



**A STUDY ON THE PROXIMATE AND MINERAL COMPOSITION OF  
*CROTALARIA SEMPERFLORENS* VENT.**

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**ABSTRACT:** Study was carried out on mature seeds of *Crotalaria semperflorens* Vent. To determine the content of moisture, ash, crude lipids, crude fiber, crude protein and the mineral nutrients. The results indicate that the mature seed has low fiber (2.88g/100g), crude lipids (1.03g/100g) and high protein (20.94g/100g). The major mineral elements of the seed include phosphorus (528.33mg/100g), potassium (369.34mg/100g) calcium (329.03mg/100g) and while iron (3.86mg/100g) is very low. These results suggest that it is good for human nutritional requirements of these elements.

**Keywords:** *Crotalaria Semperflorens* vent, Mineral composition, Proximate composition

## INTRODUCTION

The protein of good quality is a serious problem today in many developing countries due to the prohibitive cost of protein from animal sources. Alternative sources of protein which could alleviate this problem include the finding of protein from different plants (Luz Fernandez and Berry, 1988). In general legumes are richer in calcium than most cereals and contain about 100 to 200 mg of calcium per 100g. They are also considerably rich in iron, thiamin, riboflavin and nicotinic acid as compared to cereals. In addition it is a good source of dietary fiber. The crude fiber, protein and lipid components of food legumes have been shown to have a hypocholesterolemic effect. This has generated interest in food legumes as human food in developed countries. However, progress can be made in the near future on the protein malnutrition problem, if basic food grains such as legumes are upgraded in nutritive quality (Bressani 1972).

*Crotalaria semperflorens* Vent. a dicot plant belongs to the sub-class Rosidae, order Fabales and family Fabaceae. It is grown on high tea estates in south India. It has been tried as a green manure in coffee estates, but its usefulness has not been conclusively established (Sampson, 1928). However, Crosemperine, an otonecine ester, has been isolated from the *C. semperflorens* by (Atal *et al.*, 1967). Due to reports of the mutagenic (Clark 1959) and antitumor properties (Kupehan *et al.*, 1964) of pyrrolizidine esters, *Crotalaria* alkaloids have assumed a significant importance. Since these alkaloids are macrocyclic disasters, such properties could be predicted hypothetically by the enzymatic splitting of the ester of the alkaloid. However, so far, no otonecine ester of this genus has been screened for its antitumor and antimicrobial activity. Based on the mentioned earlier advantages of this plant; this study was initiated to investigate the biochemical composition of the mature seed which could be useful in assessing the actual nutrient contribution of the mature seed to the food products obtained from it.

## MATERIALS AND METHODS

The mature seed of *Crotalaria semperflorens* Vent. were obtained from Nilgiri Biosphere Reserve, Tamil Nadu, South India. They were cleaned to remove dirt and finally ground into fine powder and stored in a refrigerator until used. The ground sample was analyzed by the standard method of AOAC (1990) to determine the moisture content and other components such as ash, crude lipids, crude fiber and crude protein. The mineral content was analyzed by mixing 2 g of the ground sample with 20 ml of nitric/per chloric acid (5:1 v/v) and was allowed to stand overnight. It was then heated to dryness and reconstituted with deionized water. The concentration of calcium, manganese, magnesium, sodium, phosphorus, potassium, iron and copper were determined using atomic absorption UV-VIS Spectrophotometer (SL - 150). All analyses were carried out in triplicate and the data were analyzed by Duncan's Multiple Range Test (DMRT).

## RESULTS AND DISCUSSION

**Table 1:**

Proximate composition (g/100g dry weight) of *Crotalaria semperflorens* Vent. seed.

Moisture	8.80±0.08
Ash	3.70±0.03
Crude lipids	1.03±0.02
Crude fiber	2.88±0.08
Crude protein	20.94±0.36
(Kjeldahl Nx6.25) (1983)	

Values are means ± S.E for 3 determinations.

**Table 2:**

Mineral composition (mg/100g dry weight) of *Crotalaria semperflorens* Vent. seed.

Ca	329.03±0.27
Mn	6.21±0.43
Mg	197.51±0.31
Na	192.99±0.55
P	528.33±0.18
K	369.34±0.84
Fe	3.86±0.04
Cu	7.85±0.17

Values are means of ± S.E for determinations.

The results of the proximate composition of *C. semperflorens* Vent. seeds are presented in Table 1 and discussed as below. The low moisture content of the seed (8.80g/100g) is accountable to long dormancy of the seed then by low germination. The high nutritive values of the seeds are evidence from its high percentage of protein (20.94g/100g) and other mineral nutrients observed. However, the percentage amount of lipid is low, which can reduce obesity. The medium fiber content could serve for roughage which helps in bowel cleansing (Alan, 1982).

Compared to mineral composition of other legumes plants (2.5 to 4.2 by Bressani 1993), the present study on *C. semperflorens* have reported very high concentration as presented in Table 2: very high concentration of calcium can be useful for curing rickets and osteoporosis, and the investigated species showed very high concentration of calcium 329.03mg/100g. The low concentration of iron (3.86 mg/100g) classifies this as a fair source of nutrient with respect to iron requirement.

Elevated concentration of phosphorus 528.33mg/100g could support normal development of bones and teeth. It helps in maintaining the constant composition of the body fluids and enzymes and their functioning.

### **CONCLUSION**

Results of present investigation showed that nutritional status of the seed process high nutritional value. Hence they may be consumed good alternative sources of human food, especially for rickets patients who need calcium in excess.

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