RESEARCH ARTICLE

Phytochemical Screeningin *E. setifolia* (A. Rich) Raynal, Ethnomedicinal Plant from Bhandara District Maharashtra

Bhaisare Manmohan S[1*] and Kunjalwar SG[2,3]

1Department of Botany, Late. Nirdhan Patil Waghaye Science College Lakhani, Dist- Bhandara [M.S]
2 Department of Botany, N.A. Art, Com. and Smt. M.H. Wegad Science College Umred Dist. Nagpur (M.S.)
[3]Hislop College Nagpur.
* Corresponding Author email :-manmohanbhaisare@gmail.com Contact - (+91) 9764771220

Manuscript details:

Received: 02.05.2016
Accepted: 15.06.2016
Published : 23.07.2016

Editor: Dr. Arvind Chavhan

Cite this article as:
Bhaisare Manmohan S and Kunjalwar SG (2016) Phytochemical Screeningin *E. setifolia* (A. Rich) Raynal, Ethnomedicinal Plant from Bhandara District Maharashtra, *International J. of Life Sciences*, 4(2): 285-288.

Acknowledgement
With the sense of high resolve, the authors wish to express grateful thanks to the great advisor Dr. K. M. Kulkarni (Former DE, Higher Education, Pune), the bird watcher and local expert M. H. Deshmukh who helped and supported for completion of this research paper during this study. Also the authors very much thanks to the forest and irrigation departments, Gondia to grant the permission for this research.

ABSTRACT

Phytochemical investigation of traditionally used Medicinal Plant is Thus Valuable on two levels, Firstly as a source of potential chemotherapeutic drug andsecondly as a measure of safety for the continued use of medicinal plant. The whole plant, *Eleocharis setifolia,*(A.Rich) Raynal which are used as traditional folk medicine for the treatment of dysentery, bowel disorder and inflammatory diseases. *Eleocharis setifolia* (A.Rich) Raynal contain, alkaloid, Steroids, Flavonoids, terpens, which includes sesquiterpene hydrocarbons. This paper explain the evidence based information regarding the pharmacological activity of this plant. It has many uses as pollution abetment and is medicinally used in traditional Ayurveda system.

Key word: Ethanomedicine, Ayurveda, Photochemistry, *Eleocharis setifolia.*(A.Rich) Raynal.

INTRODUCTION

The gens *Eleocharis* R.Br. (*Cyperaceae, Cyperoideae, Scirpeae*) include about 200 species occurring in wet environments like swamps, Lakes and river margins. *Eleocharis setifolia*. (A. Rich.) Raynal, Adansonia ser. 2.7: 318. 1967. Haines & Lye, Sedges & Rushes of E. Afr; 73 Fig 108 -109, 1983. Simpson & Koyama in Santis. & Larsen. Fl. Thailand, 6 (4): 291.1998, *Isolepis setifolia* A. Rich Tent. Fl. Abyss. 2: 498, 1851. Eleocharis anceps, sensu W. Khan in J. Econ. Taxon.Bot. 27 (suppl.):1218. 2003. Non Ridl.

Biome- Delicate tuberiferous perennial; tuber witish, knotty (under 1mm broad).

Ecology- it grow in marshy place along the margin of lake and inside of rice field near the lake. Where sprinkling of water done. Also, in the wet land and rice paddy field.

Taxonomy-

***Stem*:** filiform, 5- 12 cm tall, under 1mm thick, tetragonous leafless, channeled on each side of stem.

***Leaves*:** reduced to sheath; sheaths 0.8- 1.6 mm long, whitish to pale-brown.

***Inflorences*:** of single spikelet terminated by stem.

Involucre of bract of 2 unequal glum, which are longer than fertile ones.

***Spikelet*:**ovoid,-oblong, terete 2-5 x 1-1.5 mm, greenish tinged, with red brown, many fid.

Glum: ovate to ovate or ovate lanceolate, 0.6 -1 x 0.5 -1 mm, with brown vertical bond along the uninerved keel, notched at apex, muticous.

***Bristle*:** hypogynous, absent or rudimentary.

Stamen: 1 anther ca 0.5 mm long.

***Nuts*: obovoid**, obscurely trigonous, 0.5 -0.4 mm, strongly 3- costate, smooth, pale brown to gregish-green.

Style: basedecurrent on the shoulders on nuts.

***Flower and fruit*:** October to November.

The distribution of species in tropical and temperate region, Africa, South America, philipines, Thailand. In Indiainflammatory diseases have been investigated by tribal people called vaidu. Infusion of herb has been used in pain, fever, diarrhea, dysentery and other inflammatory problem.

MATERIALS AND METHODS

Collection and identification of plant materials:

Author found of *Eleocharis setifolia*(A.Rich) Raynal in Bhandara district, near the lake margin, in paddy field village of Miregaon, Sakholi Tehsil in October 2014. The plant sample identified by authors. The voucher specimen deposited in the research place.

Qualitative Phytochemical Analysis (Abulude 2001)

Extraction

One hundred and fifty centiliter of water was added to 20gm of ground sample in a conical flask. The mixture was covered and allows to stand for 3 hour with occasional stirring. The mixture was filtered with a Watman No. 2 filter paper. This filtrate was stored in plastic containers and kept in ambient temperature prior to analysis.

Test for Alkaloids

1cm3 of 1% HCL was added to 3cm^3 to each extract in a test tube. Each extract was treated with few drop of Mayer's reagent. A creamy white precipitate was observed indicating presence of alkaloids.

Test for Corbohydred

Fehling test-5cm^3 of mixture of equal volumes of Fehling A and B was added to 2cm^3 of each extract in a test tube. The resultant mixture was boiled for 2 minute. A brick red precipitation of copper oxide was observed.

Test for Tannin and Phenol

Two drop of 5% $FeCl_3$ was added to 1cm^3 of extract. A blue dirty green precipitate was observed in each extract presence of tannin and phenol respectively.

Test for Flavonoids

Two cm^3 of extract was heated with 10cm^3 of ethyl acetate on a water bath and cooled. The layer were allow to separate and the cooler of the NH_3 layer noted (Red coloration formed)

Test for Resins

5cm^3 of copper was added to 5cm^3 of each extract. The sulting solution was shaken vigorously and allows to separate. A green colour precipitated indicating presence of resin.

Test for Fixed Oil and Fat

A drop of concentrated extract was pressed in between two filter paper and kept undisturbed. Oil

stained on the paper indicate the presence of Oil and Fats.

Test for Saponin

Frothin Test- 2cm^3 of each extract in a test tube was vigorously shaken for 2 minute. Frothing indicating presence of saponin.

Test for Physterol and Terpenoids

Lieberman Burchard test-few drop of acetic anhydred where added to chloroform solution shaken well 1 ml concentrated H_2So_4carefully added from side of test tube. A reddish brown coloration indicats the presence of sterol and Red ring indicate presence of Terpenoids.

Test for Glycosides

10cm^3 of 50% $H_2So_4$was added to 1cm^3 of each extract in a test tube. The mixture was heated in boiling water for 5 minute. 10cm^3 of Fehling's solution (5cm^3 of each solution A and B) was added and boiled. A brick red precipitated indicating presence of Glycoside.

Quantitative Phytochemical Analysis

By standard procedure applied for Alkaloids, Carbohydrates, Tannin, Phenol, Flavonoids, Saponin, and Terpen.

Alkaloid

5 g. of the sample was weighed into 250 ml beaker and 200 ml of 10 % acetic acid in ethanol was added and covered and allowed to stand for 4 hour. This was filtered and the extract was concentrated on a water bath to one quarter of the original volume. Concentrated Ammonium hydroxide was added dropwise to the extract until the precipitation was completed. This whole solution allow to settle and the precipitated was collected and washed with dilute ammonium hydroxide and then filtered. The residue is the alkaloid which was dried and weighed. (Harborn and Baxter, 1993)

Corbohydrates

5g. of sample was weighed and added to 4.5ml of alcohol. The mixture was shaken for 10 minute and centrifuged to obtained precipitate. The precipitate was dissolve in 0.5ml of 0.1N H_2So_4. This reconstituted solution was transfer to glass stoppered tubes and then hydrolyse in a water bath at 100^{0}C for 1 hour and weighed. (Goel et.al.1985, Kokate 1994).

Tannin

500mg of the sample in each case was taken in a plastic bottle and 50ml of distilled water was added. Then it was shaken in a mechanical shaker for 1hour and filtered in a 50ml volumetric flask made up to the mark. 5ml of the filtrate was pipetted out in to the test tube and mixed with 2ml of 0.1M. $FeCl_3$ in 0.1N. HCl and 0.001M. $K_4Fe(CN)_6$ (Potassium Ferrocyanide). The absorbance was measured at nm with in 10minute. (Van Burden and Robinson 1981).

Phenol

The fat free sample was boiled with 50ml of ether for extraction of phenolic component for 15minute. The extract pipetted out in 50ml conical flask to added 10ml distilled water and 2ml ammonium hydroxide solution and 5ml concentrated amyl alcohol were also added. The sample was made to mark and leaft to react for 30minute for colour development. This was measured at nm. (Harborne and Baxter, 1993)

Flavonoids

10g. of plant sample was extracted repeatedly with 100ml of 80% aqueous methanol at room temperature. The whole solution was filtered through Whatman filter paper No. 42 (125mm). The filtrate was latter transferred into a crucible and evaporated into dryness over a water bath and weighed to a constant weight. (Bohm and Kocipal, Abyzam 1994).

Saponin

20g. of each grounded sample was put into a conical flask and 100cm^{3}of 20% aqueous ethanol was added. Then the flask was heated on a hot water bath for 4 hour with constant stirring at about 55^{0}C. The mixture was then filtered and the residue was again extracted with another 200ml 20% ethanol. The combined extract was reduced to 40ml on a hot water bath at about 90^{0}C. The concentrate was transferred into a 250ml separatary funnel, added 20ml diethyl ether in it followed by vigorous shaking. The aqueous layer was recovered while the ether layer was discarded. The purification process was repeated. 60ml of n-Butanol was added. The combined n-Butanol extract where washed twice with 10ml of 5% aqueous sodium chloride. The remaining solution was heated in a water bath. After evaporation the sample were dried in oven, weighed, and saponin content was calculated as percentage. (Obadoni and Ochuko, 2001, Abulude, 2001).

Table1: Preliminary phytochemical screening of E.setifolia(A.Rich.)Raynal, Arial and Underground part of plant.

Sr.No.	Plant part	Alk.	Cor.	Ta. & Fe.	Flv.	Fixed Oil & Fats	Sap.	Pste.	Terp.
1	Arial Stem	+	+	+	+	-	+	+	-
2	Inflorescence Fruiting Body	+	+	+	+	+	+	+	-
3	Underground rhizome	+	-	+	+	-	+	-	-

+ present, **-** absent, **Alk.-**Alkaloids, **Cor.**-Carbohydrates,**Ta&Fe-**Tannin&Phenol, **Flv.**-Flavonoids, **Sap.**-Saponin, **Pste.**-Phytosterol, **Terp.**-Terpene.

Table 2 : Percentage of proximate chemical composition of *E.setifolia* (A.Rich)Raynal Mg/gm.

Sr.No.	Plant part	Alk.	Cor.	Flv.	Sap.	Ta.	Fe.	Terp.
1	Arial Stem	0.16	0.21	0.15	0.55	0.01	0.21	-
2	Inflorescence Fruiting Body	0.14	0.09	0.77	0.02	0.10	0.07	-
3	Underground rhizomes	0.03	_	0.33	3.38	0.01	0.06	-

Alk.-Alkaloids, **Cor.**-Carbohydrates, **Ta &F e**- Tannin& Phenol, **Flv.-**Flavonoids, **Sap**.-Saponin, **Terp.**-Terpene.

Terpene

100g. of plant powder were taken separately and soaked in alcoholic solution for 24 hours then filtrate. The filtrated extract treated with petroleum ether. Then estimate the total extract for terpene. (Ferguson 1996); The previously prepared sampal for quantitative analysis was transferred from assay tube to colorimetric cuvette (95 % (v/v). Methanol will be used as blank) to read the absorbtion at 538 nm. (Harborne, 1994).

RESULTS AND DISCUSSION

The present study carried out on the plant samples revealed the presence of medicinally active constituents. The phytochemical character of the *E.setifolia* plant investigated are summarized in **table-1** Alkaloid, Carbohydrates, Tannin and Phenol, Flavonoids, Saponin found present in all plant part. Except Phytosterol present in Aerial part, but absent in Underground plant part rhizomes. Quantitative estimation of the percentage crude chemical constituent in *E.setifolia* studies is summarized in **Table 2**, Rich amount of Alkaloids, Carbohydrates, Flavonoids, Saponin present to that Tannin and Phenol. Such a compound were known to show medicinal activity, They also widely employed as livestock and poultry feed. Steroidal compound are of importance and interest in pharmacy. Plant show the some activity of useful drugs. As claimed by traditional healers. Because of bioactive compound found in *E.setifolia* plant.

REFERENCES

Abulude FO (2001) Mineral and phytate content of ten vegetable grown in Nigeria and calculation of their phytate: Zn &Ca : phytate molar ratio, Ädv. Food Science 23;36-39.

Boham BA, Kocipai-Abyzam, R (1974) flavonoids and condensed thannins from the leaves of Hawaiian vacciniumVaticulatum and V.Calycinium, Pacific Sci. 48:458-463

Ferguson (1996) Phytochemical analysis of Aeglemarmalose 09-Chapter 3: Pdf-Reader on Herbal Tech Industry April 2011.

Goel, et.al. (1985) phytochemical analysis of Aegelmarmalos 09- Chapter 3: pdf- Reader on Herbal Tech. Industry; April 2011

Harborne, JB, Baxter, H (1993) Phytochemical dictionary, A Handbook of bioactive compound from plant. Taylor & Francis London.

Kokate, C.K. 1994 Practical Pharmacognosy. VallabhKubma: Prakashan India.

Obdoni BO, Ochuko, PO (2001) Phytochemical studies and comparative efficacy of crude extract of some Homostatic plant in Edo & Delta state of Nigeria , Global, J. pure application Sci. 8B: 203-208.

Simpson DA and Inglis CA (2001)Review literature, for economic importance of Cyperaceae, American Journal Botany. 93: 707-775.

Van-Burden TP, Robinson WC (1981) Formation of complexes between protein and tannin acid. J. Agric. Food Chem. 1.77.