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Research Article

# QUALITATIVE ANALYSIS OF SECONDARY METABOLITES FROM SOME FILICALES MEMBERS

**Patil DT, Gurav KD, Kadam AS, Thite SV, Thoke RB and Kore BA**

Department of Botany, Y.C.I.S., Satara, Maharashtra-415001, India.

**ABSTRACT**

The Western Ghats of India is well known for its biodiversity. The pteridophytes are important but much ignored group from this region. This paper deals with qualitative analysis of secondary metabolites from some common filicales plants, viz. Dryopterisfilix-mas (L.)Scott, Angiopterisevecta (G.Forst) Hoffm, Adiantumlunulatum Burm.f., Adiantumincisum Forsk. The qualitative analysis of powdered extracts was carried out with reference to saponins, phenols, tannins, phytosterols, triterpens, alkaloids terpenoids., etc.

**Keywords:** Filicales, secondary metabolites, phytochemical.

## INTRODUCTION

India is rich in its diversified flora and fauna. Plants are integral part of nature. Nature reflects the creative power of living god.Plants have an almost endless variety of metabolites which is very useful to human beings[1].Ferns appear to have fewer taxonomically informative morphological characters than seed plants because they lack flowers, which provide valuable characters for analyzing evolutionary relationships[2].The importance of plants is well known to us. Plant kingdom is a treasure house of potential drugs and in the recent years there has been an increasing awareness about the importance of medicinal plants. Drugs from the plants are easily available, less expensive, safe, efficient and rarely have side effects[3]. Plants produce a remarkably diverse array of over 500,00 low molecular mass natural products also known as secondary metabolites[4].Finding new secondary metabolites is a prerequisite for the development of novel pharmaceuticals. This Thematic Series on the biosynthesis and function of secondary metabolites deals with the discovery of new biologically active compounds from all kinds of sources, including plants[5]. Secondary metabolites present in plants have been linked with the healing properties of plants[6].In addition to their active ingredients pteridophytic plants contain minerals, vitamins, alkaloids, saponins, phenols, tannins, phytosterols, triterpens, terpenoids. Substances those are important in supporting a particular activity in plants.These metabolites are said to be useful to the plant itself but can be toxic to animals including man. For this qualitative analysis extraction method was used. This method involves the separation of medicinally active portions of plants tissues by using selective solvents. Therefore, in present study four common plants which belong to the order filicales were selected for qualitative analysis of secondary metabolites.

## MATERIALS AND METHODS

### Collection of Plant Material

Four plants namely *Dryopterisfilix-mas, Angiopterisevecta, Adiantumlunulatum* and *Adiantumincisum* belonging to the order filicales were obtained from Ajinkyatara fort and Pateghar. The identification were done with the help of Department of Botany at Yashavantrao Chavan Institute of Science, Satara. The plant comprising of rachis,leaves and sorion leaves.

### Preparation of Extracts

2 g of dried powder of four plants was successively dissolve in 50 ml of distilled water. Then the extraction was filtered with the help of Buchanan's funnel. Pure filtrates were taken out for further qualitative tests.

**Qualitative Analysis of Secondary Metabolites of The Plant Extracts**

Following tests were carried out for analysis:Phytochemical testing for the presence of various compounds by standard methods like Anthocyanins and Leucoanthocyanins[7], Steroids[8], Benedict's test forreducing sugar, Hager's test,Mayer's test,Wagner's test andDragendroff's test for Alkaloid[9], Tannins[10], Saponins[11], Terpenoids by Salkowski test[12] and compounds like Phenols, Flavonoids, Quinons, Cellulose, Glycosides and Triterpenes compounds by Khandelwal[13] were conducted.

## RESULT AND DISCUSSION

Nature has been a source of medicinal agent for thousands of years and an impressive number of modern drugs have been isolated from natural sources[14]. Plants have the ability to produce a large variety of secondary metabolites such as saponins, tannins, phenols, alkaloids, triterpens and phytosterols,

In present qualitative analysis of four pteridophyticplants from filicales order shows presence of saponins and Phytosterols in all plants (Table 1) *Angiopteris, Dryopteris* and *Adiantumlunulatum.* Phenols possessbiologicalproperties such as antiapoptosis, antiaging, anticarcinogen, antiinflammation, antiatherosclerosis, cardiovascular protection and improvement of endothelial function, as well as inhibition of angiogenesis and cell proliferation activities[15]. Tannins are present in *Angiopteris, Dryopteris* and *Adiantumincisum.* Tannins are reported to have various physiological effects like anti-irritant, antisecretolytic, antiphlogistic, antimicrobial and antiparasitic effects. Phytotherapeutically, tannin containing plants are used to treat nonspecific diarrhoea, inflammations of mouth and throat and slightly injured skins[16]. Terpinoids are abundantly present in *Adiantumlunulatum* and *Adiantumincisum*. Terpenoids are attributed for analgesic and the anti-inflammatory activities. The application of strigolactones, a group of terpenoid lactones, inhibits shoot branching[17]. Glycosides, sugars and quinones are present in *Adiantum lunulatum. Angiopteris* and *Adiantum lunulatum* shows positive result for triterpens*. Angiopteris,Dryopteris*and*Adiantumlunulatum* shows positive result for alkaloids. Alkaloids, saponins, tannins, quinones of compounds are known to have curative activity against several pathogens and therefore could suggest the use traditionally for the treatment of various illnesses[18].

In recent years, secondary plant metabolites extensively investigated as a source of medicinal agents.It is evidence from result that this qualitative analysis of secondary metabolites saponins, tannins, phenols, terpinoids, glycosides, quinonesugars, triterpens, phytosterols and alkaloids are abundant.

## CONCLUSION

From the above study, it is concluded that these pteridophytic plants containing some valuable secondary metabolites and it increases the value of plants in case of medicines.

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**Table 1: Preliminary phytochemical screen of different species of pteridophytes**

| Secondary metabolites | *Angiopteris evecta* | *Dryopterisfilix-mas* | *Adiantum lunulatum* | *Adiantumincisum* |
|---|---|---|---|---|
| Saponin | + | + | + | + |
| Tannin | + | + | - | + |
| Phenol | + | + | + | - |
| Steroids | - | - | - | - |
| Terpinoids | - | - | + | + |
| Flavonoids | - | - | - | - |
| Glycosides | - | - | + | - |
| Quinone | - | - | + | - |
| Sugar | - | - | + | - |
| Triterpens | + | - | + | - |
| Phytosterol | + | + | + | + |
| Alkaloids | | | | |
| (a). Mayer's test | + | + | - | - |
| (b). Wagner's test | + | + | + | - |
| (c).Dragendroff's test | - | - | + | - |
| (d). Picric acid test | - | - | - | - |

KEY : + = Presence, - = Absence.

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