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EVALUATION OF PHYTOCHEMICALS STUDIES ON *CORIANDRUM SATIVUM LINN*

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ABSTRACT

The developing countries mostly rely on traditional medicines. This traditional medicine involves the use of different plant extracts or the bioactive constituents. Plants have been known to relieve various diseases in Ayurveda. This study evaluates the phytochemicals studies on coriandrum sativum Linn. In keeping this view in mind the present investigation is carried out in Coriandrum sativum Linn. The results suggest that the phytochemical properties of the plant for curing various ailments such as alkaloids, saponins, tannins, flavonoids, terpenoids, glycosides, proteins, steroids and phenols group in various extracts like aqueous, methanol, acetone, chloroform extracts of the leaves of Coriandrum sativum Linn. The present study provides evidence that solvent extract of Coriandrum sativum Linn contains medicinally important bioactive compounds and this justifies the use of plant species as traditional medicine for treatment of various diseases.

KEY WORDS: Coriandrum sativum Linn., methanol, phytochemical, chloroform.

INTRODUCTION

The therapeutic efficacy of many indigenous plants for various disease has beed described by traditional herbal medicinal practitioners.[1] Natural products are the source of synthetic and traditional herbal medicine. Phytochemicals may protect human from a host of diseases. Phytochemicals are non-nutritive plant chemicals that have protective or disease preventive properties. Plant produces these chemicals to protect itself but recent research demonstrates that many phytochemicals can protect humans against diseases. Coriander, Coriandrum sativum Linn also known as cilantro, Chinese parsley or dhania, is an annual herb in the

family Apiaceae. All part of the plants is edible but the fresh leaves and the dried seeds are the most common parts used in cookingIn the Indian traditional medicine, a coriander is used in disorders of digestive, respiratory and urinary system, as it has diaphoretic, diuretic, carminative and stimulant. In Iranian traditional medicine, coriander has been indicated for a number of medical problems such as dyspeptic complaints, loss of appetite, convulsion and insomnia.[2-6] Hence, the present study has been made to investigate the phytochemical screening of the Coriandrum sativum Linn.

MATERIALS AND METHODS

Plant Materials The fully mature Coriandrum sativum Linn., were collected from Tiruchirappalli district, Tamil nadu, India. The plant was identified and authenticated Dr.M.Mohamed Ilyas, Associate Professor, Department of Botany, Tiruchirappalli, Tamil Nadu, India confirmed with the voucher specimen kept in the Rapinat Herbarium, St.Joseph's College, TamilNadu.

Preparation of Plant Extracts

Preparation of Extracts the Coriandrum sativum Linn. Leaves were first washed well with distilled. The leaves were shaded dried at room temperature and coarsely powdered. The powder was extracted with hexane to remove lipids. It was then filtered and the filtrate was discarded. The residue was successively extracted with aqueous, methanol, acetone, chloroform extracts using cold percolation method.

Acetone and Methanol & chloroform extract

The leaves of Coriandrum sativum Linn was dried in hot air oven at 40° -50°C for a week. The dried plant material was powdered using mixer grinder, and subjected to soxhlet extraction with acetone and methanol & chloroform extract for 24 hours. The mixture was evaporated to dryness in a rotary flash evaporator and stored in refrigerator. The condensed extracts were used for preliminary screening of phytochemicals.

Aqueous extract

The leaves of Coriandrum sativum Linn powder was boiled in distilled water for 15-20 minutes, kept in room temperature overnight and filtered. The filtrate was evaporated to dryness in hot air oven and stored in refrigerator. The condensed extracts were used for preliminary screening of phytochemicals. The extracts thus obtained were subjected to

preliminary phytochemical screening following the methodology of Harborne (1998)7and Kokate (2001)8.

Screening procedure

Test for Alkaloids

Five ml of the extract was added to 2 ml of HCl. To this acidic medium, 1 ml of Dragendroff's reagent was added. An orange or red precipitate produced immediately indicates the presence of alkaloids.

Test for Amino Acids

One ml of the extract was treated with few drops of Ninhydrin reagent. Appearance of purple colour shows the presence of amino acids.

Test for Anthraquinones

Five ml of the extract solution was hydrolysed with diluted Conc. H2SO4 extracted with benzene. 1 ml of dilute ammonia was added to it. Rose pink coloration suggested the positive response for anthraquinones.

Test for Flavonoids

One ml of the extract, a few drops of dilute sodium hydroxide was added. An intense yellow colour was produced in the plant extract, which become colourless on addition of a few drops of dilute acid indicates the presence of flavonoids.

Test for Glycosides

The extract was hydrolysed with HCl for few hours on a water bath. To the hydrolysate, 1ml of pyridine was added and a few drops of sodium nitroprusside solutions were added and then it was made alkaline with sodium hydroxide solution. Appearance of pink to red colour shows the presence of glycosides.

Test for Phytosterol

The extract was refluxed with solution of alcoholic potassium hydroxide till complete saponification takes place. The mixture was diluted and extracted with ether. The ether layer was evaporated and the residue was tested for the presence of phytosterol. The residue was dissolved in few drops of diluted acetic acid; 3 ml of acetic anhydride was added followed by few drops of Conc. H2SO4. Appearance of bluish green colour showed the presence of phytosterol.

Test for Saponins

The extract was diluted with 20 ml of distilled water and it was agitated in a graduated cylinder for 15 minutes. The formation of 1cm layer of foam showed the presence of saponins.

Test for Steroids

One ml of the extracts was dissolved in 10 ml of chloroform and equal volume of concentrated sulphuric acid was added by sides of the test tube. The upper layer turns red and sulphuric acid layer showed yellow with green fluorescence. This indicated the presence of steroids.

Test for Tannins

Five ml of the extract and a few drops of 1% lead acetate were added. A yellow precipitate was formed, indicates the presence of tannins.

Test for Triterpenoids

Ten mg of the extract was dissolved in 1 ml of chloroform; 1 ml of acetic anhydride was added following the addition of 2 ml of Conc. H2SO4. Formation of reddish violet colour indicates the presence of triterpenoids.

RESULTS AND DISCUSSIONS

Table 1: The analysis of phytochemicals in the ethyl acetate and methanol extract of *Coriandrum sativum Linn.*

S.NO	PHYTOCHEMICALS NAME	AQE	ME	AE	CE
1.	Alkaloids	+	+	+	+
2.	Flavanoides	+	+	+	+
3.	Tannin	-	-	-	-
4.	Saponins	-	-	-	-
5.	Carbohydrates	+	+	+	+
6.	Protein	+	+	+	+
7.	Amino acid	+	+	+	+
8.	Phenols	+	+	-	+
9.	Sterides and triterpenides	+	+	+	-
1O.	Vitamin c	+	+	+	+
11.	Anthocyanin	-	-	-	-
12.	Quinones	+	+	-	+
13	Cardiac glycosides	+	+	+	+

AQE-Aqueous Extract,ME-Methanol Extract,AE-Acetone Extract,CE-Chloroform Extract

Plants are a source of large amount of drugs comprising to different groups such as antispasmodics, emetics, anti-cancer, antimicrobials etc. A large number of the plants are claimed to possess the antibiotic properties in the traditional system and are also used extensively by the tribal people worldwide. It is now believed that nature has given the cure of every disease in one way or another. The results confirm the presence of constituents which are known to exhibit medicinal as well as physiological activities. The phytochemical characteristics of the leaf extract of Coriandrum sativum Linn., investigated are summarized in table-1. The result obtained in the present investigation, the aqueous, methanol, acetone, Chloroform extracts of the leaves of Coriandrum sativum Linn., showed the presence of alkaloids, amino acids, flavonoids, glycosides, phytosterols, saponins, steroids, tannins and triterpenoids. From this results observed that the aqueous extract showed more photochemical compounds when compared with other extracts.

A variety of herbs and herbal extracts contain different phytochemicals with biological activity that can be of valuable therapeutic index. Plant products have been shown to possess good therapeutic potential as anti inflammatory agents and as a wound healing promoter, due to the presence of terpenes, and flavonoids.[9]

Phytochemicals such as saponins, terpenoids, flavonoids, tannins, steroids and alkaloids have anti-inflammatory effects of Allium sativum Linn., in wistar albino rats [10] . The curative properties of medicinal plants are perhaps due to the presence of various secondary metabolites such as alkaloids, flavonoids, glycosides, phenols, saponins, sterols etc. The successive extracts of Lawsonia ulba Linn., have revealed the presence of alkaloids, flavonoids, glycosides, lignins, phenols, saponins, sterols,and tannins.[11] Previous reported that the phytochemicals Investigation of polygonum barbatum linn., depth study will provide a good concrete base of all the phytochemicals functions.[12]

Phytochemicals screening of the ethyl acetate and methanol extracts of Coriandrum sativum Linn.., used in this study revealed that the crude extracts contained alkaloids, amino acids, flavonoids, glycosides, phytosterols, saponins, steroids, tannins and triterpenoids. Tannic acid and tannins are present in many plants and they denature proteins forming protein tannate, which makes the intestinal mucosa more resistant and reduces secretion by virtue of which so many different plant species has been reported to possess antidiarrheal potential. The tannins

present in the plant extract may be responsible for the anti-diarrhoeal activity on Allium sativam Linn. in Albino Rats.[13] Phytochemicals Investigation of Coriandrum sativum Linn., depth study will provide a good concrete base of all the phytochemicals functions mention above.

CONCLUSION

In the present study, we have found that most of the biologically active phytochemicals were present in the aqueous, methanol, acetone, chloroform extracts of the leaves of Coriandrum sativum Linn., showed the presence of alkaloids, amino acids, flavonoids, glycosides, phytosterols, saponins, steroids, tannins and triterpenoids. The medicinal properties of Coriandrum sativum Linn., extracts may be due to the presence of above mentioned phytochemicals. Further studies are in progress in our laboratory to isolate the active components.

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