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PHYTOCHEMICAL TEST OF ORIGANUM MAJORANA L

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Dr. Sonu Mehta SRF(Post Doctoral) MLSU, Udaipur

Dr. kusum Mittal* Asst. Prof., Govt. Meera Girls College, Udaipur*Corresponding Author

ABSTRACT

The present study was done to find out the phytochemical constituents present in the leaf powder of Marwa plant. It is a medicinal plant used in various medicines. Keeping this in mind the phytochemical analysis was done and found that flavanoids, steroids and cardiac glycosides present in methanol, ethanol and aqueous solvent while saponins and quinone were not present in any of the medium.

INTRODUCTION:

It is a bushy half hardy perennial herb that is often cultivated as an annual plant. It is about one two feet tall with descending multi branched stems that spill over to create a mound. Leaves get upto 2.5 c.m. long and have a wonderful very distinctive, perfume fragrance. The flowers are tiny, less than 3 mm long and arranged in bur like heads 1.3 cm long. Dried marjoram is extremely important in industrial food processing and is much used together with thyme in spices mixtures for the production of sausages. In recent years, interest towards the use of natural substances as an alternative of synthetic compounds that promote further studies for the use of plant resources. Herbs and essential oils used since ancient times in traditional medicine and for preserving foods provide a large number of compounds which have antifungal and antibacterial activities. Keeping in mind the medicinal qualities of marwa the phytochemical testing was done in order to find its antimicrobial activity so that it can be used for further finish.

MATERIAL AND METHODS:

1. Collection of plant source (Marwa leaves):

Marwa leaves were collected from the local houses of Udaipur city. These were washed thoroughly in order to remove the dirt and dust. Then dry in shade so that it is maintaining medicinal qualities. The dried leaves were crushed with the help of mixer grinder. This powder of marwa leaves was stored in airtight jar and used for further experiments.

2. Preparation of extract:

The experiment was done in three solvents i.e. ethanol, methanol and aqueous. 1 gm plant source was dissolved in 25 ml. solvent of 70 % concentration (ethanol and methanol) then all the three prepared solution were kept for 24 hr. at room temperature in a closed tubes. After 24 hr. centrifuge and filtered this solution using wattman filter paper then kept in an airtight bottles at 4^{0}c for further experiment. This fine powder was analyzed for the phytochemicals present in it.

3. Preliminary Phytochemical Analysis: The leaf powder of the study plant was dissolved in various solvents and the preliminary phytochemical tests were carried out.

Phytochemical screening

Alkaloids [Mayer's test]: 1.36gm of mercuric chloride dissolved in 60ml and 5gm of potassium iodide were dissolved in 10 ml of distilled water respectively. These two solvents were mixed and diluted to 100ml using distilled water. To 1ml of acidic aqueous solution of samples few drops of reagent was added. Formation of white or pale precipitate showed the presence of alkaloids.

Flavonoids: In a test tube containing 0.5ml of alcoholic extract of the samples, 5 to 10 drops of diluted HCl and small amount of Zn or Mg were added and the solution was boiled for few minutes. Appearance of reddish pink or dirty brown colour indicated the presence of flavonoids.

Glycosides: A small amount of alcoholic extract of samples was dissolved in 1ml water and then aqueous sodium hydroxide was added. Formation of a yellow colour indicated the presence of glycosides.

Steroids [Salkowski's test]: About 100mg of dried extract was dissolved in 2ml of chloroform. Sulphuric acid was carefully added to form a lower layer. A reddish brown colour at the interface was an indicative of the presence of steroidal ring.

Cardiac glycosides [Keller killiani's test] : About 100mg of extract was dissolved in 1ml of glacial acetic acid containing one drop of ferric chloride solution and 1ml of concentrated sulphuric acid was added. A brown ring obtained at the interface indicated the presence of a de oxy sugar characteristic of cardenolides.

Saponins: A drop of sodium bicarbonate was added in a test tube containing about 50ml of an aqueous extract of sample. The mixture was shaken vigorously and kept for 3min. A honey comb like froth was formed and it showed the presence of saponins.

Resins: To 2ml of chloroform or ethanolic extract 5 to 10ml of acetic anhydrite was added and dissolved by gentle heating. After cooling, 0.5ml of H_2SO_4 was added. Bright purple colour was produced. It indicated the presence of resins.

Phenols [Ferric Chloride Test]: To 1ml of alcoholic solution of sample, 2ml of distilled water followed by a few drops of 10% aqueous ferric chloride solution were added. Formation of blue or green colour indicated the presence of phenols.

Tannins [Lead acetate test]: In a test tube containing about 5ml of an aqueous extract, a few drops of 1% solution of lead acetate was added. Formation of a yellow or red precipitate indicated the presence of tannins.

Terpenoid: 2ml of chloroform and 1ml of conc. H_2SO_4 was added to 1mg of extract and observed for reddish brown colour that indicated the presence of terpenoid.

Test for Quinone: To 1ml of extract, a few drops of concentrated hydrochloric acid were added. A yellowish brown colour was observed that showed the presence of quinone.

RESULT AND DISCUSSION:

Phytochemical analysis of Origanum majorana leaves was

done on three different mediums i.e aqueous, methanol and ethanol. The screening of Alkaloids, Flavonoids, Glycosides, Steroides, Cardiac glycosides, Saponins, Phenols, Terpenoids and Quinone were shown in table-1

Phytochemicals antimicrobial activity on the leaf extracts (Table-1)

Phytochemical constituents	Aqueous	Methanol	Ethanol
Alkaloids	++	-	+
Flavonoids	+	+	+++
Glycosides	_	+	+++
Steroids	+	+++	+
Cardiac glycosides	+	+	++
Saponins	_	_	_
Phenols	_	_	+
Tannins	+	+	_
Terpenoid	_	++	_
Quinone	_	_	_

+ = present ++ = moderately present +++ =Appreciable amount

Out of 10 tested phytochemical constituent's flavanoinds, steroids and cardiac glycosides were present in all three solvents. Saponins and quinone were not found in any of the medium. Alkaloids were in aqueous and ethanol, phenols were only in ethanol, terpenoid only in methanol. Glycosides showed their presence in methanol and ethanol while tannins in aqueous and methanol.

Conclusion: Traditionally, marwa plant has been used as a folk remedy against asthma, indigestion, headaches and rheumatism it also helpful in easing sore muscles and swollen joints while stimulating peristaltic movement of the digestive system for poor apatite as well for menstrual cramps. The results of phytochemical analysis showed that flavanoinds, steroids and cardiac glycosides were present in all three solvents i.e ethanol, methanol and aqueous. Saponins and quinone does not present in any of the solvent.

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