

# Investigation and Measurement of Some Mineral and Vitamins in Eggplant FruitCalyx, and the Possibility of Being Used as Food Supplements and Alternative Medicine

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**Keywords:** Eggplant Fruit Calyx; Vitamins; Minerals; Micronutrient

## Abstract

Food supplements are Plenty present in medicinal markets and have taken a great importance as they compensate for many of the minerals and vitamins lacking in human body, but most of them rely on introducing a chemicals substances in there composition without making an attention to their representation or its harmful effects in the body.

Today, more than 2 billion people in the world are estimated to be deficient in key minerals, particularly, iron and zinc. Most of these people live in low income countries and are typically deficient in more than one micronutrient [7]. The Usage of complementary and alternative medicine (CAM) has been increasing worldwide during the past decades .Herbal medicine (HM) was often found to be among the most popular and strongest growing forms of CAM and Eggplant (*Solanum melongena* L.), was used as one of herbal medicine which was domesticated over 4000 years ago [1].

A few studies describing the mineral content in eggplant fruit [8], but there is no information about the mineral content in eggplant calyx.

This study revealed that eggplant calyx extract contained minerals and vitamins with concentrations higher than the edible part, this Table is the Comparison between Minerals and vitamins in edible part of eggplant [11], daily recommended intakes and Percentage of ingredients.

As for amount of **manganese** was equivalent to one third of the allowable amount, which is important for the nervous system, [20], supports bone mineral density with (calcium, zinc and copper) [21], play a role in regulating blood sugar because it is concentrated in the pancreas and it is involved in insulin production [22,23] a blood vessel expander that reduces the risk of stroke [24,25] and necessary for brain functions through Its antioxidant activity [20].

**Zinc** level was of 1 mg / 100 mg in eggplant calyx which is essential in Cell regeneration by its antioxidant properties [26], and maintain the integrity of the immune system so it

prevents cancers development, reduces lungs inflammation and inhibits viruses [27], also pancreas contains amount of zinc so any deficiency in it well cause a lack in Insulin secretion [28].

Minerals and vitamins	Daily recommended in take (mg)	Percentage of ingredients in eggplant cones (mg /100g)	Percentage of ingredients in edible part(mg /100g)
<b>Phosphorus</b>	1000	350	47
<b>Magnesium</b>	410	180	15
<b>Potassium</b>	3400	1400	2
<b>Sodium</b>	2300	100	3
<b>iron</b>	15	4.7	0.38
<b>Zinc</b>	11	1	0.22
<b>Manganese</b>	1.8-2.3	0.68	
<b>Calcium</b>	1300	450	18
<b>Copper</b>	0.9	0.46	0.12
<b>Vitamin B5</b>	5	7,3	
<b>Vitamin C</b>	75	45	1

**Table 1. The Comparison between Minerals and vitamins in edible part of eggplant**

Such as **Magnesium** the amount was half of the allowable amount, which is important, especially for supporting the immune system, regulate blood sugar because it promotes the secretion of insulin [15], reduces anxiety, improves the quality of sleep and mood because serotonin depends on magnesium [16], relieves asthma attacks [17] and helps to support the muscle system and bones to protected from muscle spasm [18].

It is obvious that zinc quantity is good so it does not affect the amount of magnesium and manganese because the zinc increases their lacking. Therefore the zinc amount is good for body elements balance because its increase cause lack in copper level and a decrease in iron absorption it is better for anemia patient to take (iron+ copper + folic + vitamin C) [29].

**Iron** ratio was equivalent to one third of the allowable amount, makes it very important in Enzymes function help absorbing oxygen, and protect body from anemia [30], Body does not get any benefit from iron found in food or medicine if the person suffers from deficiency of copper

[31] or vitamin C [32] therefore the calibration of it has been done.

Copper ratio was a half of the allowable amount. It helps to form body collagen [33], iron absorption [34]. Metabolism [34], energy production [35], red blood cells formation [36], maintain bones health [37], prevent cardiovascular disease [38], prove immune function, and has an antioxidant activity [39].

**Vitamin C** ratio was half of the allowable amount [40] it helps in Bones, skin and blood vessels composition and maintenance [41], has an important role in a number of physical functions including the collagen [42], keratin [43], and some neurotransmitters [42], production, promotes iron absorption [44], its antioxidant activity may reduce the risk of some cancer types [45], prevent acute respiratory infections, protect against cardiovascular disease [46], and has beneficial effect on diabetic patients as it reduces the risk of kidney, eye and nerve deterioration [41].

In the field of bone health, these elements importance remains incomplete without the effect of calcium and phosphorus. **calcium** concentration was 450 mg/100 g and this concentration is very substantial for body's need, such as it is an adjunct to many enzymes [48], plays a role key in natural blood clotting [49], help reduce the risk of colorectal cancer [51], It is essential for bone development, growth and maintenance [53].

**Phosphorus** the amount found was half of the daily recommended intakes. it is an important element as it interacts with calcium to strength, build bones and muscles [56], work to strength the nerves and increase men's sexual ability [57], also the excess amount of it affect in calcium and magnesium absorption [59]. Therefore, its concentration suitable to calcium and manganese level.

To confirm the benefit of nutritional of the extract on heart and blood vessels, this study includes comparing sodium and potassium value. Sodium (Na) concentration is 100 mg / 100g.

immune system and leads to atherosclerosis [62], sodium is responsible for sending signals through the nerves and enables the muscles to contract.

The balance between ( K, Na) can help heart and blood vessels and the amount needed for it (14/1) This helps body fluid balance [63] and this is achieved in Eggplant cones where we find its importance clear by its role in maintaining the fluid of volume of intracellular and cross-membrane electrochemical gradients. The FDA has agreed on the following health claim: "Dietary foods are containing a good potassium source containing low sodium content may reduce the risk of hypertension and stroke Cerebral [64]. And observational studies suggest that potassium is associated with control of blood glucose and type 2 diabetes [65]. In addition, it indicates that increased potassium consumption from fruits and vegetables is associated with increased bone mineral density [66], Here we see that potassium has an important effect on bone health, heart patients [67], and diabetes [68].

Vitamin B5 (biantonic acid) ratio was equal to The daily recommended intakes because it enhances the health of the skin, hair, eyes [70] and liver and assists in the formation of red blood cells and the conversion of food into glucose [71]. Studies suggest that taking vitamin B-5 can help lower cholesterol and triglyceride levels in the blood [72], its decrease causes respiratory infections [73] and increases insulin sensitivity [74]

However, eggplant cone has very important minerals which billions of people are estimated to be deficient and can be a alternative to this deficiency We hope that those who are interested in health benefit from the eggplant cones, do not expose them to damage their because of their richness with beneficial nutritional supplements to the human body as it is useful food for cardiovascular and diabetics patients and has a significant role in maintaining the health of bones, muscles and alleviate immunity of the body.

Since these salts can spoil the internal epithelial layer of the micro vascular, increase thrombosis, affects the