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Checklist Of The Pteridophytes Of Chunkankadai Hillock, Kanniyakumari District, Tamil Nadu, India

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ABSTRACT

Pteridophytes, the second largest vascular plant group has significant contribution to the plant diversity. The present study deals with the enumeration of 25 species of ferns and fern-allies from Chunkankadai hillock of Kanniyakumari district, Tamil Nadu, India. The result has been presented in the form of a checklist.

Key words: Chunkankadai hillock, Pteridophytes, Western Ghats, Tamil Nadu

INTRODUCTION

Pteridophytes are the transition group of plant between non-tracheophytes and spermatophytes. There are about 12,000 species of pteridophytes (ferns and lycophytes) found in the world (Christenhusz and Byng, 2016) of which about 1200 species are reported from the territory of India (Chandra, 2000). Fraser-Jenkins *et al*. (2017) consider that 'altogether there are 1114 indigenous taxa and 43 exotics' for the Indian subcontinent. In peninsular India the Eastern Ghats and Western Ghats has rich source of Pteridophytes (Manickam and Irudayaraj, 1992, 2003; Mandal *et al*., 2020). In Kanniyakumari district, some workers have done systematic works in ferns and fern-allies (Sharma *et al*., 1973; Sukumaran *et al*., 2009; Jeeva *et al*., 2012; Alfred *et al*., 2018; Kumari *et al*., 2018; Felix and Sukumaran, 2021). Chunkankadai hillock is situated in Kanniyakumari district, Tamil Nadu, India. Even though it is known for it rich diversity no checklist available on the Pteridophyte diversity. With this view in mind the present work was planned and carried out.

MATERIAL AND METHODS

A survey of pteridophytes in Chunkankadai hillock were conducted during the period of April 2020 to March 2021. Terrestrial, epiphytic, lithophytes and hydrophytes forms of pteridophytes were recorded. Diagnostic features of the entire specimen were studied and relevant field notes were made on fresh plant materials. Identification was made by referring to

ISSN PRINT 2319 1775 Online 2320 7876

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available literature and Pteridophytes floras (Manickam and Irudayaraj, 1992; 2003). Data collection on ethnobotanical knowledge was carried out with the help of traditional healers using a Semi- structured Questionnaire and documented.

Results and Discussion

A total of 25 species of ferns and fern-allies at different habitat of the study area were recorded during the investigation (Table 1). Of these, 20 taxa of pteridophytes are ethnomedicinally important. They comprise terrestrial, epiphytic, lithophytic and hydrophytic forms. Among the pteridophytes studied in this site shows the maximum habitat preference by *Drynaria quercifolia* (Polypodiaceae), *Isoetus coromandelina* (Isoetaceae), *Lygodium microphyllum* (Schizaeceae) and *Pteris vitata* (Pteridance) (Table 2). Nine of them are preferred any two of the habitats. Among the 25 pteridophytes, eleven are only preferred by only one habitat. They are mainly terrestrial ones and three of them are hydrophytes. Family-wise distribution shows that Ophioglossaceae dominates (6 taxa) in terms of species richness, followed by Parkeriaceae and Thelypteridaceae 2 species each, whereas 9 familes were monospecific (Figure 1). Genus wise distribution of pteridophytes in the study area shows that *Ophioglossum* had six species, whereas *Christella* and *Lygodium* have 2 species each. All the others are singly represented. Pteridophytes are popularly known as plant reptiles. Sekar *et al*. (2011) reported thirty species from Kolli hills. They observed ethnomedicinal uses of *Actinopteris*, *Cerotopteris*, *Christella*, *Drynria*, *Hemionitis*, *Pteris* and *Salvinia*. Benjamin and Manickam (2007) observed the medicinal pteridophytes (61 species) form the Western Ghats. Among them include *Isoetus*, *Lygodium*, *Marsilea*, *Ophioglossum gramineum*, *O. reticulatum*, *Phleobodium*, *Pityrogramma*, and *Salvinia*.

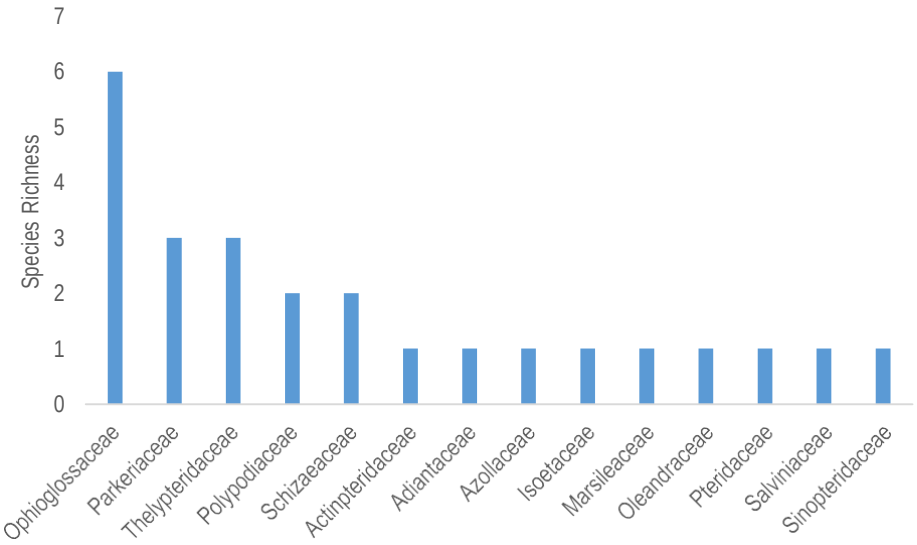

Figure 1. Family-wise distribution of plant species in the study area

Ethnobotanical significance of pteridophytes include ailments like typhoid, rheumatism, epilepsy, leprosy and kidney problem (Table 3). They cure many symptoms like asthma, cold, fever, cough, body pain, swellings, liver problems, knee pain, joint pain, and sprains.

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Pteridophytes also known to have antibacterial, antifungal, antiseptic, anthelmintic and detergent properties (Mithraja *et al*., 2012; Sukumaran *et al*., 2012). Decoction of *O. gramineum* as a lotion for boils. *O. reticulatum* is used as a cooling agent, used for bruises and hemorrhages. Many of the Pteridophytes have the curative property in wounds and cuts. *Azolla pinnta* is a well-known bio-fertilizer. The present study reveals that the Chunkankadai hillock has a rich pteridophyte flora than any other hillocks. The later appears on the pteridophytic flora of the hillock is under study.

Table 1. Checklist of pteridophytes found in the study area.

Sl. No.	Botanical Name	Family
1	*Actinopteris radiata* (Sw.) Link.	Actinpteridaceae
2	*Adiantum latifolium* Lam.	Adiantaceae
3	*Azolla pinnata* R. Br.	Azollaceae
4	*Cerotopteris thalictroides* (L.) Brongn.	Parkeriaceae
5	*Cheilanthes mysurensis* Wall. Ex. Beddome	Sinopteridaceae
6	*Christella dentata* (Forssk) Brownsey and Jermy	Thelypteridaceae
7	*Christella parasitica* (L.) H. Lev.	Thelypteridaceae
8	*Cyclosorus interruptus* (Willd.) H. Ito	Thelypteridaceae
9	*Drynaria quercifolia* (L.) J. Sm.	Polypodiaceae
10	*Hemionitis arifolia* (Burm. F.) T. Moore	Parkeriaceae
11	*Isoetus coromandelina*L.f.	Isoetaceae
12	*Lygodium flexuosum* (L.) Sw.	Schizaeaceae
13	*Lygodium microphyllum* (Cav.) R. Br.	Schizaeaceae
14	*Marsilea minuta* L.	Marsileaceae
15	*Nephrolepis multiflora* (Roxb.) Jarret	Oleandraceae
16	*Ophioglossum gramineum*Willd.	Ophioglossaceae
17	*Ophioglossum nudicaule* L. f.	Ophioglossaceae
18	*Ophioglossum petiolatum* Hook.	Ophioglossaceae
19	*Ophioglossum polyphyllum* A. Braun ex Seubert.	Ophioglossaceae
20	*Ophioglossum reticulatum* L.	Ophioglossaceae
21	*Ophioglossum vulgatum* L. f.	Ophioglossaceae
22	*Phlebodium aureum* (L.) J. Sm.	Polypodiaceae
23	*Pityrogramma calamelanos* (L.) Link.	Parkeriaceae
24	*Pteris vitata* L.	Pteridaceae
25	*Salvinia molesta* Mitch.	Salviniaceae

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 3,Dec 2022

Table 2. Habitat-wise distribution of pteridophytes in the study area

Sl. No.	Botanical Name	Lithophyte	Hydrophyte	Terrestrial	Epiphyte
1	*Actinopteris radiata* (Sw.) Link.	+	-	+	-
2	*Adiantum latifolium* Lam.	-	-	+	-
3	*Azolla pinnata* R. Br.	-	+	-	-
4	*Cerotopteris thalictroides* (L.) Brongn.	-	+	+	-
5	*Cheilanthes mysurensis* Wall. Ex. Beddome	-	-	+	-
6	*Christella dentata* (Forssk) Brownsey and Jermy	-	+	+	-
7	*Christella parasitica* (L.) H. Lev.	-	+	+	-
8	*Cyclosorus interruptus* (Willd.) H. Ito	-	+	+	-
9	*Drynaria quercifolia* (L.) J. Sm.	-	+	+	+
10	*Hemionitis arifolia* (Burm. F.) T. Moore	-	-	+	-
11	*Isoetus coromandelina*L.f.	-	+	+	+
12	*Lygodium flexuosum* (L.) Sw.	-	-	+	-
13	*Lygodium microphyllum* (Cav.) R. Br.	+	+	+	-
14	*Marsilea minuta* L.	-	+	+	-
15	*Nephrolepis multiflora* (Roxb.) Jarret	+	-	+	+
16	*Ophioglossum gramineum*Willd.	-	-	+	-
17	*Ophioglossum nudicaule* L. f.	-	-	+	+
18	*Ophioglossum petiolatum* Hook.	-	-	+	-
19	*Ophioglossum polyphyllum* A. Braun ex Seubert.	-	-	+	+
20	*Ophioglossum reticulatum* L.	-	-	+	-
21	*Ophioglossum vulgatum* L. f.	-	-	+	-
22	*Phlebodium aureum* (L.) J. Sm.	-	-	+	-
23	*Pityrogramma calamelanos* (L.) Link.	-	-	+	-
24	*Pteris vitata* L.	+	-	+	+
25	*Salvinia molesta* Mitch.	-	-	+	-

Abbreviations: (+) present; (-) absent

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 3,Dec 2022

Table 3. Ethnobotanical significance of pteridophytes of the study area

Sl. No.	Botanical Name	Part used	Ethnobotanical significance
1	*Actinopteris radiata* (Sw.) Link.	Whole plant	Anthelmintic and fever
2	*Adiantum latifolium* Lam.	Whole plant	Boiled decoction is applied to get relief from body pain
3	*Azolla pinnata* R. Br.	Whole plant	Good biofertilizer and the extract is an anti- fungal agent
4	*Cerotopteris thalictroides* (L.) Brongn.	Whole plant	Antifungal agent, plant paste mixed with turmeric and is applied for wounds and skin infections
5	*Cheilanthes mysurensis* Wall. Ex. Beddome	Whole plant	Hot decoction is used for throat pain
6	*Christella dentata* (Forssk) Brownsey and Jermy	Leaves	The juice is used to relieve body pain
7	*Christella parasitica* (L.)H. Lev.	Leaves	The juice obtained is taken orally to treat swellings
8	*Cyclosorus interruptus* (Willd.) H.	Leaves	The boiled fronds of the plant are also used to treat gastric ulcer; as a remedial source to cure boils, sores, cough, liver diseases, gonorrhea, and malaria.
9	*Drynaria quercifolia* (L.) J. Sm.	Rhizome	The rhizome made into a paste and boiled with pepper, cumin seeds, onion and garlic along with water. It is taken orally to get relieve from body pain, knee pain and joint pain.
10	*Hemionitis arifolia* (Burm. F.) T. Moore	Whole plant	Plant is ground into a paste and applied over cut wounds
11	*Isoetus coromandelina*L.f.	Whole plant	The plant gives out a fluid. It is used for liver problems.
12	*Lygodium flexuosum* (L.) Sw.	Leaves	The plant is used an expectorant. Leaf paste cures cuts, wounds, rheumatism and sprains.
13	*Lygodium microphyllum* (Cav.) R. Br.	Leaves	Leaf is ground into a paste with turmeric and applied over the affected part. The juice made from tha plant is taken orally along with pepper to get relief from cough.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 3,Dec 2022

14	*Marsilea minuta* L.	Leaves	Used as a pot herb. It is an expectorant, aphrodisiac, cough relieving properties, useful in psychopathy, opthalmia leprosy, dyspepsia and fever
15	*Ophioglossum gramineum*Willd.	Whole plant and rhizome	Plant yields a mucilaginous and astringent decoction. It is used in angina. Warm rhizome decoction as a lotion for boils. Antibacterial, anticancerous, antiseptic and detergent properties.
16	*Ophioglossum reticulatum* L.	Whole plant	Used as a cooling agent. Used to treat inflammations, wounds, bruises and haemorrages.
17	*Ophioglossum vulgatum* L. f.	Whole plant	Possesses antiseptic, stypic and vulnerary properties.
18	*Phlebodium aureum* (L.) J. Sm.	Rhizome	Used for the treatment of fever and cough.
19	*Pteris vitata* L.	Whole plant	Plants are ground into paste and applied over the affected places for wound healing. The paste is mixed with pepper and taken orally to get relief from cold, cough and fever.
20	*Salvinia molesta* Mitch.	Whole plant	Plant extract is used an antifungal agent.

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