



Phytochemical Screening of *Ricinus communis* and *Erigeron bonariensis*

Gajanan D. Wadankar, Manasi S. Khanzode, Bhagyashri K. Mahale and Anjali P. Gavhale

Post Graduate Department of Botany, R. A. Arts, Shri M. K. Commerce and Shri S. R. Rathi Science Mahavidyalaya, Washim-444505, Maharashtra, India.

E-mail: gdwadankar@gmail.com

Received: 09 May 2022; Received in revised form: 03 Jun 2022; Accepted: 07 Jun 2022; Available online: 12 Jun 2022

©2022 The Author(s). Published by Infogain Publication. This is an open access article under the CC BY license

(<https://creativecommons.org/licenses/by/4.0/>).

Abstract— *Ricinus communis* and *Erigeron bonariensis* were selected and aimed to investigate the presence of phytochemicals in leaf and stem. Aqueous, Acetone and Methanol Solvents were used for phytochemical analysis. Our findings provides evidence, that aqueous and organic solvent extracts of these plants contain medicinally important bioactive compounds.

Keywords— *Ricinus communis*, *Erigeron bonariensis* Phytochemicals screening, Qualitative.

I. INTRODUCTION

Phytochemicals generally originated from the plant source are bioactive compounds also known as secondary metabolites. These are synthesized in almost all parts of plants and are used by the local peoples for healing of certain disorders [1-2].

Plants product have been part of phytomedicines since time immemorial. This can be derived from barks, leaves, flowers, roots , fruit, seeds. Knowledge of the chemical constituents of plants is desirable because such information will be value for synthesis of complex chemical substances [3].

Medicinal plants contain some organic compounds which provide definite physiological action on the human body and these bioactive substances include tannins, alkaloids, carbohydrates, terpenoids, steroids and flavonoids [4]. These compounds are synthesized by primary or rather secondary metabolism of living organisms. Secondary metabolites are chemically and taxonomically extremely diverse compounds with obscure function. They are widely used in the human therapy, veterinary, agriculture, scientific research and countless other areas [5]. A large number of phytochemicals belonging to several chemical

classes have been shown to have inhibitory effects on all types of microorganisms in vitro [6].

Plant products have been part of phytomedicines since time immemorial. This can be derived from barks, leaves, flowers, roots, fruits, seeds [7]. Knowledge of the chemical constituents of plants is desirable because such information will be value for synthesis of complex chemical substances [8-10].

The present study was undertaken to evaluate the phytochemical analysis of *Ricinus communis* and *Erigeron bonariensis*, stem and leaves.

II. MATERIALS AND METHODS

Collection of plant material

Fresh plant material of *Ricinus communis* and *Erigeron bonariensis* were collected from different regions of Washim district, Maharashtra, India. It commonly occur in cultivated land, along with roadside, Shady & moist places. plant material washed under running tap Water 2-3 times to remove soil particles and dust. the plant material were shaded for 12 days. After drying plant materials grinded into fine powder using mechanical blender and

then transfer into airtight Container with proper labeling for further use.

Preparations of solvent Extracts

Stem and leaves of the *Ricinus communis* and *Erigeron bonariensis* were thoroughly washed with running tap water 2-3 times and then finally washed with distilled water followed by shade-dried for seven days and then dried in an oven below 50°C. The dried plant materials were then powdered using mixer and grinder. 30g of plant powder were extracted with 100ml of aqueous, acetone and methanol. After 24 hours, it was filtered through a filter paper, filtrate was collected. Test can be Conducted then and there it self after Collection or Can be stored in refrigerator for Conducting test later.

Phytochemical screening

Extracts of stem and leaves of *Ricinus communis* and *Erigeron bonariensis* using aqueous, acetone and methanol were subjected to various chemical tests in order to determine the secondary plant constituents [11]:

Test for Alkaloids

Mayer's test

A few drop of Mayer's reagents was added the Turbidity of the resulting precipitate indicates positive test for alkaloids.

Test for Tannins

A few chops of 0.1% ferric chloride was added and observed blackish-blue or brownish green Coloration indicates the Presence of Tannins.

Test for saponins

Extract was mixed with 5 ml of distilled Water in a test tube and then it was shaken vigorously, formation of stable foam indicates presence of Saponins.

Test for Flavonoids

Extract were treated with few drops of lead acetate solution yellow Coloration indicates. The presence of flavonoids.

Test for phenol

Crude Extract were treated with 3-4 drops of ferric chloride solution. bluish black or blue green colour indicate positive test for phenol.

Test for Terpenoids

(Salkowski test)

Extract was mixed in 2 ml of chloroform and concentrated H₂SO₄ (3ml) was carefully added to form a layer. A radish brow coloration of thin inter face was formed it indicates positive test for terpenoids.

Test for amino acids

Ninhydrin test

Crude extract when boiled With 2 ml of 0.2% Solution of Ninhydrin Violet color indicates the presence of amino acids.

Test for Carbohydrates

Benedict's test

2 ml of Benedict's reagent added and heated on boiling Water bath for 2 min. reddish brown precipitate indicates the presence of Carbohydrates.

Test for Glycosides

To known volume of extract 1 ml of distilled Water added and aqueous solution of NaOH was added formation of yellow color indicates positive test for Glycosides.

III. RESULTS AND DISCUSSION

Phytochemical analysis of aqueous, acetone and methanol extract of *Ricinus communis* and *Erigeron bonariensis* shows positive test for tannin. Alkaloids, saponins, carbohydrates and amino acids were absent in the all extracts of *Erigeron bonariensi*. Carbohydrates were present in methanol extract of leaf and stem of *Ricinus communis*. Amino acids were present in the aqueous extract of stem of *Ricinus communis*. Glycoside were present in all extracts of *Ricinus communis*. The results of phytochemical contents stem and leaf in Aqueous, Acetone and Methanol extracts of *Ricinus communis* and *Erigeron bonariensis* are reported in Table 1 (Fig. 1 to 3), Table-2 (Fig. 4 to 6) and Table-3 (Fig. 7 to 9), Table 4 (Fig. 10 to 12), respectively.

Table 1: Phytochemical analysis of stem of *Ricinus communis*

Test	Aqueous	Acetone	Methanol
Alkaloid	+	-	+
Tannin	+	+	+
Saponin	+	+	-
Flavonoid	+	+	-
Phenol	+	+	+
Terpenoids	+	-	+
Amino acid	+	-	-
Carbohydrate	-	-	+
Glycoside	+	+	+



Fig. 1 Phytochemical analysis of Aqueous extract of stem of *Ricinus communis*



Fig. 2 Phytochemical analysis of Acetone extract of stem of *Ricinus communis*



Fig. 3 Phytochemical analysis of Methanol extract of stem of *Ricinus communis*

Alkaloid	-	-	+
Tannin	+	+	+
Saponin	+	+	-
Flavonoid	+	+	-
Phenol	+	+	+
Terpenoid s	-	-	+
Amino acid	-	-	-
Carbohydrate	-	-	+
Glycoside	+	+	+



Fig. 4 Phytochemical analysis of Aqueous extract of leaf of *Ricinus communis*



Fig. 5 Phytochemical analysis of Acetone extract of leaf of *Ricinus communis*

Table 2: Phytochemical analysis of leaf of *Ricinus communis*

Test	Aqueous	Acetone	Methanol
------	---------	---------	----------



Fig. 6 Phytochemical analysis of Methanol extract of leaf of *Ricinus communis*



Fig. 8 Phytochemical analysis of Acetone extract of stem of *Erigeron bonariensis*

Table 3: Phytochemical analysis of stem of *Erigeron bonariensis*

Test	Aqueous	Acetone	Methanol
Alkaloid	-	-	-
Tannin	+	+	+
Saponin	-	-	-
Flavonoid	+	+	+
Phenol	+	+	+
Terpenoids	-	-	-
Amino acid	-	-	-
Carbohydrate	-	-	-
Glycoside	+	+	+



Fig. 9 Phytochemical analysis of Methanol extract of stem of *Erigeron bonariensis*

Table 4: Phytochemical analysis of leaf of *Erigeron bonariensis*

Test	Aqueous	Acetone	Methanol
Alkaloid	-	-	-
Tannin	+	+	+
Saponin	-	-	-
Flavonoid	+	-	-
Phenol	+	+	+
Terpenoids	+	-	-
Amino acid	-	-	-
Carbohydrate	-	-	-
Glycoside	-	-	+



Fig. 7 Phytochemical analysis of Aqueous extract of stem of *Erigeron bonariensis*



Fig. 10 Phytochemical analysis of Aqueous extract of leaf of *Erigeron bonariensis*



Fig. 11 Phytochemical analysis of Acetone extract of leaf of *Erigeron bonariensis*



Fig. 12 Phytochemical analysis of Methanol extract of leaf of *Erigeron bonariensis*

IV. CONCLUSION

The *Ricinus communis* and *Erigeron bonariensis* this plants are source of secondary metabolites and the solvent choice is very important for extraction of Phytochemical from plants. Medicinal plants are helpful for discovering and Manufacturing of new drugs. The research on *Ricinus communis* and *Erigeron bonariensis* plants which can be medicinally important.

REFERENCES

- [1] Ugochukwu, S.C., Arukwe, U.I. and Onuoha I. (2013). Preliminary phytochemical screening of different solvent extracts of stem bark and roots of *Denmetia tripetala* G. Baker. *Asian J. Plant Sci. Res.*, 3(3), 10-13.
- [2] Epko, M.A. and Etim, P.C. (2009). Antimicrobial activity of ethanolic and aqueous extract of *Sida auta* on microorganisms from skin infections. *J. Med. Plants Res.*, 3(9), 621-624.
- [3] Yadav, RNS. (2011). Phytochemical analysis of some medicinal plants. *Journal of Phytology*, 3(12), 10-14.
- [4] Edoga, H.O., Okwu, D.E. and Mbaebie, B.O. (2005). Phytochemicals constituents of some Nigerian medicinal plants. *Afr. J. Biotechnol.*, 4(7), 685-688.
- [5] Vasu, K., Goud, J.V., Suryam, A., Singara and Chary, M.A. (2009). Biomolecular and phytochemical analyses of three aquatic angiosperms. *Afr. J. Microbiol. Res.*, 3(8), 418-421.
- [6] Cowan, M.M. (1999). Plant products as antimicrobial agents. *Clin. Microbiol. Rev.*, 564-582.
- [7] Criagg, G.M. and David, J.N. (2001). Natural product drug discovery in the next millennium. *J. Pharm. Biol.*, 39, 8-17.
- [8] Mojab, F., Kamalinejad, M., Ghaderi, N. and Vanidipour, H.R. (2003). Phytochemicals screening of some species of Iranian plants. *Iran. J. Pharm. Res.*, 3, 77-82.
- [9] Parekh, J. and Chanda, S. (2007). Antibacterial and phytochemical studies on twelve species of Indian medicinal plants. *Afr. J. Biomed. Res.*, 10, 175-181.
- [10] Parekh, J. and Chanda, S. (2008). Phytochemicals screening of some plants from western region of India. *Plant Arch.*, 8, 657- 662.
- [11] Velavan, S. (2015). Phytochemical Techniques, *World Journal of science and Research*. 1(2), 80-91.