Original Research Paper

Volume : 5 | Issue : 9 | September 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

Phytochemical Analysis of Methanolic Extract of *Coccinia Grandis* L

Botany

KEYWORDS : Phytochemical, qualitative, methanol,Coccinia grandis

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ABSTRACT

The medicinal plants produce a diverse range of bioactive molecules, making them a rich sources of different types of medicines. The plant Coccinia grandis whole plant part is used in siddha, ayurveda, unani, traditional and ethano medicinal. The present study is focuses on the phytochemical analysis in Coccinia grandis leaf, stem and fruit were done by using methanol extract. Qualitative phytochemical analysis of this species extract confirm the presence of various phytochemicals like alkaloids, flavonoids, terpenoids, phenols, saponins, and carbohydrates.

INTRODUCTION

Many references of medicinal plants the sacred vedas dating back between 3500 BC and 800 BC. Before the history of plants have been used to treat or prevent illness. "Virikshayurveda" is the one of the remotest works in traditional herbal medicine compiled even before the beginning of Christian era. Kalaiarasi and Sengottuvel (2016) reported that ancient text like the vedas and the bible traced to the occurrence of natural products with medicinal properties. Iniaghe *et al.* (2009) reported that, in recent years, the developing countries have been reported safe and without any side effects in herbal medicines. Santhi and Sengottuvel (2016) reported that, the importance of medicinal plants increasing the awareness and the plant kingdom is a treasure house of potential drugs in recent years. In traditional medicines usage and appeared in homeopathic of some species. Plants are rich in valuable source of medicines for using human health. Selvam *et al.* (2016) reported that, the discovery of new drugs have a long been thriving source for the natural product of their chemical diversity. Nwaogu *et al.* (2007) reported that, the flowering plants are majority of medicinal plants are available in rural areas. Hena *et al.* (2010) reported that, the different parts of the world the various plants have been used to human diseases of the old method of traditional medicines. Anubha arora (2013) reported that, the very important in medicines and constitute for most of the valuable drugs in phytochemicals. Amir *et al*. (2014) mentioned that, the most wonderful nature gift from plants have been used as origin of medicines. Abhijit *et al.*(2010) reported that plants contain in different types of medicines. Plants produced phytochemical constituents such as alkaloids, flavonoids, phenols, carbohydrates, steroids, tannins, and aminoacids etc.,

The plant *Coccinia grandis* belonging to the family Cucurbitaceae, commonly known as kovay in Tamil. *Coccinia grandis* commonly originated in Asia and Central Asia. Alternately arranged in leaves, large flowers, flowers are star shaped with white colour and the fruit is red colour. The leaves and fruits used in edibles. The stem and root are used in skin diseases, asthma, bronchitis and used many diseases. The whole plant part is used in ayurveda, siddha and unani systems of medicines. The former plant *Coccinia grandis* has good antidiabietic activity with good digestive properties. This plant used in traditional and ethanomedicinal in many countries in human diseases. The various traditional uses such as digestive, body cool, stomach pain and jaundice etc… The many bioactive compounds used in the anti inflammatory, antidiabetic and analgesic activity etc Mirsanipa *et al.* (2014). In the present study to find out the qualitative phytochemical analysis from the leaf, stem and fruit of *Coccinia grandis.*

Materials and Methods:

Collection of plant materials

The plant materials (leaf, stem and fruit) of *Coccinia grandis* L. The plant materials were collected from Mallasamudram of Namakkal District, Tamil Nadu. The plant materials were washed thoroughly 2-3 times with running tap water and once sterile distilled water. After the plant parts were shade dried and coarsely powdered separately and stored in well closed containers for further laboratory use.

Authentication of plant materials

The plant specimen was identified with the help of flora of Presidency of Madras (Gamble, 1935). The voucher specimen has been deposited in the Department of Botany, Arignar Anna Government Arts College, Namakkal District, Tamil Nadu, India.

Extraction of the plant materials

These coarse powders (25g) were subjected to successive extraction in 250 ml of methanol solvent by using Soxhlet apparatus. The collected extracts were stored and then used for further analysis. The DMSO (Dimethyl sufloxide) is act as dissolved solvents for these extracts.

Qualitative phytochemical analysis

Preliminary phytochemical analysis was carried out for the extract as per standard methods

described by Brain and Turner (1975) and Evans (1996).

Detection of Alkaloids

Extracts were dissolved individually in dilute hydrochloric acid and filtered. The filtrates were used to test the presence of alkaloids.

Mayer's test: Filtrates were treated with Mayer's reagent. Formation of a yellow cream precipitate indicates the presence of alkaloids.

Wagner's test: Filtrates were treated with Wagner's reagent. Formation of brown/ reddish brown precipitate indicates the presence of alkaloids.

Detection of Flavonoids
Lead acetate test: Extracts were treated with few drops of lead acetate solution. Formation of yellow colour precipitate indicates that the presence of flavonoids.

H_2SO_4 test: Extracts were treated with few drops of H_2SO_4. Formation of orange colour indicates that the presence of flavonoids.

Detection of Steroids
Two ml of acetic anhydride was added to five mg of the extracts, each with two ml of H_2SO_4. The colour was changed from violet to blue or green in some samples indicate that the presence of steroids.

Detection of Terpenoids
Salkowski's test
Five mg of the extract of the leaves, flowers and seeds was mixed with two ml of chloroform and concentrated H_2SO_4 (3ml) was carefully added to form a layer. An appearance of reddish brown colour in the inner face was indicates that the presence of terpenoids.

Detection of Anthroquinones
Borntrager's test
About five mg of the extract was boiled with 10% HCl for few minutes in a water bath. It was filtered and allowed to cool. Equal volume of $CHCl_3$ was added to the filtrate. Few drops of 10% NH_3 were added to the mixture and heated. Formation of pink colour indicates that the presence anthroquinones.

Detection of Phenols
Ferric chloride test: 10mg extracts were treated with few drops of ferric chloride solution. Formation of bluish black colour indicates that the presence of phenol.

Lead acetate test: 10mg extracts was treated with few drops of lead acetate solution. Formation of yellow colour precipitate indicates that the presence of phenol.

Detection of Saponins
About 0.5mg of the extract was shaken with five ml of distilled water. Formation of frothing shows that the presence of saponins.

Detection of Tannins
A small quantity of extract was mixed with water and heated on a waterbath. The mixture was filtered and ferric chloride was added to the filtrate. A dark green colour was formed. It indicates that the presence of tannins.

Detection of Carbohydrates
0.5mg extracts were dissolved individually in five ml distilled water and filtered. The filtrate was used to test the presence of carbohydrates.

Detection of Protein and Amino acids
Biuret test: To 0.5 mg of extract equal volume of 40% NaOH solution and two drops of one percent copper sulphate solution was added. The appearance of violet colour indicates that the presence of protein.

Ninhydrin test: About 0.5 mg of extract was taken and two drops of freshly prepared 0.2% Ninhydrin reagent was added and heated. The appearance of pink or purple colour indicates that the presence of proteins, peptides or amino acids.

Detection of oils and resins
Test solution was applied on filter paper. It develops a transparent appearance on the filter paper. It indicates that the presence of oils and resins.

Results and Discussion:
The preliminary phytochemical analysis revealed that the presence of some bioactive compounds. The qualitative phytochemical analysis from leaf, stem and fruit the results given in the tables.

The results of the present investigation the phytochemical screening of methanolic extracts of *Coccinia grandis* L. different parts were used. The tests including such as alkaloids, flavonoids, terpenoids, phenols, saponin, tannin, carbohydrate, oil and resins (Table 1,2 and 3). The presence of phytochemical compounds such as alkaloids, flavonoids and carbohydrates were present in leaves, stems and fruits of methanol extracts. Saponin present in only leaves and stem extract. Phenol present in only leaves extract. Tannin, oils and resins were absent in the extract.

Table -1 Phytochemical analysis of *Coccinia grandis L.* methanolic extract from leaf.

S.No	Test	Inference	Result
1	Alkaloids	Cream colour reddish brown solution/ precipitate	Present
2	Flavonoids	Yellow orange reddish brown precipitate	Present
3	Steroids	No violet to blue or green colour formation	Absent
4	**Terpenoids**	No reddish brown precipitate	Absent
5	**Anthroquinone**	No pink colour	Absent
6	**Phenols**	Deep blue to black colour formation White precipitate	Present
7	Saponins	Stable persistant	Present
8	Tannins	No brownish green / blue black	Absent
9	Carbohydrates	No green colour	Present
10	Oil and resin	No transparent in filter paper	Absent

Table -2 Phytochemical analysis of *Coccinia grandis L.* methanolic extract from Stem

S.No	Test	Inference	Result
1	Alkaloids	Cream colour reddish brown solution/ precipitate	Present
2	Flavonoids	Yellow orange reddish brown precipitate	Present
3	Steroids	No violet to blue or green colour formation	Absent
4	**Terpenoids**	No reddish brown precipitate	Absent
5	**Anthroquinone**	No pink colour	Absent
6	**Phenols**	No deep blue to black colour formation white precipitate	Absent

Volume : 5 | Issue : 9 | September 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

7	Saponins	Stable persistant	Present
8	Tannins	No brownish green / Blue black	Absent
9	Carbohydrates	No green colour	Present
10	Oil and resin	No transparent in filter paper	Absent

Table -3 Phytochemical analysis of *Coccinia grandis L.* methanolic extract from Fruit

S.No	Test	Inference	Result
1	Alkaloids	Cream colour reddish brown solution/ precipitate	Present
2	Flavo-noids	Yellow orange reddish brown precipitate	Present
3	Steroids	No violet to blue or green colour formation	Absent
4	**Terpe-noids**	Reddish brown precipitate	Present
5	**Anthro-quinone**	No pink colour	Absent
6	**Phenols**	No deep blue to black colour formation white precipitate	Absent
7	Saponins	No stable persistant	Absent
8	Tannins	No brownish green / Blue black	Absent
9	Carbohy-drates	No green colour	Present
10	Oil and resin	No transparent in filter paper	Absent

The saponins and tannins present in high amount of antimicrobial activity. Anowichinedu *et al.* (2012) reported that, the saponins caused the lysis of bacterial cell wall. Naimasaeed *et al*. (2012) reported that plants are rich in phenolics they are used in food industry for improve the quality and nutritional value of food. Kiranmai and Mohammed Ibrahim (2012) reported that the phytochemical constituents are curative against many pathogens and traditionally for the treatment of various diseases. Patra *et al*. (2012) reported that mangrove plants are highly amount of bioactive compounds. The isolation of some phytochemical constituents from plants. Ai Lan Chew *et al.* (2012) reported that the host cell must be considered that toxic effect of the antimicrobial and antioxidant agents. Naturally the bioactive compounds are present in plants. They are producing colour and flavor of the plants. Gul Rahim *et al*. (2013) reported that the phytochemical compounds relive many diseases in human body certain physiological action of the plants. Santhi and Sengottuvel (2016) reported that the some bioactive compunds are used in hypercholesrolamia, hyperglycemia, antioxidant, anticancer weight loss etc…

Conclusion:

The extract obtained from plant *Coccinia grandis* subjected to various phytochemical tests to identified the active constituents which showed presence of alkaloids, flavoroids, terpenoids, phenols, saponins and carbohydrates. The phytochemical constituents seemed to have the potential to act as a source of useful drugs and also to improve the health status of the consumers as a result of the various compounds that are vital role for good health.

Acknowledgement:

We acknowledge, The Head Dept. of Botany, The Principal, Arignar Anna Government Arts College, Namakkal, Tamilnadu, for providing necessary laboratory facilities to carry out the work.

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