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Research Article

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Screening for Phytochemical Constituents of Selected Medicinal Plants from Al-Khums Region, Libya

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Abstract

The massive majority of conventionally charity medicinal plants have hitherto to be sufficiently assessed. This study search for to sights the traditional medicinal of selected plants (Coriandrum sativum, Ocimum basilicum L and Petroselinum sativum Hoffm) used by the Libyan for therapeutic efforts with the aim of identifying the prominent medicinal plants and their uses for phytochemical research. The extraction methods used to aim to imitative as carefully as potential the traditional methods to produce as carefully as conceivable the traditional 'herbal' drug consequently to reservation potential energetic constituents of the plant part. The selection of solvent system largely rest on the precise environment of the bioactive compound being embattled and this similarly affects the procedures of decontamination to be used.Quantitative percentage yield of phytochemical components of selected plants leaves were for ethanolic extracts of Coriandrum sativum contained highest percentage yield 95 %, while Petroselinum sativum Hoffm and Ocimum basilicum L contained 90 and 86 % respectively, and for aqueous extracts of Coriandrum sativum, Ocimum basilicum L and Petroselinum sativum Hoffm 91, 83and 86 correspondingly. Whereas the Quantitative estimation of percent crude chemical constituents in these plants evaluations for Petroselinum sativum Hoffm highest percentage of crude flavonoids 36%, though, Ocimum basilicum L the lowest yield of flavonoids 9% and for the Coriandrum sativum 12%. In addition, the highest yield of Petroselinum sativum Hoffm was found to contain highest yields of alkaloids that are 8 %, and for each, the lowest yield was found in both of Coriandrum sativum and Ocimum basilicum L otherplants4% for each. Saponins were as well attained from the yield noted were highest alternating from 24% in the Coriandrum sativum, 20 % in the Ocimum basilicum L and to the lowest 16 % in the Petroselinum sativum Hoffm.

Keywords: Traditional Medicinal Plants, Phytochemicals and Healthiness care Requirements

Introduction

Several of herbal medications employed in various medicinal systems for the treatment and organization of different illnesses, while herbal medicines had the major provenance of essential health care in many nations. Medicinal plants are used to endure well natural life and inhibit illnesses owing to the existence of several bioactive compounds. Conventional medications avail as a source of new pharmaceutical, healthiness maintenance product and alternative medicine [1]. Whereas "*Coriandrum sativum*" (Coriander) is indigenously distributed in Libya too, but is widely cultivated in Mediterranean Countries, Central and Eastern Europe, China and India.A leaf of "*Coriandrum sativum*" is used as a refreshing and fresh juice of the leaves is used as a mouthwash in painful throat and stomatitis. The paste is prepared by pounding green leaves with barley flour. Inaddition, the paste is utilized over boils and swellings; furthermore over cervical adenitis. Moreover, fresh juice of the leaves, mixed with sugar, is given in biliousness, nausea and intestinal irritations [2-4]. "*Ocimum basilicum L*" is an annual herb which cultivates in more than a few regions around Libya. By tradition were utilized in food as medical industries and in flavouring agent [5]. The leaves and flowering tops of the plant are perceived as astomachic, galactagogue and antispasmodic in traditional remedy [6]. Nevertheless, in recent times the probable usages of *O. basilicum*essential oil, mainly as antioxidant agents and antimicrobial [7-9]. Nevertheless, "*Petroselinum sativum Hoffm*" (Parsley) one of the essential food a long history of usage as significant ingredients that can decrease nutrition decay and regulator in contradiction of the growth of food-borne such as a bacterium, virus or another microorganism that can cause disease. Parsley (*Petroselinum sativum Hoffm*) perpetual herb species from the genus *Petroselinum* of the family *Apiaceae*, is frequently used likewise part of the food. Parsley is specified to have antispasmodic, diuretic, anti-rheumatic, expectorant, and antimicrobial properties. Traditionally, it had used for affected indigestion, cystitis, colic, dysuria, bronchitis cough in the ageing, myalgia, dysmenorrhea, and

functional amenorrhea. Also, their extracts lower the blood pressure of animal experimented and reduction respiratory movements in anaesthetized of the animal experimented [10-12]. The admitted details on traditional medicinal plants in the Libyan societies are unclear and incomplete to insufficient plant species and consequently, very slight research has been done on these medicinal plants. This enhances the engagement between traditional medicine and recent medicine in that little is known about traditional medicine and thus cannot help additional modern medicine to overcome its limits. And the main objective of this study is to recognize some relevant traditional medicinal plants used by the Libyan community and found the phytochemicals within these medicinal plants.

Materials and Methods

Collection of Plants materials

Coriandrum sativum, *Ocimum basilicum L* and *Petroselinum sativumHoffm*" were collected from different parts of the Al-khums region (Libya) in Marsh-April months of 2016. Identification of both these plants prepared by soaking 20 g dry powdered plant material in 500 mL of appropriate solvent at room temperature for 72 hour. The extracts were filtered through a Whatman No. 42 (125 mm) filter paper, concentrated using a rotary evaporator and were dried at 50 °C to the constant mass [13].

Qualitative Screening

Chemical tests were performed for the aqueous and ethanolic leaves extracts of all plants using standard procedures to identify the presence of various phytochemicals [14-23].

Test for Tannins

Ferric Chloride Test: Some amount of extract was dissolved in distilled water to this solution 2ml of 5% ferric chloride solution was added. Formation of blue-green indicates the presence of tannins.

Lead Acetate Test: Some amount of extract a few drops of lead acetate solution was added. Formation of precipitate indicates the presence of tannins.

Test for Flavonoids

Shinoda Test: (Magnesium hydrochloride reduction test): To the test, solution add few fragments of magnesium ribbon and concentrated hydrochloric acid dropwise, pink scarlet; colour appears after few minutes indicating the presence of flavonoids.

Ferric Chloride Test

In the test solution, add few drops of ferric chloride solution, the intense green colour was formed to show the presence of flavonoids.

Test for Saponin

Foam test: The extract was diluted with distilled water and shaken in agraduated cylinder for fifteen minutes. The formation of alayer of foam indicates the presence of saponins.

Test for Alkaloids

A few drops of 2N hydrochloric acid was added to 2 ml of the ethanolic extract and heated in a water bath (50 °C). The solution was filtered and Wagner's reagent added to the filtrate. The formation of a red colour precipitate indicates the presence of alkaloids.

Test for Glycoside

Keller-Killani Test: To 2 ml of the test solution, 3 ml of glacial acetic acid and 1 drop of 5% ferric chloride was added to a test tube. Add carefully 0.5 ml of concentrated sulphuric acid by the side of the test tube. Formation of blue colour in the acetic acid layer indicates the presence of Cardiac Glycosides.

Borntrager's Test: To 3 ml of the test solution, dilute Sulphuric acid was added, boiled for 5 minutes and filtered. In the cold filtrate, an equal volume of benzene was added and shake it well. The organic solvent layer was separated and ammonia was added to it. Formation of pink to red colour in ammoniacal layer indicates the presence of Anthraquinones Glycoside.

Test for Steroids

2 ml of acetic anhydride was added to 0.5 g of an ethanolic extract of each sample with 2ml of H_2SO_4. The colour change from violet to blue or green indicated the presence of steroids.

Test for Terpenoids

5ml of each extract was added to 2ml of chloroform and 3ml of con.H_2SO_4 to form a monolayer of reddish-browncolouration of the interface was showed to form positive result for the terpenoids.

Test for Phenols

Two (2) ml extract was taken into water and warmed at 45-50 ^{0}C. Then 2 ml of 3% $FeCl_3$was added. Formation of green or blue colour will indicate the presence of phenols.

Test for Carbohydrate

Molisch's Test: Treat the 2 ml of test solution with few drops alcoholic α-naphthol solution in a test tube and the1 ml of concentrated sulphuric acid was added carefully along with aside of the test tube. Formation of the vitrioled ring at the junction indicates the presence of carbohydrates.

Fehling's Test: Equal volume of Fehling solution A and Fehling solution B are mixed and few drops of the sample are added and boiled, a brick red precipitate indicatesthe presence of reducing sugar.

Test for Anthraquinones

About 0.5 g of each extract was boiled with 10 % HCl for few minutes in water bath, filtered and allowed to cool. An equal volume of CH_3Cl was added to the filtrates. Few drops of 10% ammonia were added to the mixtures and heated. Formation of rose-pink colour indicated the presence of Anthraquinones.

Test for Phlobatanins

The extracts (0.5 g) were dissolved in distilled water and filtered. The filtrate was boiled with 2% HCl solution. Red precipitate shows the presence of phlobatanins.

Quantitative Screening

Flavonoids, Saponins and Alkaloidwere quantitatively determined. The percentage yields and quantitatively determined Flavonoids, Saponins and Alkaloid of were considered according to following: [16,18,24]

$$\text{Percent Yield \%} = \frac{\text{Final Weight of Extract}}{\text{Total Weight of Ground Plant}} \times 100 \quad (1)$$

Determination of Saponin

The samples were pulverized and 10 g of each were invested in a conical flask and 50 ml of 20% aqueous ethanol were added. The samples were heated over a hot water bath for 4 h with continuous stirring at about 55°C. The mixture was filtered and the residue re-extracted with another 100 ml 20% ethanol. The combined extracts were reduced to 20 ml over awater bath at about 90°C. The concentrate was transferred to a 150 ml separatory funnel and 10 ml of diethyl ether was added and shaken vigorously. The aqueous layer was recovered while the ether layer was discarded. The purification process was repeated and 30 ml of n-butanol was added. The combined n-butanol extracts were washed twice with 5 ml of 5% aqueous sodium chloride. The remaining solution was heated in a water bath. After evaporation the samples were dried in the oven to a constant weight; the Saponin content was calculated as a percentage.

Determination of Flavonoids

20 g of the plant sample was extracted repeatedly with 200 ml of 80% aqueous methanol at room temperature. The whole solution was filtered through Whatman filter paper No 42 (125 mm). The filtrate was later transferred into a crucible and evaporated into dryness over a water bath and weighed to a constant weight.

Determination of Alkaloids

10 g of the sample was weighed into a 500 ml beaker and 400 ml of 10% acetic acid in ethanol was added and covered and allowed to stand for 4 h. This was filtered and the extract was concentrated in a water bath to one-quarter of the original volume, concentrated ammonium hydroxide was added dropwise to the extract until the precipitation was complete. The whole solution was allowed to settle and the precipitated was collected and washed with dilute ammonium hydroxide and then filtered. The residue is the alkaloid, which was dried and weighed.

Result and Discussion

Table 1: Quantitative (percent) phytochemical components of *Coriandrum sativum, Ocimum basilicum L* and *Petroselinum sativum Hoffm* Leaves

Plants Name	Percentage Yield (%)		Percentage Yield (%)	Alkaloids (%)	Saponin (%)
	Aqus Extr.	EtOH. Extr.			
Coriandrum sativum	91	95	12	4	24
Ocimum basilicum L	83	86	9	4	20
Petroselinum sativum Hoffm	86	90	36	8	16

Quantitative evaluation of percentages crude chemical components in *Coriandrum sativum*, *Ocimum basilicum L* and *Petroselinum sativumHoffm* determined as showed in Table 1. The *Coriandrum sativum* contained highest percentage yield in ethanolic extracts 95 %, *Ocimum basilicum L* contained the lowest yield 86%, while*Petroselinum sativum Hoffm* contained 90% respectively, whereas the highest quantitative estimation of percent crude chemical constituents in aqueous extracts of *Coriandrum sativum* 91%, and for each of *Ocimum basilicum L* and *Petroselinum sativum Hoffm* 83and 86% correspondingly. The plants evaluations had given also in table 1 highest percentage of flavonoids in *Petroselinum sativum Hoffm* were 36%, and for *Ocimum basilicum* L the lowest yield of flavonoids 9%, but the highest yield of alkaloids in *Petroselinum sativum Hoffm* were found to contain highest yields 8%, and the lowest yield was found in otherplants4% for each.Saponins were as wellattained from the yieldnoted were highest alternating from24% in the *Coriandrum sativum*, 20 % in the *Ocimum basilicum L* and to the lowest was16% in the *Petroselinum sativum Hoffm.*

Table 2: Qualitative phytochemical components of *Coriandrum sativum, Ocimum basilicum L* and *Petroselinum sativum Hoffm* Leaves

Plants Name	Coriandrum sativum		Ocimum basilicum L		Petroselinum sativum Hoffm	
Chemical Constituents	Aqus. Extr.	EtOH Extr.	Aqus. Extr.	EtOH Extr.	Aqus. Extr.	EtOH Extr.
Flavonoids	+	+	+	+	+	+
Phenols	+	+	+	+	+	+
Tannins	+	+	+	+	+	+
Phlobatanins	-	-	+	-	-	-
Saponins	+	+	+	+	+	+
Steroids	+	+	+	-	+	+
Terpenoids	-	+	-	+	-	+
Anthraquinons	-	-	-	-	-	-
Glycosides	-	-	+	+	-	-
Alkaloids	+	+	+	+	+	+
Carbohydrate	+	+	+	+	+	+

Phytochemical screening showed that the leaves of *Coriandrum sativum, Ocimum basilicum L* and *Petroselinum sativumHoffm*Leaves were rich in chemical constituents. Flavonoids, Phenols, Tannins, Saponins, Steroids Alkaloids, were recognized in this study. While each of constituent's phlobatanins, Glycosides and terpenoids none rich and in contrary Anthraquinones definitely not present. Consequently, these values were well-known for several years to reveal biological activity, such as effects on microbes, and numerous diseases such as anthelmintic activity and antitumor. Furthermore, such these and other chemical componentssimilar totriterpenoids, saponins, sterols and cardiac glycosides which may have an action of compounds which present in the extracts indicates that the extracts from these plants may obligate the potential of determining the problem of multi-drug resistance. Therefore, the presence of these secondary compounds verifies the use of the plants as herbal drugs. Also, the steroidal compounds are known to act like hormones, and from the phytochemical screening presence of such compound in the extracts from these plants are encourage traditionally used to recover lactation; perhaps steroids do this by acting like the hormones in control for lactation [18]. Some constituents were found in the ethanolic extracts slight bet more than in the aqueous extracts. This is because ethanol is much polar than aqueous henceforth extracting several of the active components [13]. Green leaves of *Coriandrum sativum* is utilized as a refrigerant and for preparing fresh juice for used as a gargle in a sore throat and stomatitis. Also, used as a domestic treatment were prepared paste is applied over boils, over cervical adenitis, headache, as a cooling effect on the mind and for including rest and sleep, in addition, the fresh juice of the leaves given in heartburn, biliousness, intestinal irritations, nausea and thirst [13,25-27]. *Ocimum basilicum L* is used for the treatment of inflammatory disorders in traditional medicine,and its ethanol extract includes high amounts of flavonoids and polyphenols which may well reduce oxidative tension and inflammatory reactions generated by reactive oxygen species [28]. *Petroselinum sativum Hoffm* is an important medicinal plant may be for that reason why used traditionally in Libya against many diseases such as against kidney stones. Actually, the high quantities of chemical ingredients in these plants make them an attractive variety from the treating and economic point of view.

Conclusion

There is a need for isolation of the pharmacologically active compounds for its medicinal uses. Due to the high growth rate, these plants species is said to be economically valuable and can provide the benefit to the humanities.

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