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# Do we have to go bananas? No! Not enough K.

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## Abstract

This paper reports on the potassium content of five (5) varieties of Nigeria bananas. The potassium content was determined by flame spectrophotometer. We report that of the five varieties, none contained the recommended daily allowance (RDA) for potassium (4700 mg/day) and so potassium must be acquired from other sources to meet this daily allowance or one may have to eat about a thousand (1000) g of banana a day to acquire the total RDA for potassium required per day.



## Introduction

Banana is known to contain potassium and it has been suggested that banana could well be a potential source of potassium for people who suffer from potassium deficiency. Potassium or lack of it has been implicated in several physiological and health issues. So it is of interest to determine the amount of potassium in banana to know if by eating banana one could acquire enough potassium required for physiological functions and activities. For example, we know the importance of potassium ion,  $K^+$ , in the  $Na^+/K^+$  pump; its ability to maintain normal fluid and electrolyte balance, as well as facilitating many reactions, supporting cell integrity and in assisting nerve impulse transmission and muscular contraction. Lack of or deficiency in potassium has been implicated in health issues such as muscular weakness, paralysis and confusion as well as potassium's ability to stop the heart if given into the vein; and high blood pressure is associated with low potassium and it has been suggested that high intake of potassium can prevent and correct hypertension, Devlin [1], Berg, et al [2], Whitney and Rolfe [3].

## Results and Discussion

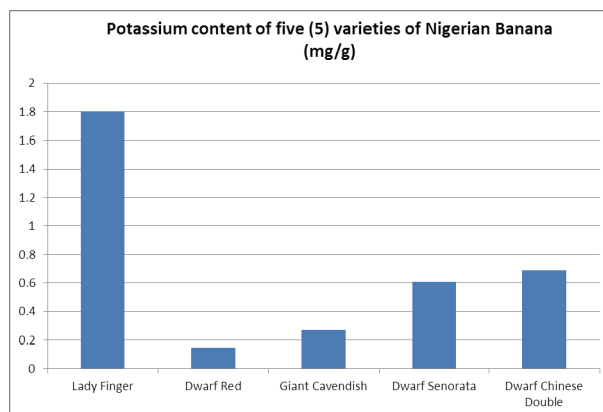
The analysis of the results from the flame photometer indicated the potassium content as shown in Figure 1. The highest potassium content was found in Lady Finger banana variety.

This preliminary finding shows that of the varieties, the Lady Finger variety with 1.80 mg of potassium per gram of banana had 3 times more potassium than the Dwarf Senorata and Dwarf Chinese Double varieties; 6 times more than Giant Cavendish and 12 times more than the Dwarf Red variety. These bananas are grown in different regions of Nigeria, could it then be that the nature of the soil has some influence on the potassium content of the banana?

The potassium content obtained for these varieties of Nigerian banana, when compared to an average value of 3.58 mg of potassium in 1 g of a different variety of banana, USDA National Nutrient Database for Standard Reference [4], are significantly smaller. Lady Finger, the banana with the highest potassium content (1.8 mg/g) has about half this average value.

## Materials and Method

Five varieties of Nigerian bananas (Giant Cavendish (Williams) AAA GP, Dwarf Red banana AAA GP, Lady Finger AA GP and Dwarf Senorata AA GP) of the *musca acuminata colla* family, were each weighed, cut up and blended in a mixture of distilled water (200 cm<sup>3</sup>) and hydrochloric acid (Sigma-Aldrich, 100 cm<sup>3</sup>, 2 mol dm<sup>-3</sup>) to obtain a smoothie. The hydrochloric acid was added to help extract all available potassium from the banana into solution. The smoothie was then centrifuged to obtain two layers, with solid residue at the bottom and a clear liquid at the top. The clear liquid (0.5 cm<sup>3</sup>) was pipetted into a 100 cm<sup>3</sup> standard flask and made up to mark with water. This solution was then analysed for potassium using flame photometer (Jenway PFP 7). The flame photometer was calibrated with standard solutions of potassium chloride (Sigma-Aldrich).



**References:** [1]. Devlin, T. M., Editor (2006) Textbook of Biochemistry with Clinical Correlations, 6th Edition, Wiley-Liss, page 986; [2]. Berg, J. M., Tymoczko, J. L., and Stryer, L., (2007) Biochemistry, 6th Edition, W. H. Freeman and Co., page 354; [3]. Whitney, E., and Rolfe, S. R., (2005) Understanding Nutrition (ISE), 10th Edition, Thomson-Wadsworth, page 411; [4]. USDA Nutrient Database for Standard Reference (<http://www.nal.usda.gov/fnic/foodcomp/search/>)

## Conclusion

The preliminary results from this experiment suggest that these bananas would not be significant sources of potassium since the highest potassium content is 1.80 mg in 1 g of banana from Lady Finger banana.

