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Screening of phytochemical analysis of Pteridophytes of Western Ghats

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Abstract
The aim of the present study, to analyze the preliminary phytochemical constituents of 254 pteridophyte species of the Western Ghats region of South India. The collected species of pteridophytes were identified. They identify the collected pteridophyte species were a shade dried and powdered. 5gms of powdered each pteridophyte species were successfully extracted with 100 ml of alcohol and distilled water using a conical flask for 2h at a room temperature. The preliminary phytochemical analysis of the extracts of pteridophyte species was carried out the standard methods. The conclusion of the present study observed that flavonoids are the major quantity of color indicated and followed by the medium level of colour indicated in alkaloids, and terpenoids in present in the maximum number of pteridophytes. Trace levels of colour indicated in active constituents of carbohydrate, tannin and saponin were observed by all the pteridophyte species.

Introduction
Pteridophyte first appears in the fossil record in the Early-Carboniferous period. About 20,000 species of plants, which is classified in the phylum or division Pteridophyta. It is also known as Filicophyta. The group is also referred to as Polypodiophyta, or Polypodiopsida, when it is treated as a subdivision of tracheophyta (vascular plants). The term "pteridophyte" has traditionally been used to describe all seedless vascular plants, making it synonymous with "ferns and fern allies". This can be confusing since members of the fern phylum Pteridophyta are also sometimes referred to as pteridophytes. The study of ferns and other pteridophytes is called pteridology, and one who studies ferns and other pteridophytes is called a pteridologist. They are represented by about 305 genera, comprising more than 12,000 species all over the world. About 191 genera and more than 1000 species are reported from India (Kirtikar and Basu, 1935; Nayar, 1957).

The Pteridophytes are long known for their medicinal and therapeutic utility. In ancient period these plants were prescribed as an herbal extract for the cure of several diseases. Theophrastus (327-287 BC) and Dioscorides (50 AD) listed several pteridophytes as a potent herbal formulation to cure more dangerous disorders. The medicinal uses of pteridophytes were reported from several authors reported previously. Holdsworth, (1977) who reported that nine species of pteridophytes are dubious value. Scheifen Hovel, (1970) reported that the fronds of *Angiopteris evecta* were bound onto the fractured limb. Futscher, (1959) who reported that *Gleichenia linearis* (*Dicranopteris linearis*) being bound externally onto wounds. Blackwood, (1935) who report the leaves of *Pteris ensiformis* and *Aspidium latifolium*, but possibly a species of *Tectaria* and the leaves and roots of *Dryopteris milneana* being applied to boils, ulcers and arrow wounds. Blackwood (1935) who reported that *Selaginella flabellata* is used to control feverish head aches and menstruation. According to Powell (1976), who reported that *Pteridium aquilinum* is used to treat tooth ache and mouth infections and leaves of *Cyclosorus* and *Polypodium* species were used for nasal infections. The *Helminthostachys zeylinica* used for herbal ayurvedic formulation to enhance the sexual efficiency and as a source of the stimulant and aphrodisiac. Few of the Pteridophyte species have been screened out chemically and numbers of active novel chemical compounds are validated (Singh *et al*.,2010).

Pteridophytes have more secondary metabolites such as alkaloids, flavonoids, phenols, steroids, and triterpenoids. Vyas and Sharma (1988) have studied phytochemistry of Rajasthan pteridophytes. According to Sharma (1989) has done experimental and phytochemical studies of ferns allies of Rajasthan. The marsiline isolated from *Marsilea minuta* has immense utility and is used in psychopathy, diarrhea, cough, skin diseases, dyspepsia fever and insomnia (Singh et al., 2010). The vast majority of pteridophyte flora are most of the endemic in Western Ghats region. Most of the pteridophytes were going to threatened category, for the reasons of tribes and traditional man uprooting collection of whole pteridophytes in medicinal purposes. Therefore, in the present study, exact active principle (s) preliminary identification of 254 species of pteridophyte of Western Ghats regions of South India.

Materials and Methods
A field study had been carried out on the pteridophytes of Southern Western Ghats, South India, the period from 1999-2015. Table -2 listed fresh specimens of pteridophytes are collected from the Western Ghats region of South India.

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Fresh specimen of pteridophyte was collected and taking photographs in natural habitat and identified by the regional floras and matching of the herbarium.

Extraction methods

5gms powdered materials of leaves were mixed with 100 ml of solvent and water (Alcohol and Water 3:1) and taken with conical flask and shaking for 2hrs.After 2hrs later remove the debris and collection of extracts filtered for the sterile cotton in funnel. Collected extract added with a few drops of toluene (toluene is antifungal agent) and further studies of phytochemical analysis of active compounds preliminary identified for standard method.

Test for alkaloids

Mayer's reagent

5 ml of the extract was mixed with about 1 ml of 1% HCl, warmed and filtered. 2 ml of filtrate was treated separately with Mayer's reagent. Turbidity or precipitation, green colour was observed to indicate the presence of alkaloids.

Test for flavonoids

5ml of the extract was mixed with 4 ml of 1N NaOH in a test tube. Formation of a dark yellow colour was observed, which indicated the presence of flavonoids.

Test for Terpenoids

5 ml of the extract adds 2ml of chloroform, and then add 1.5ml concentrated H_2SO_4 carefully. Formation of reddish brown colour at the interface indicates the presence of terpenoids.

Test for cardio glycosides

5ml of the extract, added to 2 ml of glacial acetic acid and a few drops of 5 % ferric chloride were added. This was under layered with 1 ml of H_2SO_4. The formation of brown ring at interface indicates the presence of cardio glycosides.

Test for tannins

5ml of the extract was boiled in 20 ml of distilled water in a test tube and then filtered. 1ml of the extract added with 5 % $FeCl_3$ (1ml) was added to the filtrate. The appearance of brownish green coloration showed the presence of tannins.

Test for Saponins

5ml of the extract was dissolved in 2 ml of boiling water in a test tube, allowed to cool and shaken well to mix thoroughly. The appearance of foam indicates the presence of saponins.

Table-1: Screening of preliminary phytochemicals analysis of pteridophytes

Family	Genus	Species	Phytochemicals					
			ALK	FLAV	TERP	TAN	SAP	CAR
Lycopodiaceae	*Huperzia*	*hamiltonii* (Spreng) Trev.,	++	+++	++	+	+	+
		phyllantha (Hook. and Arnott.) Holub	++	+++	++	+	+	+
		Squarrosa (Forst.) Trev.,	+++	+++	++	+	+	+
		Phlegmaria Roth.,	+++	+++	++	+	+	+
		nilagirica Spring	++	++	++	++	++	++
		hilliana (Nessel) Holub	++	+++	++	++	++	++
	Lycopodium	*wightianum* Wall. Ex Hook. and Grev.	++	+++	++	++	++	++
		japonicum Thunb.,	++	+++	++	++	++	++
		cernua(L.) Pic. Ser.,	++	+++	++	++	++	++
		clavatum L.	+++	+	+	+	++	+

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Selaginellaceae	*Selaginella*	*wightii* Hieron.	++	++	++	++	++	++
		cataractarum Alston	+++	++	++	+	+	+
		microdendron Baker	+++	++	++	+	+	+
		delicatula (Desv.) Spring	+++	++	++	+	+	+
		pulvinata (Hook. & Grev.)	+++	++	++	+	+	+
		ganguliana	++	++	++	++	++	++
		radicata (Hook. Grev.)	++	++	++	++	++	++
		keralensis	++	++	++	++	++	++
		inaequalifolia (Hook. Grev.)	++	++	++	++	++	++
		repanda (Desv.) Spring	++	++	++	++	++	++
		nayarii	++	+++	++	++	++	++
		intermedia	++	+++	++	++	++	++
		tenera	++	+++	++	+	+	+
Ophioglossaceae	*Ophioglossum*	*gramineum* Willd.	++	+++	++	+	+	+
		nudicaule L.f.	++	+++	++	+	+	+
		vulgatum L.f.	++	+++	++	+	+	+
		reticulatum L.	++	+++	++	++	++	++
		petiolatum Hook.	++	+++	++	++	++	++
		virginianum	++	+++	++	++	++	++
		Lanuginosum Wall. Ex Hook. and Grev.	++	+++	++	++	++	++
	Botrychium	*daucifolium* Wall	++	+++	++	++	++	++
	Helminthostachys	*zeylanica* (L.) Hook.	++	+++	++	++	++	++
Marattiaceae	*Angiopteris*	*evecta* (Forst.) Hoff.	++	++	++	++	++	++
	Marattia	*fraxinea* Sm.	++	+++	++	+	+	+
Osmundaceae	*Osmunda*	*hugeliana* Presl	++	++	++	+	+	+
		regalis	++	+++	++	+	+	+
	Schizaea	*digitate* (L.) Sw.	++	++	++	+	+	+

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Schizaeaceae	*Lygodium*	*flexuosum* (L.) Sw.	++	++	++	++	++	++
		microphyllum (Cav.)R.Br.	++	++	++	++	++	++
		wightiana Gard.	++	+++	++	++	++	++
	Anemia	*wightiana* Gard.	++	+++	++	++	++	++
Pteridaceae	*Acrostichum*	*aureum* L.	++	+++	++	++	++	++
	Pteris	*vittata* L.	++	++	++	++	++	++
		pellucida Presl.	++	++	++	++	++	++
		cretica L.	++	+++	++	++	++	++
		scabripes Wall. Ex.Ag.	++	++	++	+	+	+
		longipes D. Don	++	+++	++	+	+	+
		biaurita L.	+	+++	+++	++	+	+
		quadiaurita Retz.	++	+++	++	++	+	+
		perrottetii Hieron	++	++	++	++	++	++
		kleiniana Christ	++	++	++	++	++	++
		aspericaulis Wall. ex Hieron.	++	++	++	+++	++	++
		mertensioides Wild	++	++	++	++	++	++
		otaria Beddome	++	++	++	++	++	++
		argyraea T.Moore	++	+++	+	+	+	+
		linearis Poir	++	++	++	++	++	++
		ensiformis Burm. f.	++	+++	++++	++++	++	++++
		confusa T.G.Walker	+++	++	++	++	++	++
		wallichiana Ag	++	++	+++	++	+	+
Sinopteridaceae	*Cheilanthes*	thwaitesii Mett. ex Kuhn	++	++	++	+	+	+
		viridis (Forssk.) Kaulf.	++	++	++	+	+	+
		Cheilanthes persica (Bory) Mett. *ex* Kuhn	++	++	++	++	++	++
	Pityrogramma	*calomelanos* (L.)Link.	++	++	+++	++	++	++
Adiantaceae	*Adiantum*	*caudatum* L.	++	++	+++	++	++	++

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		incisum Forssk.	++	++	+++	++	++	++
		lunulatum Burm.	+++	+++	++	+++	+++	+++
		zollingeri Mett.ex. Kuhn	++	++	+++	++	+++	++
		lomesam Nayar & Geevar	++	++	++	+	+	+
		hispidulum Sw.	++	++	++	+	+	+
		concinnum Willd.	++	++	++	++	++	++
		raddianum Presl.,	++	++	++	++	++	++
		capillus-veneris L.	++	++	++	++	++	++
		latifolium Lam.	++	++	++	++	++	++
		poiretii Wickstr.	+++	+++	++	+	+	+
		venustum	++	++	++	++	++	++
	Hemionitis	*arifolia* (Burm.f) T.Moore	+++	++	++	+	+	+
Vittariaceae	*Vittaria*	*flexuosa* Fee	++	++	+++	++	+	+
		montana Manickam	++	++	++	++	++	++
		elongate Sw.	++	++	++	++	++	++
		microlepis Hieron	++	++	++	++	++	++
	Antrophyum	*plantagineum* (Cav.) Kaulf.	++	++	++	++	++	++
	Alsophilla	*nilgirensis*	++	++	++	++	++	++
	Pteridium	*aquilinum* (L.) Kuhnv.Deck	++	++	+++	++	++	++
	Histiopteris	*incise* (Thunb) J. Sm.	++	++	+++	+	+	+
	Hypolepis	*glandulifera* Brownsey et Chinnock	+++	++	++	+	+	+
Dennstaedtiaceae	*Microlepia*	*platyphylla* (Don) J.Sm.	++	++	+++	++	++	++
		strigosa (Thunb) Presl	++	++	+++	++	++	++
		majuscule (Lowe) Moore	++	++	+++	++	++	++
		rhomboidea Prantl	++	++	++	++	++	++
		speluncae (L.) Moore	+++	+++	+++	+++	++	++

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Lindsaeaceae	*Lindsaea*	*odorata* Roxb. Ex Griff.	++	++	++	++	++	++
		ensifolia Sw	++	++	++	+	+	+
		malabarica (Beddome) Bak. Ex. C.Chr.	++	++	++	+	+	+
		orbiculata (Lamarck) Met.	++	++	++	++	++	++
		heterophylla Beddome	++	++	++	++	++	++
Davalliaceae	*Leucostegia*	*immerse* Wall ex. C. Presl.	++	++	++	++	++	++
	Davallia	*bullata* Wall. Ex Hook	++	++	++	++	++	++
	Araiostegia	*pulchra* (Don) J.Sm.						
		hymenophylloides (Bl.) Copel	++	++	++	++	++	++
	Humata	*repens* (L.f.) Diels	+++	++	++	+	+	+
Oleandraceae	*Oleandra*	*musifolia* (Bl.) Presl	+++	++	++	+	+	+
	Nephrolepis	*auriculata* (L.) Trimen	++	++	++	++	++	++
		cordifolia (L.) Presl.	++	++	++	++	++	++
		multiflora (Roxb.) Jarret	++	++	++	++	++	++
Hymenophyllaceae	*Hymenophyllum*	*denticulatum* Sw.	++	++	++	++	++	++
		gardneri v.d.B.	+++	+++	+	+	+	+
		javanicum Spr.	++	++	++	++	++	++
	Trichomanes	*obscurum* Bl	+++	++	++	+	+	+
		saxifragoides Presl	+++	++	++	+	+	+
		agasthianum	++	++	++	++	++	++
		plicatum (v.d.B) Beddome	++	+++	++	++	++	++
		schmidianum Zenker ex. Taschn	++	+++	++	++	++	++
		intramarginale Hook. and Grev.	++	+++	++	++	++	++
Gleicheniaceae	*Dicranopteris*	*Dicranopteris*	++	+++	++	++	++	++
	Angiopteris	*Angiopteris*	++	++	++	++	++	++

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Cyatheaceae	*Cyathea*	*nilgirensis* Holttum	+++	++	++	+	+	+
		gigantean (Wall. Ex Hook.)Holttum	+++	+++	++	+	+	+
		crinita (Hook)	++	+++	++	++	++	++
Thelypteridaceae	*Thelypteris*	*paludosa* (Blume) K. Iwat	++	+++	++	++	++	++
		confluens (Thunb.) Morton	++	+++	++	++	++	++
	Metathelypteris	*flaccida* (Bl.) Ching	++	+++	++	++	++	++
	Macrothelypteris	*ornate* (Wall.ex Beddome) Ching	++	+++	++	++	++	++
	Stegnogramma	*pozoi*(Lagasca) K.Iwats.	++	+++	++	++	++	++
	Pseudocyclosorus	*tylodes* (Kunze) Ching	+++	+++	++	+	+	+
		ochthodes (Kunze) Holttum	+++	++	++	+	++	+
	Trigonospora	*caudipinna* (Ching) Sledge	++	++	++	++	++	++
		ciliate (Wall. Ex Benth.) Halttum	++	++	++	++	++	++
	Pronephrium	*triphyllum* (Swartz) Holttum	++	++	++	++	++	++
		articulatum (Houlst. And Moore) Holttum	++	++	++	++	++	++
	Cyclosorus	*interruptus* (Willd.) H.Ito	++	+++	++	++	++	++
		gongylodes Schkuhr) Link	++	+++	++	++	++	++
		parasiticus (L.) Farw	+++	+++	++	+	+	+
	Amphineuron	*terminans* (Hook) Holttum	+++	+++	++	+	+	+
	Sphaerostephanos	*unitus* (L.) Holttum	++	++	++	++	++	++
		arbuscula (Willd) Holttum	++	+++	++	++	++	++
		subtruncatus (Bory) Holttum	++	++	++	++	++	++
	Christella	*parasitica* (L.) H. Lev.	++	+++	++	++	++	++
		meeboldii	++	++	++	++	++	++

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		(Rosenst.)Holttum						
		dentate (Forssk.) Brownsey and Jermy	++	+++	++	++	++	++
		hispidula (Decne) Houlttum	+++	+++	++	+	+	+
		papilio (Hope) Holttum	+++	+++	++	+	+	+
		parasitica (L.) H. Lev.	++	+++	++	++	++	++
	Pneumatopteris	*truncate* (Poir) Houlttum	++	+++	++	++	++	++
Aspleniaceae	*Asplenium*	*nidus* L.	++	++	++	++	++	++
		ensiforme Wall.ex Hook and Grev.	++	++	++	++	++	++
		formosum Willd.	++	+++	++	++	++	++
		erectum Bory ex Hook & Grev.	++	+++	++	++	++	++
		decrescens Kunze	++	+++	++	++	++	++
		obscurum Bl.	+++	+++	++	+	+	+
		cheilosorum Kunze ex Willd	+++	+++	++	+	+	+
		unilaterale Lam.	++	+++	++	++	++	++
		zenkeranum Kunze	++	+++	++	++	++	++
		indicum Sledge	++	++	++	++	++	++
		crinicaule Hance	++	++	++	++	++	++
		normale D.Don	+++	+++	++	++	++	++
		polyodon G.Forster	++	++	++	++	++	++
		inaequilaterale Willd.	+++	++	++	+	+	+
		serricula Fee	+++	++	++	+	+	+
		tenerum Forst	++	+++	++	++	++	++
		tenuifolium D.Don	++	++	++	++	++	++
		laciniatum D.Don	++	+++	++	++	++	++
		affine Swartz.	++	++	++	++	++	++

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		auritum Sw.	++	+++	++	++	++	++
		nitidum Sw.	++	+++	++	++	++	++
		aethiopicum Burm. F) Becherer	+++	+++	++	+	+	+
Woodsiaceae	*Dryoathyrium*	*boryanum* (Willd) Ching	+++	+++	++	+	+	+
	Anisocampium	*cumingianum* Presl	++	++	++	++	++	++
	Athyrium	*hohenackeranum* (Kunz) T. Moore	++	++	++	++	++	++
		rupicola (Edgew. ex C. Hope) C. Chr.	++	+++	++	++	++	++
		dilatatum (Bl.) Holttum.	++	+++	++	++	++	++
		pectinatum (Wall.) Presl	++	++	++	++	++	++
		parasnathense (C.B.Clarke) Ching ex Mehra .,	++	++	++	++	++	++
		falcatum Beddome	+++	++	++	+	+	+
		rubricaule (C.B.Clarke) Bir	+++	++	++	+	+	+
		puncticaule (Bl.)T.Moore	++	+++	++	++	++	++
		nigripes (Bl.)T.Moore	++	+++	++	++	++	++
		solenopteris (Kunz) T.Moore	++	+++	++	++	++	++
		lanceum (Kunz) T.Moore	++	+++	++	++	++	++
	Deparia	*petersenii* (Kunz) T.Moore	++	+++	++	++	++	+
		sylvaticum (Bory) Sw	++	+++	++	++	++	++
		muricatum (Mett.) Aldrew.	++	++	++	+	+	+
		cognatum (Hieron.) Sledge	++	++	++	+	+	+
		beddomei C. Chr.	++	++	++	++	++	++
		dilatatum Bl.	++	++	++	++	++	++
		travancoricum Beddome	++	++	++	++	++	++

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		polypodioide Blume	++	++	++	++	++	++
		brachylobum Sledge	++	++	++	++	++	++
	Hypodematium	*crenatum* (Forrsk.) Kuhn	++	+++	++	++	++	++
	Tectaria	*paradoxa* (Fee) Sledge	++	++	++	+	+	+
		wightii (Clarke) Ching	++	++	++	+	+	+
Dryopteridaceae		*dubia* (C.B.Clarke & Baker) Ching	++	+++	++	++	++	++
		zeilanica (Houtt.) Sledge	++	+++	++	++	++	++
		periya Nayar & Geev.	++	+++	++	++	++	++
	Dryopsis	*scabrosa* (Kunz) Holttum & Edwards	++	++	++	++	++	++
	Lastreopsis	*tenera* (R.Br) Tindale	++	++	++	++	++	++
	Polystichum	*harpophyllum* (Zinker ex Kunz)Sledge	++	++	++	++	++	++
		piceo-paleaceum Tagawa	+++	++	++	+	+	+
		manickamianum Benniamin Fras.-Jenk. & Irud.	+++	++	++	+	+	+
		subinerme (Kunz) Fraser - Jenkins	++	++	++	++	++	++
		moluccense (Bl) T.Moore	++	++	++	++	++	++
		squarrosum (D.Don) Fee	++	++	++	++	++	++
	Phanerophlebia	*caryotidea* (Wall. Ex Hook. & Grev.) Copel	++	++	++	++	++	++
	Arachniodes	*tripinnata*(Goldm.)Sledge	++	++	++	++	++	++
		aristata (Forst.F.)Tindale	++	+++	++	++	++	++
		amabilis (Bl.)Tindale	+++	+++	++	+	+	+
	Dryopteris	*hirtipes* (Bl.)	+++	+++	++	+	+	+
		madrasensis Fraser-Jerkins	++	++	++	++	++	++
		cochleata (Buch. Ham ex D.Don) C. Chr.	++	++	+++	++	++	++

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		sparsa (Buch. Ham ex D.Don) Kuntze	++	++	+++	++	++	++
		approximate Seledge	++	+++	+++	++	++	++
		odontoloma (Bedd.) C.Chr.	++	+++	++	++	++	++
		juxtaposita Christ	++	++	++	++	++	++
		austroindica Fras.-Jenk.	+++	+++	++	+	+	+
Lomariopsidaceae	*Elaphoglossum*	*angulatum* (Blum) T.Moore	+++	+++	++	+	+	+
		stigmatolepis (Fee) T.Moore	++	++	++	++	++	++
		beddomei Sledge	++	++	++	++	++	++
		stelligerum (Wall ex. Baker) T.Moore	++	+++	++	++	++	++
		nilgiricum Krajina ex Sledge	++	+++	++	++	++	++
		appendiculata (Willd) K.Iwatz	++	+++	++	++	++	++
		sinensis (C.Presl) Hennipman	++	+++	++	++	++	++
	Bolbitis	*presliana* (Fee) Ching	+++	++	++	+	+	+
		subcrenatoides Fraser-Jenk	+++	+++	++	+	+	+
	Bolbitis	*semicordata* (Baker) Ching	++	++	++	++	++	++
	Trignospora	*caudipinna* (Ching) Sledge	++	+++	++	++	++	++
Blechnaceae	*Blechnum*	*orientale* L.	++	+++	++	++	++	++
		occidentale L.	++	++	++	++	++	++
		colensoi (Hook. f.) Wakef	++	+++	+	+	++	+
Polypodiaceae	*Stenochlaena*	*palustris* (Burn.)Beddome	++	++	++	++	++	++
	Leptochilus	*axillaris* (Cav.) Kaulf	+++	+++	++	+	+	+
		decurrens Bl.	+++	++	++	+	+	+

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		thwaitesianus Fee	++	+++	++	++	++	++
	Drymoglossum	*heterophyllum* (L.) Trimen	++	+++	++	++	++	++
	Drynaria	*quercifolia* (L.)J. Sm	++	++	++	+++	++	
	Loxogramme	*involuta* (D.Don) C. Presl	+++	+++	++	+	+	+
		parallela Copel	+++	+++	++	+	+	+
	Phymatosorus	*lucidus* (Roxb. Ex Griff.) Pic.Ser.	++	++	++	++	++	++
		nigrescens (Bl.) Pic Ser.	++	++	++	++	++	++
	Crypsinus	*montanus* Sledge	++	++	++	++	++	++
	Phlebodium	*aureum* (L.) J.Sm.	++	++	++	++	++	++
	Pyrrosia	*lanceolata* Farwell	+	+++	+	+	+	+
		heterophylla (L.) M.G. Price	++	+++	++	++	++	++
		porosa var.porasa Hov.	+++	++	++	+	+	+
	Microsorum	*pteropus*(Bl.)Copel	+++	+++	++	+	+	+
		punctatum (L.) Copel	++	+++	++	++	++	++
	Pleopeltis	*macrocarpa* (Bory ex Willd.) Kaulf.	++	++	++	++	++	++
	Lepisorus	*nudus* (Hook) Ching	++	++	++	++	++	++
		amaurolepidus (Sledge) Bir. &Trikha	++	+++	++	++	++	++
Grammitidaceae	*Grammitis*	*attenuate* Kuntz	++	+++	++	++	++	++
		medialis (Baker)Sledge	++	++	++	++	++	++
	Ctenopteris	*subfalcata* (Bl.)Mett.	++	+++	++	++	++	++
	Prosaptia	*obliquata* (Bl.) Mett.	++	+++	++	++	++	++
		contigua(Forst.f.)Presl	++	+++	++	++	++	++
	Pitryrogramma	*calomelanos* (L.) Link	++	++	++	++	++	++
Marsileaceae	*Marsilea*	*minuta* L.	++	++	++	++	++	++
Salviniaece	*Salvinia*	*molesta* Mitch.	++	++	++	++	++	++
Azollaceae	*Azolla*	*pinnata* R.Br.	++	++	++	++	++	++

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Results and Discussion

The results of preliminary phytochemical analysis of pteridophytes were identified in standard method. The phytochemicals of pteridophytes were identified in colour indication methods shows in the table -1. Table -1 shows the phytochemicals of pteridophytes revealed that alkaloids, flavonoid, terpenoids, carbohydrates, tannin and saponin. Most of the phytochemical such as vitamins, terpenoids, phenolic acids, lignins, stilbenes, tannins, flavonoids, quinones, coumarins, alkaloids, amines, betalains and other metabolites shows in antioxidant activity was reported in the previous authors (Zheng and Wang,2001; Cai *et al*., 2003). In the present study, 254 species of pteridophytes were indicating the active compounds of phytochemicals represented in the table-1. Flavonoids are major quantity of color indicated in the maximum number of pteridophytes and followed by the medium level of colour indicated in alkaloids, and terpenoids in present in the pteridophytes. Trace levels of colour indicated in active constituents of carbohydrate, tannin and saponin were observed by all the pteridophyte species. According to Mithraja *et al.*, (2012) investigated in the preliminary phytochemical identification of several pteridophytes species such as *D.heterophyllum, D.linearis, B.orientale, C.thalictroides, H.arifolia, L.ensifolia, N.multiflora P.calomelanos* and *P.confusa.* Earlier studies, Kumudhavalli and Jaykar, (2012) evaluated for phytochemical screening of *Hemionitis arifolia*. Muraleedharan Nair *et al.*, (2012) examined in the phyto-constituents of pteridophytes species such as *Adiantum caudataum, Adiantum latifolium, Adiantum lunulatum, Christella dentate* and *Christella parasitica,* to provide chemical marker and inter-specific variation between the medicinally important genuses. Rajesh et al., (2014) find out the presence of phytochemicals in the aqueous, ethanol and petroleum ether extracts of four ferns *Actinopteris radiata, Drynaria quercifolia, Dryopteris cochleata* and *Pityrogramma calomelanos* by both qualitative and quantitative screening methods.

The active constituents of alkaloids in *Pteridium aquilinum* (Kardong *et al*., (2013)*, Adiantum venustum* (Hussain et al.,2008) and *Equisetum arvense* (Sandhu et al., 2010) were reported. Phytochemicals studies on some pteridophytes revealed the presence of glycosides in *Asplenium adiantum-nigrum* (Imperato,1980)*, A. septentrionale* (Imperato,1984), *A. trichomanes* (Imperato,1979), *Equisetum arvense* (Sandhu *et al*., 2010), *Pteridium aquilinum* (Imperato,1998) and *Salvinia natans* (Srilaxmi et al.,2010) were reported. Active compound of saponins present in the fern species of *Pteridium aquilinum* (Selvaraj *et al*., 2005), *Adiantum venustum* (Mubashir and Shah *et al*.,2011) and *Equisetum arvense* (Sandhu *et al*., 2010). The active constituents of saponins are used for industrial as well as for pharmacological purposes and are beneficial to humans in many ways including treating a variety of diseases and have antibiotic, insecticidal and antifungal properties (Sparg *et al*.,2004). The conclusion of the present study was most of the pteridophytes were present in the more colour indicates the alkaloids and flavonoids compounds in pteridophytes. Further study will be isolation and identification of active principals in pteridophytes.

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