

NUTRIENT ANALYSIS OF *NEPHROLEPIS CORDIFOLIA* (L.) C. PRESL

D. P. Gauchan*, Dina Manandhar, Nisha Shrestha, Shyam Krishna Suwal
Department of Biotechnology
Kathmandu University, Dhulikhel, Nepal

*Corresponding author: gauchan@ku.edu.np

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ABSTRACT

Fresh and roasted tubers of *Nephrolepis cordifolia* are consumed by the local dwellers in Nepal. Different parts of plant have been chemically analyzed for their nutritional contents viz., chlorophyll, carbohydrate, crude protein, starch, moisture contents, dry matter, ether extract, crude fibre, total ash, calcium and phosphorus. It is observed that tubers contain high amount of moisture, fat, carbohydrate and calcium while the protein are reported maximum in rhizome part of the plant.

Key words: *Nephrolepis cordifolia*, nutrient analysis, protein, carbohydrate.

INTRODUCTION

Nephrolepis cordifolia (L.) C. Presl is terrestrial fern with short rhizome and small tubers. It is an epiphytic and epilithic plant, belonging to the family, Dryopteridaceae of the order, Filicales and commonly known as sword fern in English and Pani amla (Pani saro) in nepali. It has bright green fronds that are from 16-32 inches (40-80 cm) long and about 4 inches (10 cm) wide at their widest point. It is a vigorous grower and colony former, producing small scaly tubers on their roots. In nature, they will grow in a wide variety of situations, growing in the soil or among rocks as well as growing as an epiphyte. Though, found growing in many climates, it mainly enjoys subtropical and tropical regions with well drained soil mix and can spread aggressively throughout by wind blown spores and by accidental movement of stolons, tubers, and rhizomes (Fig. 2). *N. cordifolia* is commonly cultivated as ornamental fern in Shilong and often the tubers are eaten to quench thirst (Chhetri, 2006). Juice of root tubers is taken to treat fever, indigestion, headache, cough, cold and hematuria. Whole plant is used to cure renal, liver and skin disorder (Dhiman 1998).

MATERIALS AND METHODS

The investigation was conducted at Dhulikhel (Kavrepalanchowk) during 2007- 2008. The study site lies between latitude 27^o21' - 27^o42'N and 85^o23' - 85^o49'E longitude (Fig. 1). Its altitudes vary from 200m – 3018m whereas the average temperature ranges from 10^oC to 31^oC. Chlorophyll content were estimated after Arnon's method (1949), protein by Lowry *et al.* (1951),

total soluble sugar and starch by Dubois *et al.* (1956), moisture content, dry matter, ether extract, crude fibre (%), ash (%), calcium and phosphorus by A. O. A. C. (1995). Chlorophyll was estimated from leaves only while rest of other nutrients was analyzed from root, rhizome, rachis, leaflets and tubers (Fig. 3- 7).

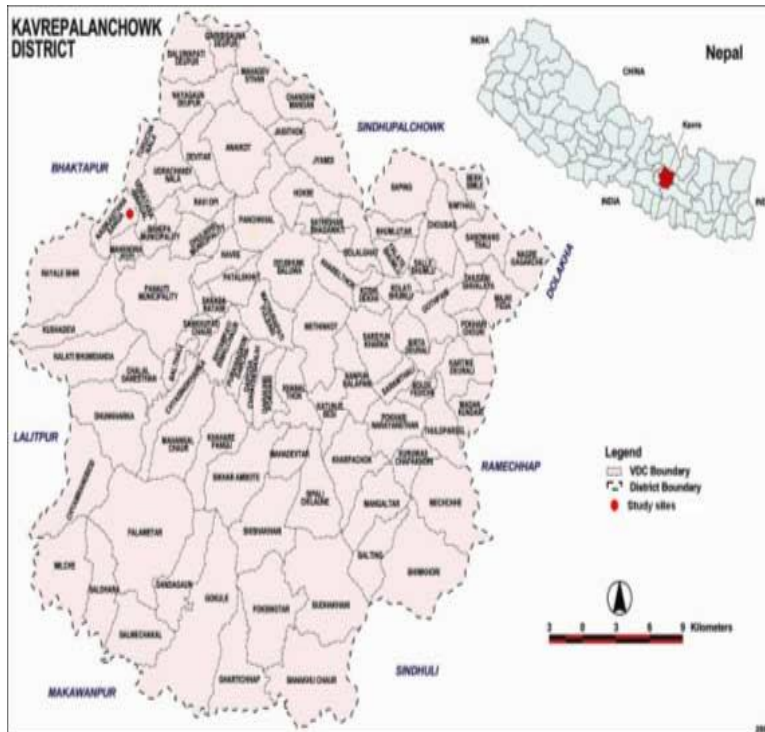


Figure1. Location map of Kavrepalanchowk showing the study areas

RESULTS & DISCUSSION

A perusal of data in Table 1 & 2 reveals that the mean of chlorophyll, ether extract, protein, carbohydrate, starch, crude fibre, moisture content, dry matter, ash, calcium and phosphorus. The mean value of chlorophyll content was recorded from leaves. Maximum carbohydrate content was present in fruit and minimum in roots, protein and starch were recorded maximum in roots and minimum in fruits. Moisture was more in fruit and less in rhizome, highest dry matter in rhizome ad least in fruits. Crude fat was richest in fruits and lowest in leaves while crude fibre was higher in rachis than in fruits.



Figure 2. *Nephrolepis cordifolia*, entire plant



Figure 3. Tubers



Figure 4. Roots



Figure 5. Rhizome



Figure 6. Rachis



Figure 7. Leaflets

Table 1. Percentage chemical composition of different parts of *N. cordifolia*

Plant parts	Carbohydrate (%)	Protein (%)	Starch (%)	Chlorophyll (%)		
				Ch(a) (Mg/lit)	Ch(b) (Mg/lit)	Ch(a+b) (Mg/lit)
Leaf	11.38	1.63	2.29	31.72	38.85	61.86
Rachis	8.09	3.84	1.81	–	–	–
Rhizome	9.31	11.90	1.68	–	–	–
Root	6.72	16.02	2.32	–	–	–
Tuber	13.42	1.34	1.25	–	–	–

Table 2. Percentage chemical composition of different parts of *N. cordifolia*

Plant parts	Moisture content (%)	Dry matter (%)	EE (%)	Crude fibre(%)	Ash (%)	Calcium (%)	Phosphorus (%)
Leaf	78.35	21.60	0.71	37.90	11.00	0.60	0.06
Rachis	68.50	31.48	1.47	62.16	6.26	0.56	0.14
Rhizome	66.04	33.85	1.23	41.33	8.00	0.40	0.17
Root	69.18	30.80	1.44	38.94	8.69	0.49	0.15
Tuber	95.27	4.72	1.91	14.88	6.53	0.75	0.07

CONCLUSIONS

On the overall basis, nutrient analysis of different parts of the plant showed that large amount of carbohydrate and calcium are found in tubers. Therefore, fresh, mature and roasted tubers are eaten by children. These fresh tubers quench the thirst and are rich source of nutrients. Further, research is needed to determine the quality of the nutrients in the tubers so that production of human consumable products could be possible.

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