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PHYTOCHEMICAL AND NUTRITIONAL ANALYSIS OF *CARALLUMA FIMBRIATA L.*

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Abstract:
In nature, there are many underutilized plants of promising nutritive value, which can nourish the ever increasing human population. They haveremained underutilized due to the lack of awareness and popularization of technology. People's diet offers a greater and more diverse group of plant bioactive than do drugs and they often do not realize that many drugs are derived from the compounds which are originally discovered in plants. Plants play an important part in maintaining general good health owing to the presence of nutritional and phytochemical property. All these substances help to protect the body process, on which vitality and good health depend. They also contain a variety of bioactive non-nutritive health promoting factors. Most of the plants serve as food but their nutritional and phytochemical potential has not been overlooked. The present study was to analyze the preliminary phytochemical and nutritional analysis of Caralluma fimbriata L. It is an ethnomedicinal and nutritional plant used for different ailments in the tribal regions of Sangamner tehsil of Ahmednagar district (MS) India. This study reveals the presence of Steroid, Caumarin, Protein, Carbohydrates, Diterpenes, Phytosterol, Flavonoids, Saponins and alkaloids. The nutritional analysis shows the rich amount of mineral and elemental substances. Present study gives an alternative source for pharmaceutical and nutraceuticals industries.
Keywords: Phytochemical, Nutritional, *Caralluma fimbriata*, Pharmaceutical, Nutraceuticals.

Introduction:

Caralluma fimbriata, also known as *Caralluma adscendens*, belongs to the family asclepiadacea. In Western India it is also called Ranshabar, Makad shenguli, Kullimudayan, and Shindula makadi. There are other species of Caralluma that grow in India. Among these are: C. indica, C. attenuata, C. umbellata, and C. All these varieties of Caralluma are botanically and phytochemically similar to *C. fimbriata* and regularly consumed by the native population across India. *Caralluma fimbriata* is consumed daily as a vegetable in the Kolli Hills of South India; it is used in pickles and chutney in the arid regions of Andhra Pradesh; and in Western India, *Caralluma fimbriata* is accepted as a famine food - suppressing appetite and quenching thirst. Legend has it those hunting tribes' chewed chunks of the Caralluma cactus to suppress hunger and thirst when on a long hunt. There are no adverse events reported in the Indian subcontinent over the centuries of use of *Caralluma fimbriata*. It is listed as a vegetable in The Wealth of India and in Indian Health Ministry's comprehensive compilation on medicinal plants. Key phytochemical ingredients include sitosterol, Hexadecanoic acid, Oleic acid, pregnane glycosides, flavone glycosides, megastigman glycosides, bitter principles, alkaloids, saponins, various flavonoids etc. Caralluma has become an extremely useful type of "portable food" It is even called as "famine food", since it helps fight off hunger in times of desperate need of food for those who had to travel long distances on land [1].

In nature, there are many underutilized plants of promising nutritive value, which can nourish the ever increasing human population. They have remained underutilized due to the lack of awareness and popularization of technology [2] [3] [4]. People's diet offers a greater and more diverse group of plant bioactive than do drugs and they often do not realize that many drugs are derived from the compounds which are originally discovered in plants. Plants play an important part in maintaining general good health owing to the presence of nutritional and phytochemical property [5] [6] [7] [8]. All these substances help to protect the body process, on which vitality and good health depend. Most of the plants serve as food but their nutritional and phytochemical potential has not been overlooked [9] [10]. The present study was to analyze the preliminary phytochemical and nutritional analysis of *Caralluma fimbriata* L. It is an ethnomedicinal and nutritional plant used for different ailments in the tribal regions of Sangamner tehsil of Ahmednagar district (MS) India.

Materials and Methods:

Collection and Identification:

Plant sample was collected from the forest areas of Sangamner tehsil. Identification

was done with the help of Flora of Ahmednagar District [11].

Phytochemical screening:

The powder is used for the phytochemical analysis both qualitative as well as quantitative phytochemical screening for the identification of the various classes of active chemical constituents, using standard prescribed methods [12]. The positive tests were noted as weak (+), moderate (++), strong (+++) and absent (-).

Plant filtrate was prepared by boiling 20 g of the powder of the plant in distilled water. The solution was filtered. The filtrate was used for the phytochemical screening of flavonoids, tannins, saponins, alkaloids, reducing sugars, anlhraquinones and anthocyanosides.

Alkaloids

1 ml of the bark filtrate was mixed with 2 ml of Dragendoff s reagent; a turbid orange colour indicated the presence of alkaloids. The confirmation test was done using Mayer's reagent; a yellow precipitate indicated the presence of the alkaloids.

Tannins

1 ml of the filtrate was mixed with 2 ml of $FeCl_2$; a dark green colour indicated a positive test for the tannins.

Saponins

1 ml of the plant filtrate was diluted with 2 ml of distilled water, the mixture was vigorously shaken and left to stand for 10 min during which time, the development of foam on the surface of the mixture lasting for more than 10 min, indicates the presence of saponins.

Anthocyanosides

1 ml of the bark filtrate was mixed with 5 ml of dilute HC1; a pale pink colour indicates the positive test.

Flavonoids

1 ml of bark filtrate was mixed with 2 ml of 10% lead acetate; a brownish precipitate indicated a positive test for the phenolic flavonoids. While for flavonoids, 1 ml of the plant filtrate was mixed with 2 ml of dilute NaOH; a golden yellow colour indicated the presence of flavonoids.

Steroid

Liebermann-Burchard reaction was performed for the presence of steroids. A chloroformic solution of the crude powder was treated with acetic anhydride and few drops of concentrated H2SO4 were added down the sides of test tube. A blue green ring indicated the presence of steroids.

Amino acids

Small quantities of extract were dissolved in a few ml of water and treated with Ninhydrin reagent. A purple colouration obtained showed the presence of amino acids.

Proteins

Small quantities of extract were dissolved in a few ml of water and treated with Biuret reagent**.** A violet colouration obtained showed the presence of proteins.

Carbohydrates

A small quantity of powder were dissolved separately in 5 ml of distilled water and filtered. The filtrate was subjected to Molisch's test to detect the presence of carbohydrates.

Cardiac glycosides test

Keller-kiliani test was performed for the presence of cardiac glycosides. The crude powder each was treated with 1ml mixture of 5% FeCl3 and glacial acetic acid (1:99 v/v). To this solution, few drops of concentrated H2SO4 were added. Appearance of greenish blue color within few minutes indicated the presence of cardiac glycosides.

Phenol test

The powder was treated with few drops of diluted sodium hydroxide (NaOH) separately. Formation of intense yellow color which turned colorless on addition of few drops of diluted HCl indicated presence of phenol.

Phlobatanins test

The crude powder was boiled with 1% aqueous HCl. Deposition of red precipitate was taken as evidence for the presence of phlobatanins.

Nutritional Analysis

Mineral and elemental analysis of powder was done by using standard methods (13).

***Caralluma fimbriata*L.**

Table 1. Preliminary Phytochemical screening.

Sr. No.	Phytochemical constituents	Inference
1.	Steroid	+++
2.	Anthocyanin	-
3.	Caumarin	+++
4.	Protein	+++
5.	Amino acid	-
6.	Carbohydrates	+++
7.	Diterpenes	++
8.	Phytosterol	+++
9.	Phenol	-
10.	Flavonoids	+++
11.	Tannins	-
12.	Phobatannin	-
13.	Cardinal glycoside	-
14.	Saponins,	++
15.	Alkaloids	+++

Note: + Low, ++ Moderate, +++ High, --- Absent.

Table 2. Mineral and elemental constituents

Sr. No.	Mineral and elemental constituents	Inference
1.	Ash value	5.96%
2.	Fats	8.13%
3.	Total sugar	31.58%
4.	Crude fiber	6.18%
5.	Dry mater	76.28%
6.	Iron as Fe	0.0006%
7.	Zinc	0.003%
8.	Copper	0.00064%
9.	Nitrogen	3.54%
10.	Potassium	1.34%
11.	Phosphorous	1.04%
12.	Sodium	0.0026%
13.	Calcium	0.12%
14.	Magnesium	0.006%
15.	Silica	4.92ppm
16.	Calorie value	5548.64 Kcal/Kg

Result and Discussion:

The medicinal value of plants lies in some chemical active substances that produce a definite physiological action on the human body. This study reveals the presence of Steroid, Caumarin, Protein, Carbohydrates, Diterpenes, Phytosterol, Flavonoids, Saponinsand alkaloids.There are records that show the benefits of these compounds detected from *Caralluma fimbriata L.* The nutritional analysis shows the adequate amount of nutritional compounds which are required to fulfill the daily need of diet.

Conclusion:

Present study gives the detail study of phytochemical and nutritional features so it should be an alternative source of food and also be cultivate on large scale.

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