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### Research Article

### Evaluation of Garhwal Himalaya Medicinal Plant *Rubus laciocarpus* Fruit

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#### Abstract

The present study aimed at evaluating the nutritional profile, antinutritional value, mineral value and phytochemical screening of wild edible fruit of *Rubus laciocarpus* were investigated by standard method. The fruits have been found to rich in nutrients and minerals such as crude protein, carbohydrates, crude fiber, ash content (3.87%, 31.28%, 3.25% and 1.80%) and minerals as calcium, magnesium, potassium and phosphorus (1.30%, 6.13%, 2.10% and 0.60%) respectively and phytochemical screening of plant for the presence of glycosides, flavonoids, phenols, resin and tannins. However, alkaloids were absent. This analysis revealed that, the fruits contained higher value of fat, protein, fiber and minerals as compared to the cultivated fruits with Grapes and 500gm fruits contain sufficient amount of nutrients required per day by a person.

**Keywords:** Nutritional value, Mineral value, Phytochemical Screening

#### Introduction

The Garhwal region of Uttarakhand is highly enriched with wild edible fruits. Such Fruits are highly potential with medicinal value and nutritional value due to the presence of bio-actives, primary & secondary metabolites, these fruits are consumed by local inhabitants to play a significant role as supplementary foods and

medicines. Nutraceutical are those chemical compounds which can be considered a food or its part which, in addition to its normal nutritional value provides health benefits including prevention of diseases or promotion of health [1 & 2]. Medicinal plants and herbs are of great importance to the prevention or control of some metabolic disorders like diabetes, heart

diseases and certain types of cancers. One of the great advantages of these medicinal plants is that they are easily available and have moderate side effects. Wild edible plants are very important for the well being of rural populations in the region of Garhwal Himalaya, it is not only as sources of food supplemental, nutritionally balanced diets, medicine, fodder and fuel but also for their income generating potential. The fruits have show's astringent, diuretic, anti-diarrheal and anti-dysenteric properties [3 & 4]. *Rubus*

**Collection of plant material:**

The fresh parts of fruit of *Rubus laciocarpus* were collected from adjoining area of Rambada village, Distt- Rudraprayag Garhwal, Uttarakhand) in the month of June –August

*laciocarpus* belongs to the family of Rosaceae which is commonly known as black Hinsar in Uttarakhand India. The fruit of *Rubus laciocarpus* is contains protein, crude fat, vitamin C, minerals and dietary fibers etc. Which is used in the treatment of digestive disorder, astringent, supplementary food, cardiac disorder and blood disorders.

**Materials and Methods**

2012. The plant was authenticated by botanist Prof. R. D. Guar, Department of Botany and the voucher specimen number is GUH 7842. H. N. B. Garhwal (A Central University) Srinagar Garhwal, Uttarakhand India.



***Rubus laciocarpus* fruit**

**Preparation of plant extracts:**

The plant material was separated into its selected part fruit air dried ground to moderately fine powder and soxhlet extracted with increasing polarity solvent (Petroleum ether, chloroform, ethyl acetate, acetone, methanolic, ethanolic and water) [5]. Each extract was evaporated to dryness under reduce pressure using rotary

evaporator. The coarse powder of fruit were subjected to successive hot continuous extraction with various solvent each time before extracting with next solvent the powdered material will be air dried (weight of crude extract 500gm). The various concentrated

extracts were stored in air tight container for

**Nutritional value, antinutritional value & minerals assay:**

The edible portion of fruit was analyzed for moisture, ash, fat [6] and fiber as per method reported in AOAC. Total nitrogen was analyzed by microkjeldhal method [7] and for crude protein the value was multiplied by 6.25. Total carbohydrates were obtained by subtracting the value moisture, crude protein, crude fat, crude fiber and ash from 100% [8]. The total energy value equal to addition of fat, protein and sugars calorie each gram of fat give 9 kcal, protein and sugar give 4 kcal energy. The minerals analyzed were potassium using atomic absorption spectrophotometer, calcium and phosphorus by flame photometer. Ascorbic acid in fruit was estimated by standard process [9].

**Preliminary Phytochemical Studies:**

Preliminary phytochemical test of all various extracts of fruits powder of *Rubus laciocarpus* were performed for phytochemical analysis of alkaloids, glycosides, carbohydrates, steroids, flavonoids, polyphenols, saponins, resin and tannins. However, alkaloids were absent. The qualitative test of all extracts showed significant indication about the presence of metabolite which was detected by using standards methods [10].

**Results and Discussion**

The present investigation deals with the comparative study of wild edible fruit and cultivated fruit. Which are used for health

further studies.

(nutritional and antioxidant properties) on the basis of their traditional and medicinal used in local people. The first step towards this goal is the nutritional profile, antinutritional value, TLC analysis, successive extraction and phytochemical screening. This analysis revealed that the fruits contained higher value of fat, protein, fiber and minerals as compared to the cultivated fruits with 500gm and these fruits contain sufficient amount of nutrients required per day by a person. The preliminary phytochemical screening of these plant fruits for the presence of glycosides, flavonoids, phenols, resin and tannins. The results of nutritional profile, antinutritional value, mineral value, TLC analysis, successive extraction, phytochemical screening and amino acid as table 1, 2, 3, 4, 5 and 6.

**Nutritional value:**

The level of nutrients such as crude protein, carbohydrates, crude fiber and ash content (3.87%, 31.28%, 3.25% and 1.80%) and also minerals as calcium, magnesium, potassium and phosphorus (1.30%, 6.13%, 2.10% and 0.60%) respectively.

**Phytochemical screening:**

This qualitative chemical test of *Rubus laciocarpus* fruit powder shows the presence of alkaloids, glycosides, carbohydrates, steroids, flavonoids, polyphenols, saponins, resin and tannins.

**Table 1: Nutritional and Antinutritional value of *Rubus laciocarpus* and *Vitis vinifera* fruit.**

Nutrients (%)	<i>Rubus laciocarpus</i>	<i>Vitis vinifera</i>	Anti-nutrients (%)	<i>Rubus laciocarpus</i>	<i>Vitis vinifera</i>
Moisture	58.6±0.10	86.7±0.10	Total saponins	1.06±0.4	1.36±0.4
Ash	1.80± 0.15	1.20± 0.15	Total flavonoid	2.74±0.5	1.87±0.5
Crude fat	1.20±0.20	0.50±0.20	Total alkaloid	0.02±0.1	0.01±0.1
Crude fibre	3.25±0.14	1.95±0.14	Total phenolic	2.17±0.5	2.53±0.5
Total nitrogen	0.62±0.05	0.31±0.05	Total tannins	0.92±0.2	0.72±0.2
Total protein	3.87±0.08	1.93±0.08	Water insoluble	20.0±0.10	15.20±0.10
Carbohydrate	31.28±0.10	7.72±0.10	Water soluble	80.0±0.05	84.80± 0.15
Organic matter	98.20± 0.15	98.80± 0.15	Vitamin C	2.81±0.05	15.20±0.05

**Table 2: Mineral value of *Rubus laciocarpus* and *Vitis vinifera* fruit.**

Minerals (%)	<i>Rubus laciocarpus</i>	<i>Vitis vinifera</i>	Anti-nutrients (%)	<i>Rubus laciocarpus</i>	<i>Vitis vinifera</i>
Ca	1.3±0.05	0.9±0.05	K	2.1±0.05	2.80.05
Na	0.8±0.05	0.3±0.05	P	0.6±0.05	0.4±0.05
Mg	6.13±0.05	2.8±0.05	Fe	0.5±0.05	0.3±0.05
N	0.62±0.05	0.31±0.05	Cu	9.3±0.05	7.3±0.05

**Table 3: Phytochemical screening of *Rubus laciocarpus* (RL) and *Vitis vinifera* (VV) fruit, (+) – Present, (-) – Absent.**

Test	Pt. ether Extract		Chloroform Extract		Methanolic Extract		Water Extract	
	(RL)	(VV)	(RL)	(VV)	(RL)	(VV)	(RL)	(VV)
Carbohydrates/ glycosides								
(1) Molish test	(-)	(-)	(-)	(-)	(+)	(-)	(+)	(-)
(2) Fehling test	(-)	(-)	(-)	(-)	(+)	(+)	(+)	(+)
(3) Benedict test	(-)	(-)	(-)	(-)	(+)	(+)	(+)	(+)
Alkaloid								
(1) Mayer's test	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
(2) Dragondroff test	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
Flavonoids								
(1) Shinoda/pew	(-)	(-)	(-)	(-)	(+)	(+)	(+)	(+)
(2) Ammonia	(-)	(-)	(-)	(-)	(+)	(+)	(+)	(+)
Saponins	(-)	(-)	(-)	(-)	(+)	(+)	(+)	(+)
Tannins								
(1) Pyrogall & catechol	(-)	(-)	(-)	(-)	(+)	(+)	(+)	(+)
(2) Gallic acid	(-)	(-)	(-)	(-)	(+)	(+)	(-)	(-)
Unsaturated sterol/triterpenes								
(1) Liebermann & Burchard test	(+)	(+)	(+)	(+)	(+)	(+)	(-)	(-)
(2) Salkowiskis test	(+)	(+)	(+)	(+)	(+)	(+)	(-)	(-)
Resin	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)
Phenolics compound								
(1) Ferric chloride	(-)	(-)	(-)	(-)	(+)	(+)	(+)	(+)
(2) Nitric acid	(-)	(-)	(-)	(-)	(+)	(+)	(+)	(+)
Protein and amino acid								
(1) Xanthoprotien	(-)	(-)	(-)	(-)	(+)	(+)	(+)	(+)

Figure 1.1 Comparison of per day intake of nutrients by Adults with the nutrients present in the fruit of *Rubus laciocarpus*.

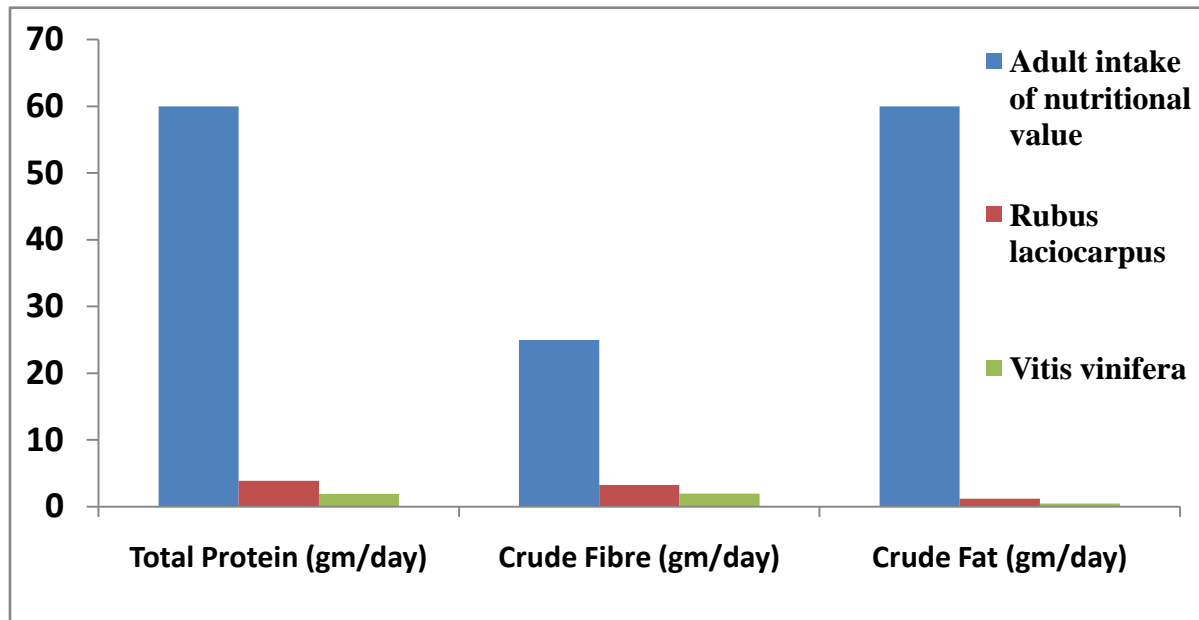
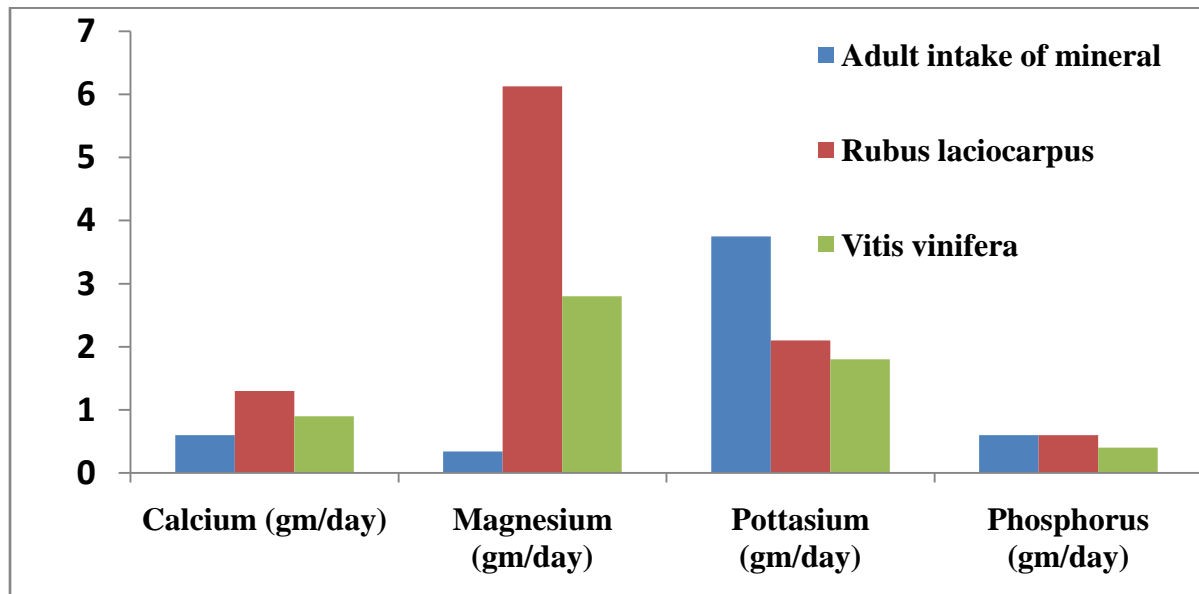


Figure 3.1 Comparison of per day intake of minerals by Adults with the mineral present in the fruit of *Rubus laciocarpus*.



## Conclusions

In conclusion, the results of this investigation revealed that nutritional value, antinutritional value, mineral value, successive value, TLC analysis and phytochemical activity against selected part of plant fruit. The fruit of *Rubus laciocarpus* contain higher value of nutritional, mineral and successive and also low value of antinutritional profile in compared with *Vitis vinifera* fruit. The qualitative tests of all extracts showed significant indication about the presence of metabolites. Preliminary phytochemical investigation tests are useful to isolate the pharmacologically active principles present in the plant. TLC profiling of all extracts gives an impressive result that directing towards the presence of number of phytochemical. The TLC method is best choice for the identification of secondary metabolite present in plants. Here the different  $R_f$  values indicate the presence of different nature of phytoconstituents in single extracts. Different  $R_f$  values of the compound also reflects an idea about their polarity. This information will help in selection of appropriate solvent system for further separation of compound from these plant extracts.

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