



PHYTOCHEMICAL SCREENING AND IN-VITRO EVALUATION OF ANTHELMINTHIC ACTIVITY OF PARMOTREMA PRAESOREDIOSUM

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Abstract

There are numerous medicinal plants in Indonesia. With the development of science and technology, the general people has been using this medicinal plant extensively in an effort to combat health issues like slow wound healing. The vital significance of secondary metabolites of plants as therapeutic raw materials has been further clarified by the discovery of numerous new pharmaceutical molecules derived from natural sources. The plant *Parmotrema praesorediosum*, also known as the black stone flower and rathi pootha, is a member of the parmeliaceae family, Subfamily: *Parmelioideae*, Genus: *Parmotrema*, Species: *Parmotrema praesorediosum*. The current study examines the preliminary phytochemical and anti-helminthic activity screening of *Parmotrema praesorediosum*. The flower has antibacterial, anti-oxidant, and anti-microbial properties. Initial phytochemical analysis found flavonoids, glycosides, alkaloids, tannins, etc. in the sample. To identify the components in the ethanolic floral extract, TLC was used. The anthelminthic properties of the crude ethanolic extract of *Parmotrema praesorediosum* flower were examined.

Key Words: *Parmotrema praesorediosum* Phyto-chemical screening, Anthelminthic, activity, ethanolic extract.

Introduction

Plant introduction

Parmotrema praesorediosum, a rare black lichen, grows on rocks, trees, and other solid objects. Blackstone flowers are a subspecies of *Parmotrema praesorediosum*. This species can be found in both the northern and southern hemispheres. [1] They have no roots, stems, or leaves, and the only place where their chloroplasts are discovered is on lichens. The *praesorediosum* *parmotrema* prefers tree trunks, but it can also be found on rocks. It is commonly used in Indian cooking as part of the masala spice blend, especially in dishes with meat.[2]. It is also a popular ingredient in vegetarian dishes. It eases bronchitis, vomiting, and other symptoms as well as excessive salivation.[3]. Additionally, flowers can treat chronic gastritis. It has been shown that *Parmotrema praesorediosum* has antibacterial, antifungal, and antioxidant activities in invitro experiment. Traditional treatments have employed lichens for millennia, and in many parts of the world, it continues to be of significant interest [4,5,6]. Researchers have been looking at the secondary substances that lichens produce for more than a century. Lichens produce a wide range of distinctive secondary metabolites that are known to have a variety of biological functions[7]. Many pharmacological effects, including antibacterial, antiviral, antiprotozoal, enzyme inhibitory, insecticidal, antitermite, cytotoxic, antioxidant, wound healing, antiherbivore, and analgesic, have been linked to lichens and their

secondary metabolites[8]. Due to their low concentration in nature, lichens represent a diversity of novel bioactives, the majority of which have yet to be fully described and their potential found.

Taxonomy

- Domain: Eukaryotes
- Kingdom: Fungi
- Division: Ascomycota
- Class: Lecanoromycetes
- Order: Lecanorales
- Family: Parmeliaceae.
- Genus: Parmotrema
- Species: Praesorediosum
- Binomial name: Parmotrema praesorediosum.

Synonyms: Parmelia praesorediosa Nyl.,
Parmelia praesorediosa
Parmotrema praesorediosum (Nyl.) Hale,
Parmotrema praesorediosum

Common name:

Black stone flower

Sanskrit: Shaileyam

Tamil: Kalpasi

Punjabi: Dagar da phool

Marathi: Dagaad phool

Telugu: Raathi pootha

Kannada: Kalluhooovu

Hindi: Patthar ke phool

Plant activity

- ❖ Antimicrobial activity
- ❖ Antioxidant activity
- ❖ Antibacterial activity
- ❖ Anti-diabetic activity

Methodology

Materials



Figure: 1 parmotrema praesorediosum

Chemical Constituents:

Parmotrema praesorediosum has been reported to contain:

- **praesorediosic acid,**
- **protocetraric acid,**
- **usnic acid,**
- **α -collatolic acid,**
- **β alectoronic acid,**
- **atranorin and**
- **chloroatranorin.**

Therapeutic Uses :

1.It is frequently used as a spice in masalas, particularly in meat dishes, in Indian cuisine.

Additionally, vegetarian meals use it.

2.It can be used to treat bronchitis, excessive salivation, and other conditions.

3.Flower is used to decrease cholesterol and blood sugar levels; therefore, it may be beneficial for people with chronic gastritis

4. It is used in treatment of arthritis.

Plant collection and authentication

In the months of December and January, the Horsley hills were used to collect the fresh *Parmotrema praesorediosum* flowers. Dr. Raviprasad Rao, from the Department of Botany at Sri Krishnadevaraya University in Ananthapuram, validated and taxonomically identified the flower material. Number 57418 on the floral voucher. Fresh lichen was harvested and dried out in the shade for 15 days. A mechanical grinder was used to ground the dried lichen into a coarse powder, which was then stored in an airtight container.

Experimental Methodology

Soxhlet (Hot continuous extraction)

In this procedure, the finely powdered herbal medication is put in the chamber of a Soxhlet extractor, "fig:1" which has a porous bag or "thimble" composed of sturdy filter paper. A condenser cools the hot vapor of the extraction solvent in Flask A. For extraction, the condensed extractant is put into the drug substance-containing pod and made contact with. The contents of the chamber are sucked into the flask when the liquid level in the chamber reaches the top of the syphon tube.

This process is constant and goes on until all residue is gone and the solvent droplets from the syphon tube have evaporated. This method has the advantage over the earlier method in that it can extract vast amounts of data and a considerably lesser quantity of the solvent, of the medication. This can help you save a lot of time, effort, and money. It is only used on a limited scale as a batch process; however, it becomes much more cost-effective and useful when converted to a medium or large continuous extraction method.



Fig no 2: Soxhlet apparatus

Preparation of extraction

For around 10 days, the plant material was dried at room temperature in the shade. [9,10,11]. The mechanically ground dried plant materials were sieved to produce powder with a particle size range of 50 to 150 μ m. Before extraction, the powder (100g) was kept in polythene bags at room temperature and extracted in stages with ethanol using a Soxhlet extractor "fig:2" 16 hours of extraction were spent until the solvents' colours returned to normal at the end of the syphoning process.[12]Using

rotary evaporator equipment, solvents were evaporated at low pressure.

Used organism:

The Indian earthworm *Pheritima posthuma* (Annelida) was collected from water logged area of soil and identified at the department of zoology, APT reddpalli, Anantapur. Then, the earthworms was washed with ordinary saline to expel all the fecal issue, were utilized for the Anthelmintic investigation. [13.14]

Anthelmintic Activity:

Invitro anthelmintic activity was carried out. All the dried extract of *Parmotrema praesorediosum* were dissolved in least measure of DMF and the volume was acclimated to 10 ml with saline water.[15]For carrying out the anthelmintic activity. 5 groups each of 6 earthworms were released into 10ml of desired formulations [16]and control as saline water ,reference drug is Albendazole (20 mg/ml) [17]

Observation were made for the time taken to paralyse and demise of individual worm. Loss of motion was said to happen when the worms couldn't move even in typical saline. Passing was closed when the worms lost their motility followed with blurring endlessly of their body hues as our past method[18].

Results & Discussion

Table 1 percentage of yield

Sample	Weight of sample in gms	Weight of the extract	% Yield
<i>Parmotrema praesorediosum</i> ethanol extract	25 gm	20 gm	80 %

Table : 2 phytochemical screening results

S. No	Test for	ethanolic extract of <i>parmotrema praesorediosum</i>
1	Carbohydrates	-
2	Steroids	+
3	Cardiac glycosides	-
4	Steroid glycosides	-
5	Coumarins	-
6	Flavonoids	+
7	Alkaloids	+

8	Tannins	-
9	Terpenoids	-
10	Volatile oils	+

Thin Layer Chromatography

Rf values of flavonoid compounds identified and their colours on TLC chromatography under the UV light

Table 3: Rf values

Flavonoids	Rf value	Color under UV 365 nm
Orientin	0.61	Violet

Table 03: Anthelmintic activity of parmotrema praesorediosum

Sl. No.	Groups	Conc.(mg/ml)	Time taken for paralysis (min)	Time taken for death (min)
1	Parmotrema praesorediosum Ethanol extract	25	35±0.10	70.25±1.45
		50	22.5±0.02	32.65±0.41
		75	14.7±0.26	25.5±1.07
2	Albendazole	25	24.51±0.28	44.9±0.29
		50	20.41±0.7	39.18±0.6
		75	12.4±0.17	24.0±0.15
3	Control(saline water)	---	---	---

* Values are expressed in mean ± SD of three samples for each group.

Discussion Of Results

In the current study, dried lichen from Parmotrema praesorediosum was extracted using the Soxhlet method with ethanol as the solvent. A portion of the extract was set aside for initial phytochemical research, and the remainder was used for phytochemical screening and pharmacological activity. The preliminary phytochemical analysis revealed the presence of tannin compounds, alkaloids, glycosides, and flavonoids. An ethanolic extract of lichen was used to isolate the component, which was then subjected to qualitative TLC examination. It was discovered that the ethanolic extract of Parmotrema Praesorediosum had an Rf value of 0.61, which was closer to the typical Rf value of Orientin (0.65). We have selected chloroform:methanol:water as the mobile phase (4:3:1) examined the in-vitro evaluation of parmotrema praesorediosum's anti-helminthic activity.

Conclusion

The ethanolic extract of Parmotrema praesorediosum has been shown to have anthelmintic activity, according to the findings of the current investigation. This activity might be brought on by the abundance of substances including alkaloids, flavonoids, tannins, steroids, and phenols. This review suggests that a chemical from the plant Parmotrema praesorediosum could be used as a lead compound to develop powerful medications that could be used to treat a variety of disorders. The traditional significance of the claimed activity, however, cannot be supported by this research alone; additional pharmacological, phytochemical, and bioanalytical studies, followed by observational studies in people, must be conducted.

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