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Peripheral Phytochemical study of Guggul and Mentha Herbal plant by Used Different many extractions solvents

Vivek Kumar Yadav [1], Dr. A. P. Singh [2]

APS University Rewa[1]

Govt. Model science college Rewa[2]

ABSTRACT

Solvents used during extraction process are reported to have an influence on nature and the number of secondary metabolites extracted from medicinal plants. Thus, the choice of proper extraction solvent is necessary for the desired pharmacological activity of these extracts. In the present study, we extracted Commiphorawightii (Guggul) and Mint (Mentha) medicinal plants, with six solvents of different polarity, i.e.soxhlation extraction process with six (Ethanol, Acetone, Dichloromethane (DCM), Dimethyl sulfide (DMS), Diethylene Glycol Monoethyl Ether (DE) and water) to obtain total extracts. In all solvents get alkaloids, glycosides, flavonoids, carbohydrates, proteins, steroids- phyto-steroids, and Terpenoids,thepresence of different Phyto-chemicals results in various treatments like cancer, diabetics, inflammations, ureic infections, etc. both plants showed active compounds in all used solvents. Must further studies should focus on the qualitative of active secondary metabolites from these extracts.

Keywords- ***Herbal plant; Guggul; Mentha; Extraction; Phytochemical's***.

1. INTRODUCTION

Today whole world most people in the world rely heavily on traditional remedies as remedies. Plants have been a chief source of medicines for thousands of years. According to the latest WHO report, more than 80% of people are completely relying on herbal medicines. Plants and their parts are also the source of much modern medicine. To a large extent, medicinal plant species are collected in the different and relatively few generations are grown commercially. The medical efficiency of many medicinal plants has been proven by many traditional reports [1-3]. medicinal plants are a good source of chemically diverse bioactive compounds.

Extraction, which is used for the separation of medicinally. Solvents used during the extraction process are reported to have an influence on the nature and number of secondary metabolites extracted from medicinal plants. solvent extraction is widely used in Its applications ranging from hydrometallurgy, e.g., reprocessing of spent nuclear fuel, to fertilizer manufacture and

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from petrochemicals to pharmaceutical products[4]. For example, polar solvents are used to extract phenolic compounds, their glycosides, saponins, and nonpolar solvents are used for the extraction of fatty acids and steroids. Many studies have reported the impact of different solvents on the content of secondary metabolites and / or their antioxidant activity [5-6]. according to a previous literature study for this study, we chose two herbal medicinal plants leaf's, which are as follows-

Commiphorawightii (Guggul) is a gum resin, historically used for antiseptic and deep penetrating action in the treatment of elevated blood cholesterol and arthritis. Guggul is effective as a weight loss and fat burning agent. It increases white blood cell count and possesses strong disinfecting properties. Used as a carrier and combined with other herbs to treat the specific conditions [7-8].

while another plant Mentha piperita (Lamiaceae), the peppermint (mint) plant is a very useful and important medicinal plant that is mainly found in North America, Asia, and Europe. Oil is extracted from the leaves of the flowering plant for which it is primarily cultivated [9]. The main uses of Peppermint oil are flavoring pharmaceuticals and oral preparations such as kinds of toothpaste, dental creams, and mouthwashes. In these phytochemical investigations of medicinal plants were done by using soxhlation extraction process with six (Ethanol, Acetone, Dichloromethane (DCM), Dimethyl sulfide (DMS), Diethylene Glycol Monoethyl Ether (DE) and water) Solvents. Thus, in this study, our main aim was to analyze the impact of extraction solvents on the Qualitative or Phytochemical screening of extracts obtained from two medicinal plant leaves. whose has active and non-active compounds details has been done in results below.

2. MARTERIALS AND METHODS:

2.1 Collection of plant materials:

Fresh plants of *R.**Guggul*** and ***Mentha*** is collected from local and botanical nursery of sidhi and rewa. The leaves were plucked individually from the stem, washed with tap water, and shade dried for 5 to 6 days. The dried samples were finely powdered using mortar and pestle.

2.2 Preparation of extract:

Dry leaves are ground into a powder with the help of a grinder. 10 g from each sample was extracted with six solvents of different polarities namely; water, EtOH, $(CH_3)_2S$, Diethylene Glycol Monoethyl Ether, acetone, and dichloromethane. The reduced extraction mixture is added to Petri plates with dry air for 2-3 days depending on the nature of the solvent extract.

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A reduced volume was collected in Eppendorf tubes for further analysis.

2.3 Phytochemical screening:

phytochemical screening of plant extract was assessed by the method as describe by [10].

Test for proteins

Crude extract when boiled with 2ml of 0.2% solution of Ninhydrin, violet colour appeared suggesting the presence of amino acids and proteins.

Test for alkaloids

Crude extract was mixed with 2ml of 1% HCl and heated gently. Mayer's And Wagner's reagents were then added to the mixture. Turbidity of the resulting precipitate was taken as evidence for the presence of alkaloids.

Test for glycosides

Keller-kilani test

Crude extract was mixed with 2ml of glacial acetic acid containing 1-2 drops of 2% solution of FeCl3. The mixture was then poured into another test tube containing 2ml of concentrated H2SO4. A brown ring at the interphase indicated the presence of cardiac glycosides.

Test for flavonoids

Alkaline reagent test

Crude extract was mixed with 2ml of 2% solution of NaOH. An intense yellow colour was formed which turned colourless on addition of few drops of diluted acid which indicated the presence of flavonoids. **Test for saponins**

Crude extract was mixed with 5ml of distilled water in a test tube and it was shaken vigorously. The formation of stable foam was taken as an indication for the presence of saponins.

Test for carbohydrates

Molisch's test

Crude extract was mixed with 2ml of Molisch's reagent and the mixture was shaken properly. After that, 2ml of concentrated H2SO4 was poured carefully along the side of the test tube. Appearance of a violet ring at the interphase indicated the presence of carbohydrate.

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Test for terpenoids

Crude extract was dissolved in 2ml of chloroform and evaporated to dryness. To this, 2ml of concentrated H2SO4 was added and heated for about 2 minutes. A grayish colour indicated the presence of terpenoids.

Test for steroid

Crude extract was mixed with 2ml of chloroform and concentrated H_2SO_4 was added sidewise. A red colour produced in the lower chloroform layer indicated the presence of steroids. Another test was performed by mixing crude extract with 2ml of chloroform. Then 2ml of each of concentrated H2SO4 and acetic acid were poured into the mixture. The development of a greenish coloration indicated the presence of steroids.

3. **RESULTS and DISCUSSION:**

This study reports the phytochemical analysis of six different solvents. Many bioactive compounds were present in both plant leaves, with higher qualitative observed in all six solvent extracts of the leaves. This means that the nutritional value of these species as a supplement cannot be ignored. Studies have reported that the found compounds hydrolysates from various sources possess antioxidant activity [11-12].

There are several biological activities that have been reported for Guggul and Mentha, among which are anti-inflammatory, anticoagulant, antibacterial, antifungal, antiviral, anticancer, antihypertensive, antitubercular, anticonvulsant, antiadipogenic. The analysis and characterization of bioactive compounds from plants are important to their medicinal value [13]. This study showed that pharmacologically active compounds such as Alkaloids, terpenoids, flavonoids, saponins, proteins, steroids, and glycosides were present in plant leaves.

in this research, Guggul and Mentha plant Saponins are most present in all solvents, while in Guggul plant alkaloids found in Acetone, DCM; Glycoside in DCM solvent; Flavonoids in DCM, DM solvent; carbohydrate in Acetone, DCM; Proteins in present in DMS, DE, and water; steroids and phyto-steroids found in Acetone; DCM; DMS and DE solvent but only Terpenoids not found only in Water. Same other Mentha plant Alkaloids found in all solvents; Glycosides present in only Acetone; Flavonoids present in ethanol, acetone and DE solvent; Saponins not found in only in acetone solvent; Carbohydrate present in all solvents; Terpenoids in acetone & DCM solvent; Proteins present in Ethanol, acetone, DMS and water; and steroids and phyto-steroids not found in only in water solvent. An interesting aspect of this study is that

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the leaves of the plant contained more active compounds than those present when six solvents were used as the extractants. This has importance in conserving the species.

Table 1: Results of preliminary phytochemical screening of six different solvent extracts from the leaves, of *Guggul* and *Mentha* plant

	Different solvent results of *Guggul* plant leaves extract						**Different solvent results of *Mentha* plant leaves extract**					
Phytochemical Test	Ethanol	Acetone	DCM	DMS	DE	H2O	Ethanol	Acetone	DCM	DMS	DE	H2O
Test of Alkaloid's	-	+	+	-	-	-	+	+	+	+	+	+
Glycosides Test	-	-	+	-	-	-	-	+	-	-	-	-
Test of Flavonoid's Alkaline Reagent	-	-	+	-	+	-	+	+	-	-	+	-
Test of Saponins	+	+	+	+	+	+	+	-	+	+	+	+
Test of Carbohydrates Molisch's	-	+	+	-	-	-	+	+	+	+	+	+
Terpenoids	+	+	+	+	+	-	-	+	+	-	-	-
Test of Protein's	-	-	-	+	+	+	+	+	-	+	-	+
Test of steroids and phyto-steroids	-	+	+	+	-	-	+	+	+	+	+	-

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Many medicinal plants are being overexploited and are in danger of becoming extinct [14]. Since most of the bioactive compounds are present in the leaves of both plants, it is, therefore, possible to harvest the leaves while leaving the other parts, intact to regenerate themselves. In his study, the six solvents showed Soxhlet extraction of compounds not only within the same solvent but also in the different solvents of the plant leaves. The important lesson from this study is that a single solvent may not necessarily extract all the useful bioactive compounds from a plant. Several solvents may have to be used to obtain the best of specific compounds. This study present that the Guggul and Mentha plant the qualitative screening showed in all solvents.

4. CONCLUSION:

This study tries to focus on the effects of solvents on the Qualitative screening, for two plants (*Guggul* and *Mentha*). The results concluded by using soxhlation extraction process with six solvents which were - Ethanol, Acetone, DCM, DMS, DE, and water Solvents. were found to be rich in compounds in all solvents hence the important thing is that in all six solvents it was done using the soxhlet extraction method.Whichwill contribute to the observed high antioxidant activity and all other activity in future research.

but in all solvents found compounds will show different activity results because used solvents are manufactured from different chemicals and nature. Our finding provides scientific evidence for the traditional uses of these medicinal plants. Potent extracts can be the lead for the development of plant leaves-based therapeutic agents, functional foods, and cosmeceuticals.

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