



## Analysis of Thiamine From Some Vegetables

### KEYWORDS

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**ABSTRACT** Thiamine were estimated from the eight plant viz. *Sesbania grandiflora*, *Moringa olifera*, *Mucuna nivea*, *Hibiscus cannabinus*, *Colocasia esculenta*, *Solanum lycopersicum*, *Cicer arietinum*, *Cucumis melo*. Higher yield of thiamine was recorded in *Moringa olifera*, *Mucuna nivea*, *Hibiscus cannabinus* and *Sesbania grandiflora*.

### INTRODUCTION:-

Vitamins are very important to our body survival and are actually crucial in buildings of our bodies. Approximately 97% of our body is being replaced each year by the food we eat. Our bodies need approximately fifty or more nutrients in order to maintain good health. These include thirteen essential vitamins among which are the eight B vitamins, amino acid, two essential fatty acids and five co-factors, which are vitamin like substance that the body required. Vitamins are organic nutrients that are required in small quantity for a variety of biochemical function and which generally cannot be synthesized by the body and must therefore be supplied in diet. The thirteen essential vitamins include vitamin A (Retinol), vitamin C (ascorbic acid), vitamin D(cholecalciferol), vitamin E(tocopherol), vitamin K(naphthoquinone) along with the eight B-complex vitamins which are vitamin B1 (thiamine), vitamin B2 (riboflavin), vitamin B3 (niacin/niacin amide), vitamin B5 (pantothenic acid), vitamin B6 (pyridoxine), vitamin B12 (cyanocobalamin), and folic acid.

Vitamins do not give instant energy; they function in the body with carbohydrates, proteins and fats to supply energy. In other words, they are components of an enzymes system that function to create energy. We only need small amount of most vitamins to maintain good health. However, our bodies in the amount necessary to sustain life cannot synthesize them. Therefore, we must get them from our food and multi-vitamin supplements. The existence of vitamins as an essential food factor in vegetables and other plant source and their importance to human survival is the major aspiration governing the choice of this research. Thiamine is present in practically all of the plant commonly used as food. The enrichment of flour, bread, corn and macaroni products with thiamine has increased considerably the availability of this vitamin in the diet. Since the vitamin B is water soluble and somewhat heat labile particularly in alkaline solutions. It may be lost in the cooking water. Thiamine deficiency affects predominantly the peripheral nervous system the gastrointestinal tract and the cardiovascular system. Thiamine has been shown to be more effective in the treatment of beriberi, alcoholic neuritis and the neuritis of pregnancy or of pellagra.

Thiamine is used to prevent or treat low levels of vitamin B1 in people who do not get enough of the vitamin from their diets. Most people who eat a normal diet do not need extra vitamin B1. Low levels of vitamin B1 may causes heart failure and mental problems. Vitamin B1 participates in the structure of the enzyme carboxylase. If this

vitamin is lacking, conversion of pyruvic acid to acetylCoA is reduced, consequently carbohydrates cannot participate in the kreb cycle and carbohydrate metabolism slow down. Some disorder of the nervous system has been observed due to lack of vitamin B1. Vitamin B1 is required for the production hydrochloric acid, and for maintaining healthy circulation.

The main objectives of this research work are; to quantify the amount of thiamine in vegetables, to see if the consumption of these plants will provide the recommended daily intake. And to find out whether drying has effect on the nutritional values of thiamine in these vegetables.

### MATERIAL AND METHODS:-

**SAMPLE COLLECTION :-** All the vegetables sample are collected from a local plantation. The leaves were washed for any contaminants, dried thoroughly under shade and powdered finely. All the reagents and standard used in this work were of analytical grade. The methods used in this work for the determination of the samples are the standard methods.

### ESTIMATION OF THIAMINE:-

1 gm. Of sample were taken in conical flask and added 100ml of 0.1N H<sub>2</sub>SO<sub>4</sub> and stand it for overnight. Next morning shake it and filter. Pipette 10ml of extract and add 3ml of 15% NaOH into each and followed by four drops of ferricyanide solution and 15ml isobutanol. Shake vigorously for 30 second and allow the layer to separate. Drain off the bottom layer and collect extract and add solution sulphate collect the clear extract in test tube. Prepare a set of sample blank by pipetting out 10ml of the extract and follow procedure. Prepare a blank for the standard separately. Observe the intensity of all samples.

### RESULT AND DISCUSSION:-

The amount of thiamine was estimated in the leaves of vegetables. The results reveal that plant leaves contain appreciable quantity of vitamin. In the vegetables thiamine content is *Sesbania grandiflora* 660µg/100gm, *Moringa olifera* 1250µg/100gm, *Mucuna nivea* 570 µg/100gm, *Hibiscus cannabinus* 850µg/100gm, *Colocasia esculenta* 100µg/100gm, *Solanum lycopersicum* 370µg/100gm, *Cicer arumietin*120µg/100gm, *Cucumis melo* 950µg/100gm. from which it is clear that higher amount of thiamine present in *Moringa olifera* and lower amount of thiamine present in *Colocasia esculenta*.

According to the NIH, the RDA for infants age 0-6 months is 0.2 mg; infants 7-12 months is 0.3 mg; for children 1-3

years it is 0.5 mg; for children 4-8 years it is 0.6 mg. Children between 9-13 years of age should get 0.9 mg, for males age 14-18 years it is 1.2 mg; for females age 14-18 years it is 1 mg, taken orally. Dr. Weil recommends 1.5 mg as part of a children's daily multivitamin, but you should always consult with your pediatrician before beginning supplements. Men 19 years and older: 1.2 mg (RDA). Women 19 years and older: 1.1 mg (RDA). Pregnant or breastfeeding women: 1.4 mg (RDA).

#### RECOMMENDATION:-

It is suggested that further research work should be carried on this particular plants to find more about their medicinal applications and nutritive value, it is therefore suggested that these vegetables should be adequately included in our daily diet.

**Table: thiamine content of some vegetables**

s/No.	Name	Thiamine present in sample
1	Sesbania grandiflora	660 µg
2	Moringa olifera	1250 µg
3	Mucuna nivea	570 µg
4	Hibiscus cannabinus	850 µg
5	Colocasia esculenta	100 µg
6	Solanum lycopersicum	370 µg
7	Cicer arietinum	120 µg
8	Cucumis melo	950 µg

#### REFERENCE

- [1]. Harries R. S., Loraine T. A. Woll I (1965). Vitamin and Hormones Advance in research and Application on annual publication Academic press. | [2]. Don Cobert, M. D., 2001. Importance of vitamins and mineral content. J. Appl. Nutri.,5:24. | [3]. Ibitoye, A.A., 2005. Laboratory manual on basic method of plant analysis. Practical Manual on plant Analysis, pp:2-5. | [4]. John Wort, S. T. and A. Smart, 2004. Twenty nine vitamins. Mineral, amino acid and herbs. J. Appl. Nutri.,pp2:16. | [5]. Sallamander, C.,1998. Vitamin B1 Thiamine information page, all about vitamin B1. 2nd Edn. Department of Biochemistry Purdue University, pp:1-6. | [6]. Peter, A. M.,1990 Structure and function of the water soluble vitamins. Reader in biochemistry royal veterinary college, university of London, pp:547. | [7]. Carpenter KJ. Beriberi, white rice, and vitamin B: a disease, a cause, and a cure. Berkeley, CA: University of California Press; 2000 | [8]. Williams, R.R.; Cline, J.K. (1936). "Synthesis of vitamin B1". J. Am. Chem. Soc. 58 |