

**Research Article****Screening and Quantitative Analysis of Phytochemicals from Three Selected Medicinal Plants**Allah Bux Ghanghro\*<sup>1</sup>, Abdul Hameed Lanjwani<sup>1</sup>, Irshad Hussain Ghanghro<sup>2</sup>, Taj Muhammad Jahangir Khuhawar<sup>4</sup><sup>1</sup> Institute of Biochemistry, University of Sindh Jamshoro, Sindh, Pakistan<sup>2</sup> water testing & surveillance laboratory Liaquat University of Medical & Health Sciences (LUMHS) Jamshoro, Sindh, Pakistan<sup>4</sup> Institute for advanced Research Studies in Chemical Sciences, University of Sindh Jamshoro Sindh, Pakistan**ARTICLE INFO:****Article history:**

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**ABSTRACT**

Three Medicinal plant *Iphiona aucheri* (Boiss.) Anderb, *Chlorophytum Macrophyllum* (A. Rich.) Asch. and *Althaea rosea* (Linn) were used for this study. These are most important medicinal plants. Keeping in view their importance, this research was carried out to investigate the phytochemicals from three selected medicinal plants. The samples were extracted in methanol, ethanol, chloroform, and water. It was observed that Photochemical such as phenolic compounds, flavonoids, tannins, glycosides, carbohydrates, proteins and amino acids were found present and alkaloids were absent in these three plants. The quantitative estimation of phytochemicals total protein, carbohydrates, phenolic compounds was determined in the plant using standard method. Such types of studies have an important role, to provide a scientific data for pharmaceutical industries and in particular for the local practioners as well as for the common people using these medicinal plants for body disorders.

**1. Introduction**

Medicinal plants are the richest source of raw materials for synthesis of traditional as well as modern medicine in all over the world. But unfortunately still their scientific role has not been identified in the large number of medicinal plants[1]. The knowledge of medicinal plants has been possessing from generation to generation by ancient people and new knowledge added to it by the next generation. Gradually, a group of people have been trying continuously by each generation to collecting medicinal plants and using them for treatment of various types of diseases but unfortunately many of them had not been explored scientifically. Disease is controlled by pharmaco therapy. It is observed that the many phyto constituents present in plant which have most essential because most drugs have been synthesized[2]. Such as Phytochemicals are plant-derived chemical constitutes which are not essential nutrients but have important properties such as, protective or preventive diseases properties[3]. Phytochemicals are antioxidant[4], antibacterial antifungal[5,6], anti-inflammatory, antidiabetic[7,8]. The people still has been facing the problem that few drugs are scarce, expensive for common man so that study of medicinal plants are most important, scientifically and identification of these plants for treatment of various types of disease. It is possible solution to increase formation of less costly and effective plants derived drugs from plants materials[9].

**2. Material & Method****2.1 Collection, identifications and Sample preparation of plants**

Corresponding Author: Prof. Allah Bux Ghanghro, Professor, Institute of Biochemistry, University of Sindh, Jamshoro ; E-mail: [allah.bux@usindh.edu.pk](mailto:allah.bux@usindh.edu.pk)

All medicinal plants were collected from Hamal Lake and its adjoining areas of District Qamber/Shahdadkot, Sindh Pakistan. Plants were identified from the Institute of Plants Science, University of Sindh Jamshoro Pakistan. Fresh leaves and some whole plants were collected and the collected plant materials were deposited in Nutrition and Food Technology Research Laboratory in Institute of Biochemistry University of Sindh Plants were washed with distilled water and dried under shade for about 15 days and made to a fine powder using a pestle and mortar and stored in an airtight plastic bag. These powdered materials were used for further phytochemical analysis.

**2.2 Preparation of extract**

10 g of each of the plant powdered samples were dissolved separately in 100 ml of ethanol, methanol, chloroform and aqueous in different conical flasks and kept on shaking bath at room temperature for 24 hours and then filtered through muslin cloth and centrifuged at 6000 rpm for 20 minutes. Supernatant was collected and kept in oven at 40 °C for four hours. The remaining solution was stored in refrigerator for further phytochemical screening.

**2.3 Screening and quantitative analysis of Phytochemicals**

Phytochemical screening total carbohydrates by enthrone method[10], Total protein by Lowry's method[11], Total Phenolic compounds by Folin–Ciocalteu reagent method[12].

## 3. Results

**Table 1:** Screening of phytochemical from *Iphiona aucheri* (Boiss.) Anderb.

Botanical Name of the Plant		<i>Iphiona aucheri</i> (Boiss.) Anderb (Parts mixed ) leaves, stem & roots			
S. No.	Test	Extracts			
		Aqueous	Ethanol	Methanol	Chloroform
1.	Alkaloids				
	Mayer's test	-	-	-	-
	Wagner's test	-	-	-	-
	Dragendorff's test	-	-	-	-
2.	Hager's test	-	-	-	-
	Phenolic compounds and tannins				
	Ferric chlorides test	+	+	+	-
	Lead acetate test	+	+	+	-
3.	Flavonoids				
	Alkaline reagent test	-	+	+	-
	Shinoda test	-	+	+	-
4.	Saponins				
	Foam test	+	+	+	+
5.	Protein and amino acids				
	Ninhydrin test	+	-	-	-
	Biuret test	+	+	+	+
	Millon's test	+	+	+	+
6.	Carbohydrates				
	Molisch's test	+	+	+	+
	Benedict's test	+	+	+	+
	Fehling test	+	+	+	+
7.	Glycosides				
	Legal's test	+	+	+	+
	Kellar killani test	+	+	+	+

**Table 2:** Screening of Phytochemical from *Chlorophytum Macrophyllum* (A. Rich.) Asch.

Botanical Name of the Plant		<i>Chlorophytum Macrophyllum</i> (A.Rich.) Asch. (leaves)			
S. No.	Test	Extracts			
		Aqueous	Ethanol	Methanol	Chloroform
1.	Alkaloids				
	Mayer's test	-	-	-	-
	Wagner's test	-	-	-	-
	Dragendorff's test	-	-	-	-
2.	Hager's test	-	-	-	-
	Phenolic compounds and tannins				
	Ferric chlorides test	+	+	+	-
	Lead acetate test	+	+	+	-
3.	Flavonoids				
	Alkaline reagent test	+	+	+	-
	Shinoda test	+	+	+	-
4.	Saponins				
	Foam test	+	+	+	+
5.	Protein and amino acids				
	Ninhydrin test	+	-	-	-
	Biuret test	+	+	+	+
	Millon's test	+	+	+	+
6.	Carbohydrates				
	Molisch's test	+	+	+	+
	Benedict's test	+	+	+	+
	Fehling test	+	+	+	+
7.	Glycosides				
	Legal's test	+	+	+	+
	Kellar killani test	+	+	+	+

**Table 3:** Screening of phytochemical from *Althaea rosea* (Linn.)

Botanical Name of the Plant		<i>Chlorophytum Macrophyllum</i> (A.Rich.) Asch. (leaves)			
S.No.	Test	Extracts			
		Aqueous	Ethanol	Methanol	Chloroform
1.	Alkaloids				
	Mayer's test	-	-	-	-
	Wagner's test	-	-	-	-
	Dragendorff's test	-	-	-	-
	Hager's test				
2.	Phenolic compounds and tannins				
	Ferric chlorides test	+	+	+	-
	Lead acetate test	+	+	+	-
3.	Flavonoids				
	Alkaline reagent test	+	+	+	-
	Shinoda test	+	+	+	-
4.	Saponins				
	Foam test	+	+	+	+
5.	Protein and amino acids				
	Ninhydrin test	+	-	-	-
	Biuret test	+	+	+	+
	Millon's test	+	+	+	+
6.	Carbohydrates				
	Molisch's test	+	+	+	+
	Benedict's test	+	+	+	+
	Fehling test	+	+	+	+
7.	Glycosides				
	Legal's test	+	+	+	-
	Kellar killani test	+	+	+	-

**Table 4:** Quantitative estimation of phytochemical from three medicinal plants

Botanical name of plants	Total Protein (%)	Total Carbohydrate (%)	Total Phenolic compound (%)
<i>Iphiona aucheri</i> (Boiss.) Anderb	3.9	18.0	0.8
<i>Chlorophytum Macrophyllum</i> (A.Rich.)	4.0	9.6	1.0
<i>Althaea rosea</i> (Linn)	8.4	8.4	0.3

#### 4. Discussion

The medicinal plants *Iphiona aucheri*, *Chlorophytum macrophyllum* and *Althaea rosea* belonging to the different families were collected and extracted with ethanol, methanol, water and chloroform and extracts were used for screening of various medicinally active phytochemicals. The various plants extracts were subjected to phytochemical screening which reveals the presence of phytochemicals. Aqueous extract shows presence of phenolic compounds, flavonoids, tannins, saponins, glycosides, carbohydrates, amino acids and protein and alkaloids and absence of alkaloids. Ethanolic and methanolic extract shows presence of phenolic compounds, flavonoids, tannins, saponins, glycosides, carbohydrates and protein and alkaloids and absence of alkaloids and amino acids. Chloroform extract shows presence of saponins, carbohydrates and protein and absence of alkaloids, phenolic compounds, flavonoids, tannins, glycosides, and amino acids. The major

phytochemicals are present in water extract; therefore, the water extract is showing better results compared to other extracts. The results are shown in Tables 1-3.

It was observed that protein was present in all plants investigated in this study. The maximum protein concentration was determined in *Althaea rosea* (8.0%) and minimum 3.9% in *Iphiona aucheri*. Total carbohydrate was determined from the selected medicinal plant materials and it was found that the highest percentage of carbohydrate (18.0%) was present in *Iphiona aucheri* and lowest (8.4%) in the *Althaea rosea*. It is observed that phenolic compounds were present in all these plants and recorded as maximum 1% in *Chlorophytum Macrophyllum* and the minimum 0.3% in the *Althaea rosea* (Table 4). Phenolic compounds are useful as antioxidants, treatment of different diseases and also formation of some antimicrobial compounds such as salicylic acid and cresol.

## 5. Conclusion

The medicinal plants are richest sources of phytochemicals which are widely used in formation of traditional medicine for treatment of various types of diseases. The present study observed that phytochemicals could be extracted by different solvent selectively by applying the fundamental concept of acid-base reaction. Plants derived products are considered key role in formation synthetic product. They indicate also that not valuable drugs are formed in industries by chemical synthetic reactions but can also form from natural sources.

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