



Study of Elemental Analysis of a Medicinal Plant - *Canthium coromandelicum* (N. Brum.) Alston

Shaikh F.Y.* And Ghatge M. M.

Bharati Vidyapeeth's Matoshri Bayabai Shripatrao Kadam Kanya Mahavidyalaya,
Kadegaon. 415304 (M.S.), India.

*Email: firojgeology@gmail.com

Article Info

Received: 07-09-2017,

Revised: 02-11-2017,

Accepted: 22-11-2017

Keywords:

Canthium coromandelicum,
minerals, leaves, ripened
fruits

Abstract

Canthium coromandelicum (N. Brum.) Alston is one of the important small trees belonging to Rubiaceae, distributed in peninsular India. The mineral analysis of leaves and ripened fruits of *Canthium coromandelicum* was estimated by using atomic absorption spectrophotometer. The quantitative metal analysis of leaves and ripened fruits shows the presence of vital essential minerals. The large quantity of Fe, Mg, Zn, Mn, Cr and minimum amount of Ca, Ni, Co, Cu were found in the leaves and fruits. The ripened fruits showed a large amount of Fe and Ca is higher than in leaves.

INTRODUCTION

Canthium coromandelicum (N. Brum.) Alston is native to India, Sri Lanka, and tropical East Africa (Bridson, 1992). The leaves and roots are astringent, sweet, thermogenic, diuretic, febrifuge, constipating, anthelmintic and these are used against kapha, diarrhea, strangury, fever, leucorrhoea, intestinal worms, and general debility (Warrier, 1996). A decoction of leaves is used for wound healing in animals. It is traditionally used for snake bites (Mahishi, 2015). Leaf paste is externally applied twice a day to treat scabies and the ring worm infection (Anitha *et al.*, 2008).

Canthium as a herbal medicine is used for the treatment of diabetes among major tribal groups in South Tamilnadu (Ayyanar *et al.*, 2008). The leaves are the richest source of beta carotene (Rajayalakshimi, 2003). This plant is reported to have antioxidant activity (Chandra, 2014). Harole and Abraham (2011) studied the preliminary

phytochemical and antimicrobial screening of whole plant extracts of *Canthium parviflorum* Lam.

In the present investigation, an attempt was taken to analyze the mineral content of *Canthium coromandelicum*.

MATERIALS AND METHODS

The leaves and fruits of *Canthium coromandelicum* were collected from a dried area in Dahiwadi tehsil and washed in fresh running water to eliminate dust, dirt and possible parasites. Afterward, treated with de-ionized water and were dried in shade at 25-30 °C. The leaves and fruits were converted into powdered form. The mineral element extracts were prepared following the method described (Toth *et al.* 1948). The acid digestion method was used to estimate different inorganic elements. The estimation of mineral elements was carried out by using 'Atomic Absorption Spectrophotometer' in CFC (Common Facility Center) of Shivaji University, Kolhapur.

RESULTS AND DISCUSSION

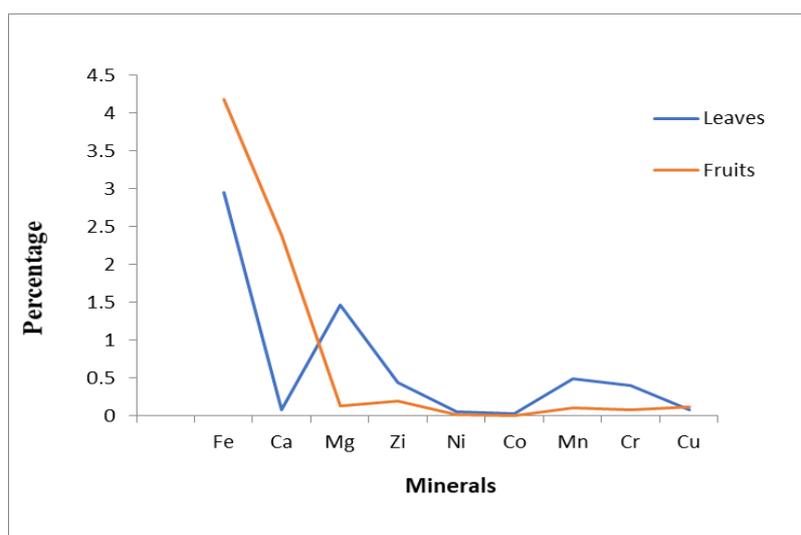
Represents The quantitative account of minerals in the leaves and fruits of *Canthium coromandelicum* represented in table 1. These values are also depicted in graph 1. The analysis of

various elements in leaves and fruits indicated that Fe, Ca, Mg, Zn *etc.* were present in maximum amount. On the other hand Ni, Co, Mn, Cr, Cu *etc.* were present minimum amount of *Canthium coromandelicum*.

TABLE 1: The mineral content in the leaves and fruits of *Canthium coromandelicum*

Sr. No.	Elements	Leaves	Fruits
1	Fe	2.954	4.186
2	Ca	0.075	2.38
3	Mg	1.466	0.131
4	Zi	0.435	0.195
5	Ni	0.049	0.02
6	Co	0.023	0.003
7	Mn	0.492	0.111
8	Cr	0.395	0.075
9	Cu	0.075	0.115

Note: The values are expressed in percentage.

**Graph 1: showing percentage of minerals in the leaves and fruits of *Canthium coromandelicum***

Iron plays an important role in the oxygen transport to the cells. It is found in a protein called hemoglobin which carries oxygen from lungs to all over the body, to each and every cell. It has an ability to donate and accept electrons. The iron content was found higher in fruits (4.186%) than that of leaves (2.954%) of *Canthium coromandelicum*. The iron content recorded in the leaves (0.0146%) of *Morinda pubescence* (Devareet *al.*, 2011). Bhogaonkar (2014) reported 315mg/100g iron content in *F. racemosaf* fruits. The Calcium plays a vital role in building of bones and

teeth in our body. Besides it, calcium is also essential for nerves and muscles. Plasma calcium has a role in blood coagulation. The calcium content found in the fruits of *Canthium coromandelicum* was 2.38 % and in the leaves 0.075%. This is correlated with the results of Njoku and Akumefula (2007), who recorded 1.310 % calcium in the leaves of *Spondias mombin*. The Magnesium is a key metal in cellular metabolism. Magnesium ions have been evolved for signaling, enzyme activation and catalysis. The requirement of magnesium in adult human is 300-400 mg/day.

In present study, magnesium the content observed in the leaves (1.466%) was higher than the fruits (0.131%) of *Canthium coromandelicum*. Yesufu and Hussaini (2014) reported 0.329 g/100 g magnesium in leaves of *Sarcocephalus latifolius*. Zinc is extremely important to numerous body functions. Deficiency of zinc may be associated with mental lethargy, emotional disorders. In the present analysis, the amount of zinc reported in leaves and fruits were 0.435% and 0.192 % respectively. Zinc content detected in the leaves of *Morinda Pubescence* was 0.0052% (Devare *et al.*, 2011).

The leaves and fruits showed minimum amount of Ni *i. e.* 0.049 % and 0.02% respectively. The Ni is toxic in nature and their presence in trace amount in various medicinal plant sample observed is due to the pollution occurred from automobile and industrial activities. The detection of cobalt in leaves (0.023%) and fruits (0.003%) of *Canthium coromandelicum* correlates with the cobalt content in *Garcinia Kola* seed (0.055%) by Okwu (2005). The presence of Mn in the leaves (0.492%) and (fruits) 0.111% of *Canthium coromandelicum* has been detected. The Cr and Cu were also found less amount in the leaves and fruits.

ACKNOWLEDGEMENT

The authors are grateful to the Vice-Chancellor Dr. Shivajirao Kadam and Secretary Dr. Vishwajeet Kadam, Bharati Vidyapeeth University, Pune for their encouragement and advice. Also, thankful to Principal Dr. Mrs. S. D. Kulkarni of M. B. S. K. Kanya Mahavidyala, Kadegaon, Bharati Vidyapeeth University for their constant inspiration and providing necessary facilities.

REFERENCES

Anitha B, Mohan VR, Athiperumalsami T, Sudha S, 2008. Ethanomedical plants, tamil Nadu to treat skin diseases. *Ethnobotanical leaflets* 12:171-180.

Ayyanar M, Sankarasivaraman K., Ignacimuthus S, 2008. Traditional Herbal medicine used for treatment diabetes among two major tribal group in south Tamil Nadu, India. *Ethnobotanical Leaflets*, 12: 276.

Bhogaonkar P Y, Chavhan V N and Kanerkar U R, 2014. Nutritional potential of *Ficus racemosa* L. Fruits. *Biosci. Disc.*, 5(2):150-153.

Bridson DM, 1992. The genus *Canthium* (Rubiaceae - Vanguerieae) in tropical Africa". Kew Bulletin, 47(3):353-401.

Chandra MS, Sasikala K, Anand T, 2014. Antimicrobial and wound healing potential of *Canthium coromandelicum* leaf extract- A preliminary study. *R J Phytochem*, 8:35-41.

Devare SM, Kale AA, Chandrachood PS, Deshpande NR, Salvekar JP, 2011. Study of elemental analysis of a medicinal plant- *Morinda pubescence*. *Scholars Research Library*, 3(3): 58-62.

Harold P, Abraham S, 2011. Preliminary Phytochemical and antimicrobial screening of whole plant extracts of *Canthium parviflorum* Lam. *International journal phytopharmacy research* 21 (11): 30-34.

Mahishi P, Shrinivas A, Shivanna MB, 2015. Medicinal plant wealth of local communities in some villages in shimoga district of Karnataka, Indian, *journal ethanopharmacology*, 98(3):307-312.

Njoku PC, Akumefula MI, 2007. Phytochemical and nutrient evaluation of *Spodias mombin* leaves. *Pakistan journal of nutrition*, 6(6):613-615.

Okwu D, 2005. Phytochemicals, vitamins and mineral contents of two Nigerian medicinal plant. *International Journal of Molecular Medicine And Advance Science* 1(4):375-381.

Rajyalakshmi P, 2003. *Canthium parviflorum*: An under exploited carotene rich fruit.. *Natural Product Rediance*, 2: 70.

Toth SJ, Prince AL, Wallace A, and Mikkelsen DS, 1948. Rapid quantitative determination of 8 mineral elements in plant tissues by systematic procedure involving use of a flame photometer. *Soil Sci.*, 66: 456-466.

Warrier PK, Nambiar PK, Ramankutty RC, Vasudevan NAIR R, 1996. Indian medicinal plants, *oriental black swan publishers, New Delhi*, Pp-366.

Yesufu HB, Hussaini IM, 2014. Studies on Dietary Mineral Composition of the Fruit of *Sarcocephalus latifolius* (Smith) Bruce (Rubiaceae), *J. Nutr. Food Sci*, 4: 113.

How to cite this article

Shaikh F.Y. And Ghatge M. M., 2018. Study of Elemental Analysis of a Medicinal Plant - *Canthium coromandelicum* (N. Brum.) Alston. *Bioscience Discovery*, 9(1): 29-31.