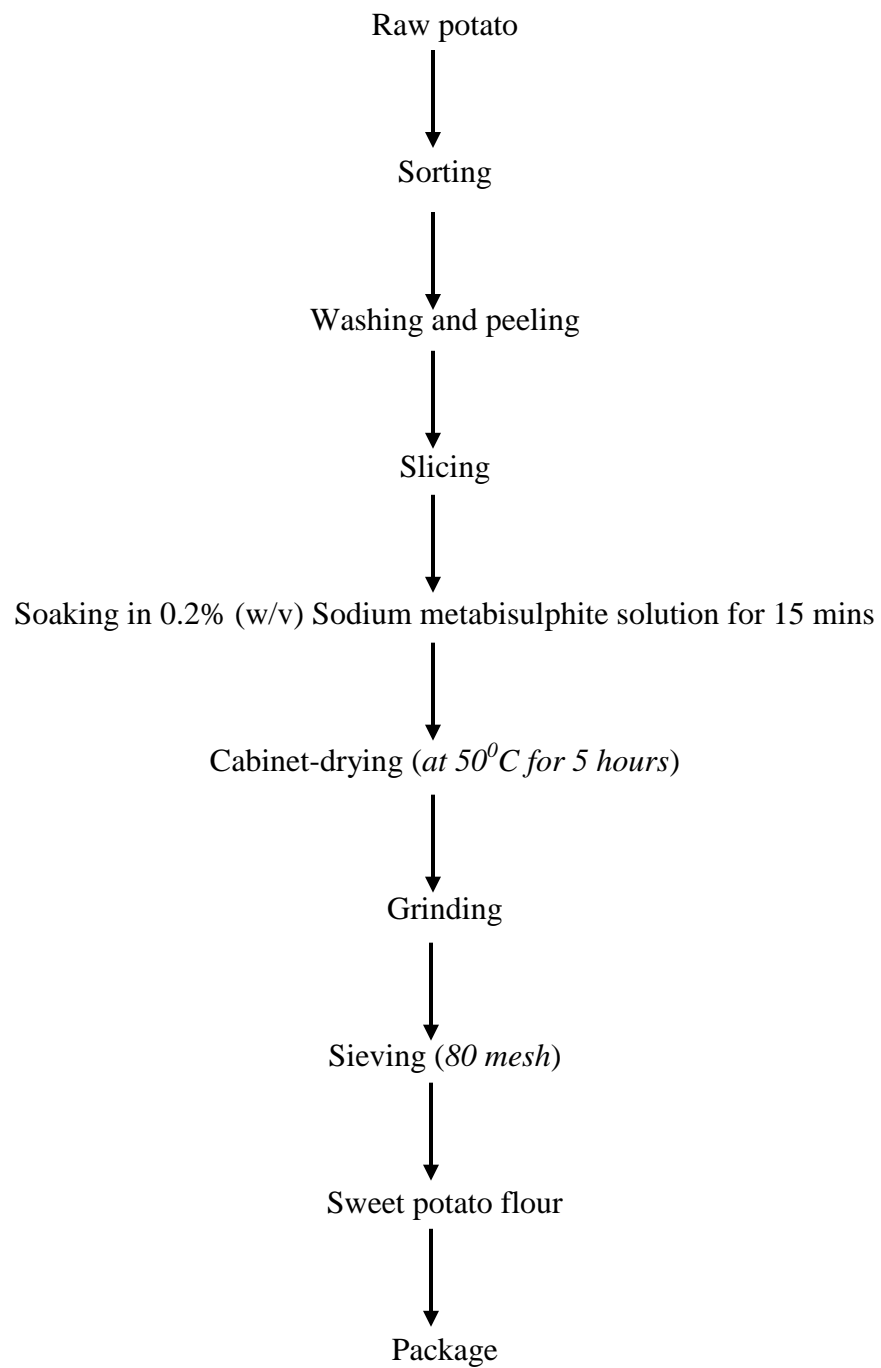


Figure 1: Flowchart representing the processes of potato flour production

Sources: Jangchud, et al., 2003; Woolfe, 1992; van Hal, 2000; Olatunde, et al., 2016.

## **Analysis**

The Proximate composition of potato tubers was determined using standard method describe by AOAC (2000), Total carbohydrate and energy was determine by the differences (James, 1995).

## **Data analysis**

Data obtained was analyzed using analysis of variance (ANOVA) and Duncan was used to separate mean at  $P \leq 0.05$  level.

## RESULTS AND DISCUSSION

### Results

**Table 1: Results showing the Proximate Composition of two varieties of Potato Tubers commercially Available in Ilaro metropolis**

Variety	Moisture (%)	Ash (%)	Fat (%)	Protein (%)	Crude fibre (%)	Carbohydrate (%)	Energy k(cal)
<b>SP</b>	10.34a±0.01	6.46a±0.02	4.34b±0.01	6.50b±S0.07	2.40a±0.01	69.96a±0.05	80.80a±0.01
<b>RP</b>	12.73b±0.02	4.20b±0.02	12.70a±0.01	8.23a±0.01	2.00a±0.01	60.14b±0.05	81.07a±0.00

*Values represent means of triplicates. Values with the same superscript are not significantly different at  $p \leq 0.05$ .*

*KEY:*

*SP = Sweet potato*

*RP= Red potato*

## **DISCUSSION**

The result of the proximate composition of two varieties of potato tubers commercially available in Ilaro metropolis are as shown in Table 1. The moisture contents for the two potato varieties are 10.34% (sweet potato) and 12.73% (red potato) respectively. The figures are in agreement with a precious studies (Hal, 2000; Osundahunsi, et al., 2003; Aina, et al., 2009 and Olatunde, et al., 2016). Moisture content is considered critical in the overall shelf stability of flour foods such as potato flour. Ash content as revealed by the analysis carried out were 6.46% and 4.20% for sweet and red potato flour. Sweet potato has 4.34% fat while red potato variety has 12.70% fat.

Protein is an essential nutrient in the diet of human being and generally required for growth. The protein content for sweet potato variety is 6.50% while that of real potato was 8.23%. Potato are known not be a good source of protein but those found in it are of high biological value as reported in a previous study ( val Hall, 2000, ILSI, 2008; Olatunde, et al, 2016). The indigestible past crude fibre as obtained from the result are 2.40% (sweet potato) and 2.00% (red potato) respectively. Tubers are mostly starchy foods that are rich in carbohydrate contents. Sweet potato has 69.96% carbohydrate while red potato 60.14%. The difference in the observed values for the two varieties of potato could be due to genetic, cultural and varietal factors. There are no significant differences between the potato varieties in term of energy content.

## **CONCLUSION AND RECOMMENDATIONS**

### **Conclusion**

This study has shown the proximate composition of two notable varieties of potatoes in Ilaro metropolis. Potatoes are energy serving food and contained fairly amount of protein hence serve as source of protein of plant origin for low income consumers.



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