

QUALITATIVE PHYTOCHEMICAL ANALYSIS OF *MOMORDIA CHARANTIA* FROM LEAF, SEED AND FRUIT PULP EXTRACTS

Agawane P. M.¹, Kamble K. J.² and *Wali B. S.

¹Rayat Institute of Research and Development Satara, Maharashtra.

²D. P. Bhosale College, Koregaon, Dist. Satara, Maharashtra.

*Shri Yashwantaro Patil Science College, Solankur Dist Kolhapur, Maharashtra.

Article Received on
07 February 2023,

Revised on 28 Feb. 2023,
Accepted on 20 March 2023

DOI: 10.20959/wjpr20235-27556

*Corresponding Author

Wali B. S.

Shri Yashwantaro Patil
Science College, Solankur
Dist. Kolhapur, Maharashtra.

ABSTRACT

Momordia charantia is a medicinal plant also known as bitter gourd, bitter melon and karela in hindi. It is mostly used in vegetable and also used for diabetic patient. The various bioactive compounds present in the plant and is useful for proper study. The present phytochemical study was conducted to identify the antidiabetic compound present in the leaves seed and fruit pulp extract of *Momordia charantia*. For this method Soxhlet apparatus was used. Phytochemical analysis of *M.charantia* seed, leaf and fruit pulp extract gives the presence of various compounds. The compounds present in the plant are very important because of their antidiabetic, antioxidant, antimicrobial and anti-cancer property. Our findings gives the result of aqueous extracts of these tested plant contain medicinally important bioactive compound. This plant is useful in the treatment of various diseases.

KEYWORDS: Phytochemicals, Soxhlet apparatus, *Momordia charantia*, Qualitative.

INTRODUCTION

The *M.charantia* is medicinally important plant because of its antioxidant, antibacterial activity (Naeem Hasan Khan, *et.al.*, 2019). Plant possess many active compounds like alkloides, steroids, tannis, phenol, flavonoid etc. These compounds are found in particular parts such as Leaves, seed and fruit pulp. Many organic compounds present in *M. charantia* are Antidiabetics, Antimicrobial, Anticancer, (Nesar Ahmand, *et.al.*, 2016).

M.charantia present several biological activity and useful for treat the many diseases and also

act as bioherbicides. (Mozaniel Santana de oliveira, *et.al.*, 2018). In the present study the qualitative phytochemical analysis of fruit pulp, seed and leaves of *M.charantia* was carried out in three parts of aqueous extract.

MATERIAL AND METHOD

Fresh material like leaves, seed and fruit pulp of *M.charantia* is collected from local field of Kondve near Satara city. The plant materials were taxonomically identified and authenticated by department of botany Yashwantrao Chavan Institute of Science Satara. The collected material were washed, leaves are shade dried and seed and fruit pulp were sun dried and powdered by mixture and strained with the help of muslin cloth. Extract were prepared with the help of Soxhlet apparatus by using distilled water as a solvent. For the preparation of aqueous extract 20gm of plant powder was extracted in 200ml distilled water in soxhlet apparatus. Then plant extracts were concentrated by evaporation with high speed evaporator.

The plant extracts were preserved in the refrigerator. The extracts or filtrates were used for phytochemical analysis as per the standard protocol.

Phytochemical Analysis of *M.charantia*

1) Test for Alkaloides

Mayers Test: 3ml of extracts was stirred with 3 ml of 1% HCL on steam bath. 1ml of mixture was taken Mayer's reagent was added and appearance of buff coloured precipitate was taken as positive test.

2) Test for flavanoides

i) Ferric chloride test: The test solution with few drops of ferric chloride solution shows intense green color. Ferric chloride :(2%)-2gm in 100ml distilled water.

ii) Alkaline reagent Test: Test solution when treated with sodium hydroxide solution shows increase in intensity of yellow color which becomes colorless on addition of few drop of dilute acid.

iii) Lead acetate solution test: Test solution with few drops of lead acetate solution (10%W/V) gives yellow precipitate.

3) Test for Phenol and Tannis: About 2ml of extract was stirred with 2ml of ferric chloride (FeCl₃ 2%) solution was added. Formation of blue green or black colouration indicated of phenol and tannis.

4) Test for terpenoids

- i) **Salkowaski Test:-** When few drop of concentrated sulphuric acid is added to the test solution, shaken and allow to stand, lower layer turns red indicating the presence of sterol.
- ii) **Liebermann Burchard Test:** The test solution treated with few drops of glacial acetic acid and mixed well. When concentrated sulphuric acid is added from the sides of test tube, it shows a brown ring at the junction of two layers and the upper layer turns green.

5) Test for carbohydrates

- i) **Molish test:** Test solution with few drops of molish reagent and 2 ml concentrated sulphuric acid added slowly from the sides of the test tube shows a purple ring at the junction of two liquid.
- ii) **Benedict's Test:** Test solution treated with Benedicts reagent and boiling on a water bath shows reddish brown precipitate.

6) Test for fats and oil: The test solution pore on the slide treat with few drops of Sudan Red III. After that wash the slide with the help of 50% alcohol. The slide is mounted in glycerin and observed under microscope. During microscopic observation red oil globules indicates test is positive.

7) Test for protein: The test solution is treated with 4% NaOH solution. Then add 1% coppersulphate solution. Violet color indicates presence of protein.

8) Test for Glycoside

i) Test for cardiac glycoside

Baljets Test:- The test solution was treated with few drops of sodium picrate. Formation of yellow colour indicates that presence of cardiac glycoside.

ii) Test for Saponin glycoside

Foam test: Vigorous shaking of test solution was done in this test. Observation of foam is indicates the presence of Saponin glycoside.

9) Test for Steroid

Salkawski test: Mix 2ml of extract with chloroform. Add 2ml of concentrated Sulphuric Acid and was shaken well. Chloroform layer appeared red and acid layer showed greenish yellow florescence indicated the presence of steroid.

RESULT AND DISCUSSION

The phytochemical analysis from aqueous extract of *M.charantia* Leaf, seed and fruit pulp extract reveals the presence of various phytochemicals that are Alkaloid, Flavonoid, Phenol, Tannin, Terpenoid, Carbohydrates, Protein, Fats and oils, Cardiac glycosides, and Steroid were found in aqueous extracts. Phytochemical analysis of *M.charantia* was studied by Daniel *et.al.*, (2014). But in the present study the more phytochemicals were found in Leaves and Fruit pulp extract as compared to seed extract.

The phytochemicals are used as medicine which are found in leaf, seed and fruit pulp extract of *M.charantia*. The presence of Alkaloid was found in all three parts of the plant. Alkaloids are one of the diverse groups of secondary metabolites. All other phytochemicals were found in leaf and fruit pulp extract of the plant. Some phytochemicals are absent in the seed part of the *M.charantia*. Terpenoids were found in the leaf and fruit pulp. Phenol, tannin and flavonoid are also present in the leaf and fruit pulp extract of *M.charantia*. The majority of phytochemicals were found in the leaf and fruit parts of the plant. Comparative phytochemical constituents from fruit extracts of *M. charantia* were studied by Anjama and Lakshmi (2015). But were absent in the seed of the plant. Carbohydrates were absent in the seed extracts. Proteins were present in all parts of the plant. The fats and oils were mostly found in the seed and less in the fruit and leaf of the *M.charantia*.

Table No 1: Qualitative analysis of phytochemicals in leaf, fruit pulp and seed extract of *M.charantia*.

Phytochemicals	Leaf	Fruit pulp	Seed
Alkaloids	+++	++	+
Flavonoids	+++	++	-
Phenol and Tannin	+++	++	-
Terpenoid	+	++	-
Carbohydrates	+++	++	-
Protein	++	+++	++
Fats and oil	+	+	+++
Glycosides	+++	++	-
Steroid	+	++	+++

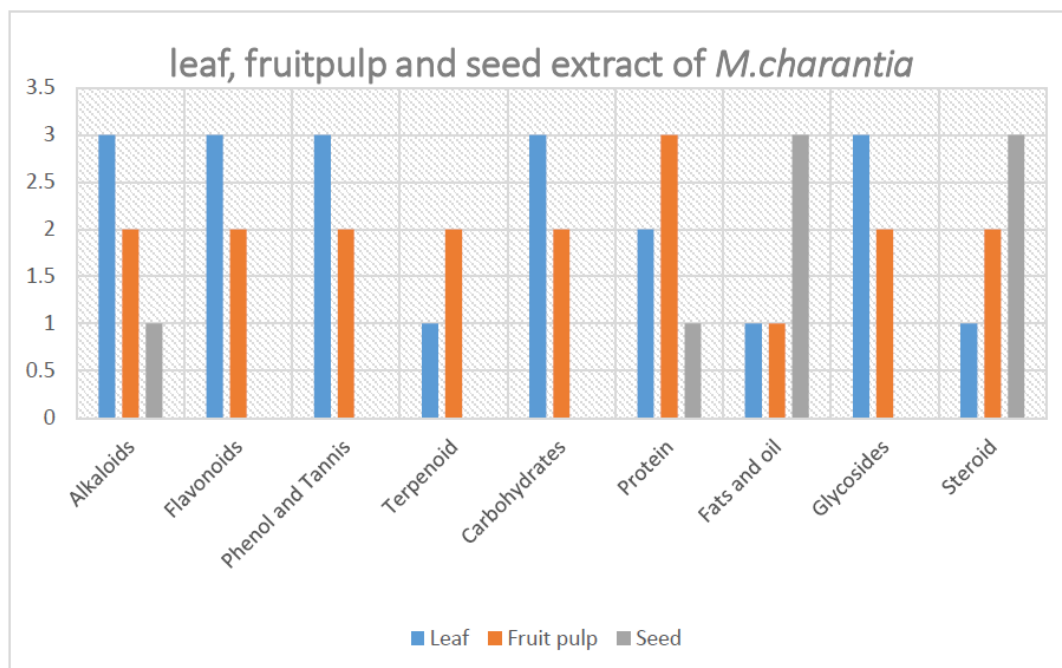


Fig:-Graphical representation of Phytochemicals present in Leaf, fruit pulp and seed extract of *M. Charantia*.

CONCLUSION

The result revealed the presence of phytochemicals in the aqueous extracts of leaf, fruit pulp and seed extracts of plant *M. charantia*. The Alkaloids, Protein, Steroid, Fats and oil present in leaf, seed and fruit pulp extracts. Leaf, fruit pulp and seed extracts have a potential bioactive compound that are used to treat the various type of diseases. This qualitative phytochemical compounds are further used for effect on Chorio allontoic membrane of *Gallus gallus domestics*.

REFERENCES

1. Anjali Soni and Sheetal Sosa Phytochemical Analysis and Free Radical Scavenging Potential of Herbal and Medicinal Plant Extracts. Journal of Pharmacognosy and phytochemistry, 2013; 2(4): 22-29.
2. Anjamma M and N.Lakshmi Bhavani Comparative Phytochemical Constituent Evaluation from the fruit Extracts of Momordia charantia L. and Momordia dioica Roxb.Int j.Curr. Biotechnol, 2015; 3(8): 17-21.
3. Daniel P, Supe U, Roymon MG. A review on Phytochemical analysis of Momordiac charantia. Int J Adv Pharm Biol Chem, 2014; 3(1): 214-20.
4. K.J.Kamble and R.S.Dubal Phytochemical analysis of active compounds from the leaf

- extract of *Moringa olifera*. Journal of pharma research, 2019; 8(7): 494-496.
5. K.Kabesh, P.Senthilkumar, R.Ragunathan and R.Rajkumar Phytochemical Analysis of *Catharanthus roseus* Plant Extract and its Antimicrobial Activity. International journal of Pure and applied Bioscience, 2015; 3(2): 162-172.
 6. Mala Agrawal and Raka Kamal Invitro clonal propogation and phytochemical Analysis of *Momordica charantia* .Linn Journal of Pharnacognosy and photochemistry, 2013; 2(1): 66-77.
 7. Mozaniel Santana de Oliveira, Wanessa Almeida da Costa, Fernanda Wariss Figueiredo Bezerra, Marilena Emmi Araujo, Gracialda Costa Ferreira and Raul Nunes de Carvalho junior Phytochemical profile and biological activities of *Momordia charantia* L.(Cucurbitaceae):A review African journal of Biotechnology, 2018; 17(26): 829-846.
 8. Naeem Hasan khan, Amy Teh Sze Lin and Nabila Perveen Phytochemical Analysis, Antibacterial and Antioxident activity Determination of *momordia charantia* world journal of pharmacy and pharmaceutical science, 2019; 8(2): 81-96.
 9. Nesar Ahmad, Noorul Hasan, Zeeshan Ahmad, Mohd Zishan, Seikh Zohrameena, "Momordia charantia: For Traditional use in Pharmacological Actions. Journal of Drug Delivery and Therapeutic, 2016; 6(2).
 10. S.B.Mada, A Garba, H.A.Mohammed, A Muhamad, A Olagunju and A.B.Muhammad, "Antimicrobial activity and phytochemical screening of aqueous and ethanol extracts of *Momordia charantia* L.leaves", Journal of medicinal plants, 2013; 7(10): 579-586.
 11. Prarthna Daniel, Ujjwala Supe, M.G.Roymon.A review on Phytochemical analysis of *Momordia charantia* International journal of advances in pharmacy, Biology and Chemistry, 2014; 3(1): 214-220.