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PROXIMATE COMPOSITION OF EPIPHYLLUM OXYPETALUM STEM AND LEAVES

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ABSTRACT

To determine the "Proximate Composition Epiphyllum Oxypetalum Stem and Leaves". Epiphyllum Oxypetalum is a species of cactus and one of the most cultivated species in the genus and commonly known as Bramhakamal. Here we report the moisture, crude fibre, total extract, crude protein, total carbohydrate, reducing sugar and non-reducing sugar, ash and its analysis, calcium, magnesium, carbon, hydrogen, nitrogen and sulphur contents.

KEYWORD: Epiphyllum Oxypetalum stem and leaves, Chemical composition.

INTRODUCTION

Epiphyllum Oxypetalum plant is very unique plant. It is a species of cactus and one of the most cultivated species in the genus and commonly grown of the Epiphyllum Oxypetalum. In India it is commonly known as Bramhakamal.[1] It is also known as orchid cactus as the flower has orchid like beauty.[2] It is a variety of night blooming cereus, Queen of Night, Leady of night as its beautiful lotus like flower blooms late night.[3,4]

The plant kingdom is a large reservoir of pharmacologically active molecules and large number of plant derived medicines now commercially available.[5] The medicinal plant produce therapeutic properties. The stem is used to cure dropsy and cardiac affections. Flower is used in bloody phlegm, cough, uterine bleeding and shortness of breath. This plant has a potent power to stifle the pain and is able to neutralize blood clotting.[6]

Plant based antimicrobials have enormous therapeutic potential and possess lesser side effect than the synthetic antimicrobials.[7] Nature selects such type of plants and these plants are normally free from pests as well as pathogens.[8] In recent years, pharmaceutical companies have spent considerable time and money in developing therapeutics based upon natural products extracted from plants.[9]

The uses of medicinal plants as traditional medicine is wide spread and represent a large source of natural anti-oxidants that might serve as leads for the development of the novel drugs.[10]

The knowledge of this innovation and investigation will be useful for the plant breeders for further improvement in this plant. The scientist can also use the information developed in value addition of the medicine. The information generated through this research can be used by the traders in national as well as international market.

Table1. Taxonomy of Epiphyllum Oxypetalum Kingdom Planta

Kingdom	**Plantae**
Sub Kingdom	Tracheobionta
Superdivision	Spermatophyta
Division	Magnoliophyta
Class	Magnoliopsida
Order	Caryophyllales
Family	Cactaceae
Genus	Epiphyllum
Species	E. oxypetalum
Binomial name	Epiphyllum oxypetalum

MATERIAL

Chemicals

All chemicals and reagents used during this test were of analytical grade. These chemicals and reagents were obtained from Department of Chemistry, Mithibai College, Mumbai-400056, Maharashtra, India.

PLANT MATERIAL

Collection of plant material

The fresh stem and leaves of Epiphyllum Oxypetalum were collected from the local area in kalyan, Maharashtra, India. The collected stem and leaves were identified and authenticated by Dr. Sashirekha Suresh Kumar (Head of Botany Department) from

Mithibai College.

Fig. 1: Epiphyllum oxypetalum stem and leaves.

Preparation of plant extract

The fresh stem and leaves were washed under running tap water, shed dried and coarsely powdered in a mechanical grinder.

Preparation of alcohol extract-

The powder was extracted with absolute ethanol in soxhlet extractor at temperature 40-50^{O}C. The extract was dried on water bath at 60^{O}C.

METHODS

The powder of stem and leaves were cleaned and stored properly at room temperature prior to their use in actual experiment.

Moisture, Ash (its analysis) and Calcium and Magnesium content were determined by the methods as described by Pearson.[11,15]

Crude fibre content was determined by the method recommended in the Fertilizer and feeding stuff regulations.[12]

Total extract was determined by the methods used by Colowick and Kaplan.[13] Carbohydrate, reducing and non-reducing sugar were estimated by the method used by Nelson.[14]

Crude protein was estimated by "Micro Kjeldhal'' method (N X 6.25).[15]

Sulphur, Carbon and Hydrogen were estimated by method used by Sharma and Jeffry.[15,16]

Table2. Proximate principles of air dried seeds (g/100 g)

Sr.No	Sample	Moisture	Crude Fibre	Total Extract	Crude Protein	Total Carbohydrat	Reducing Sugar	Non-reducing Sugar
1	Stem	22.6158	24.827	15.9847	1.0584	1.02	Absent	1.02
2	Leaf	10.4658	32.1753	27.2152	0.7106	1.27	Absent	1.27

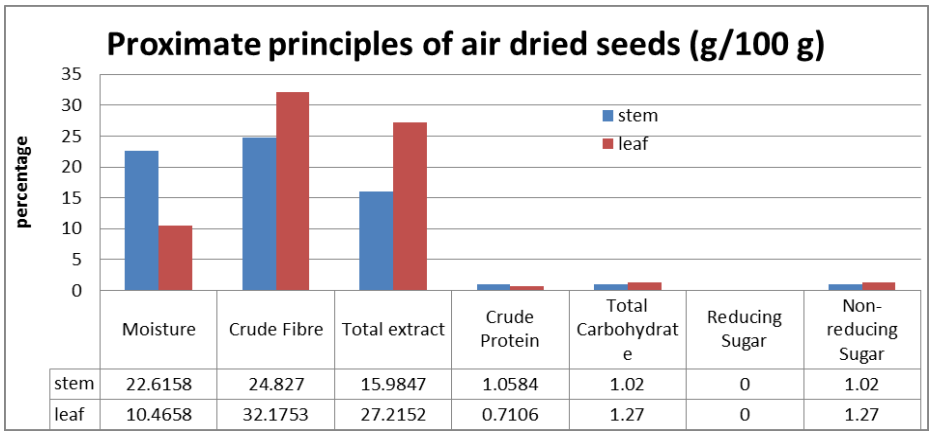

Fig. 2

Table3. Ash content and its analysis of air dried stem and leaf (g/100 g)

Sr.No	Sample	Ash (g)	Water Insoluble ash(g)	Water Soluble ash(g)	Acid Insoluble ash(g)	Acid Soluble ash(g)
1	Stem	2.0625	1.1726	0.8730	0.1465	1.9181
2	Leaf	2.6024	3.4843	3.4777	0.1533	1.9120

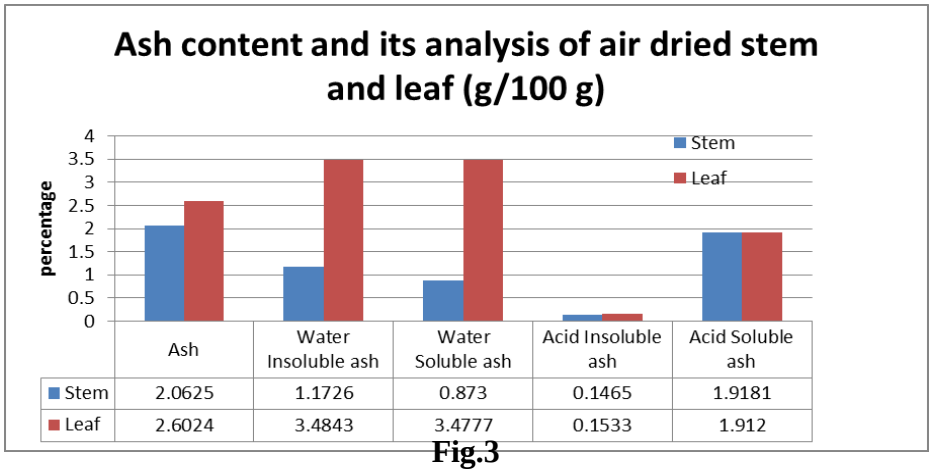

Fig.3

Table4. Elemental analysis of air dried stem and leaf (g/100 g)

Sr. No	sample	Calcium (Ca)	Magnesium (Mg)	Carbon (C)	Hydrogen (H)	Nitrogen (N)	Sulphur (S)
1	Stem	0.0377	0.0292	65.473	2.5052	0.1693	2.3224
2	Leaf	0.1148	0.713	68.967	1.1642	0.1137	9.5138

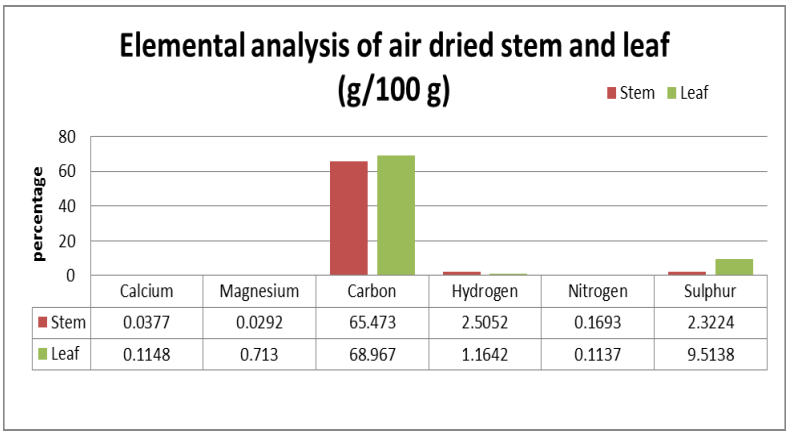

Fig.4

Table 5. Conductance, Hardness and Alkalinity content air dried stem and leaf (g/100 g)

Sr. No	Sample	Conductance of water soluble ash	Hardness of water soluble ash	Alkalinity of water soluble ash (% meq)	Conductance of acid soluble ash (mhos)	Hardness of acid soluble ash (ppm)
1	Stem	$2.33x10^{-3}$	400	2	$184.4x10^{-3}$	34900
2	Leaf	$8.35x10^{-3}$	600	6	$154.4x10^{-3}$	19900

RESULT

The result of proximate principles of air dried stem and leaf are shown in Table 2. It shows that the moisture, crude fibre, total extract, crude protein, total carbohydrate, reducing sugar and non-reducing sugar contents in stem and leaf were found to be 22.618 and 10.4658, 24.827 and 32.1753, 15.9847 and 27.2152, 1.0584 and 0.7106, 1.02 and 1.27, absent, 1.02 and 1.27 respectively.

Moisture and crude protein of air dried stem was higher than the air dried leaf. However crude fiber and total extract of air dried leaf was found to be higher than the air dried stem. Carbohydrate of air dried stem was found to be lower than air dried leaf. However reducing sugar was found to be absent in stem as well as leaf.

The result of ash content and its analysis of air dried stem and leaf are shown in Table 3. It shows that the ash, water insoluble ash, water soluble ash and acid insoluble ash of air dried leaf 2.6024, 3.4843, 3.4776, and 0.1533 respectively were found to be maximum than the air dried stem 2.0625, 1.1726, 0.8730 and 0.1465 respectively. However acid soluble ash of air dried stem 1.9181 was found to be higher than the air dried leaf 1.912 respectively.

The result of elemental analysis of air dried stem and leaf are shown in Table 4. It shows that the Calcium (Ca), Magnesium (Mg), Carbon (C), Hydrogen (H), Nitrogen (N) and Sulphur (S) contents in air dried stem and leaf were found to be 0.0377 and 0.1148, 0.0292 and 0.0713, 65.473 and 68.967, 2.5052 and 1.1642, 0.1693 and 0.1137 & 2.3224 and 9.5138 respectively. Calcium, magnesium, carbon and sulphur were found comparatively maximum in air dried leaf. However hydrogen and nitrogen was found to be higher in air dried stem.

The result of conductance, hardness and alkalinity content in air dried stem and leaf are shown in Table 5. It shows that conductance of water soluble ash(mhos),hardness of water soluble ash(ppm) and alkalinity of air dried leaf $8.53x10^{-3}$, 600 and 6 respectively was found to be maximum than air dried stem $2.33x10^{-3}$, 400 and 2 respectively. However conductance of acid soluble ash (mhos) and hardness (ppm) of acid soluble ash of air dried stem $184.4x10^{-3}$ and 34900 was found to be higher than air dried leaf $154.4x10^{-3}$ and 19900 respectively.

The result of proximate principles, ash content and its analysis and the elemental analysis of air dried stem and leaf were represented graphically form in Fig. (2-4).

DISCUSSION

The present study was carried out on stem and leaf of the plant Epiphyllum Oxypetalum. The nutritive values of plants were shown significant presence of proteins of stem and leaf 1.0584% and 0.7106% and carbohydrates of stem and leaf 1.02% and 1.27% respectively.

It also showed the presence of minerals Calcium and Magnesium of stem and leaf 0.0377 % and 0.1148% & 0.292 % and 0.713 % respectively.

Screening of Epiphyllum Oxypetalum showed the presence of crude fibre, moisture and elemental constituents like Carbon, Hydrogen, Nitrogen and sulphur, while reducing sugar was found to be absent. The presence of these compounds shows the medicinal potential of the plant. Since reducing sugar is absent in plant stem and leaf part can be carried out on detecting different kinds of phenolic compound, amino acids and medicinal value. Since the present study was only carried out on stem and leaves of different parts of the plant like flower and root can be studied further.

CONCLUSION

This is the first report of proximate analysis of Epiphyllum oxypetalum, and it is found to be easy, fast and green approach. Present investigation revealed that Epiphyllum oxypetalum leaves could be very useful resource as bio therapeutic agent. As its stem and leaf possess good nutritive values and its expended use as dried dehydrated extracts and its blends could be worth exploiting from economic point of view. Their efforts could be open up the possible of finding new clinically effective bio therapeutic agents. This indeed is a step towards its sustainable use and justifying its abundance.

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