

## Extraction of trace minerals from some important medicinal plants growing in District of Kamber/Shahdadt, Sind, Pakistan

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**Objective:** To determine the medicinal properties of three selected plants found in our area.

**Methodology:** Three medicinal plants were collected belonging to different families. Physico-chemical parameters and some selected minerals were quantitatively estimated by standard methods.

**Results:** Na, K, Ca, Mg, Fe, Ni, and Al were present in the *Chlorophytum Macrophyllum* (A. Rich) and *Althaea rosea* (Linn) Cav and without Al

all above-mentioned minerals were also present in *Iphiona aucheri* (Boiss.)Anderb.

**Conclusion:** *Chlorophytum Macrophyllum* (A. Rich) and *Althaea rosea* (Linn) Cav were medicinal plants, which had most valuable and rich source of minerals. The scientific findings may be useful and beneficial for human health. (Rawal Med J 201;41:360-362)

**Key Words:** Trace minerals, medicinal plants, biochemical properties.

### INTRODUCTION

It was acknowledged that pharmaceutical studies are most important because of medicinal plants having valuable sources of bioactive chemicals.<sup>1</sup> Medicinal plants have been used as a source for the treatment of various types of diseases since long. More recently, medicinal plants have been receiving attention because of their importance to protect the communities from various ailments. Phytochemicals are secondary metabolites present in the medicinal plants, which have curative medicinal properties.<sup>2,3</sup> Many Medicinal plant extracts possess antimicrobial properties.<sup>4</sup> In the present study, the physico-chemical parameters and some selected minerals were estimated quantitatively in three plants found in our area (Fig. 1).

Fig. 1. Three plants essayed in the study.



Iphiona aucheri (Boiss.), Chlorophytum

Macrophyllum Althaea rosea(Linn) Cav. Anderb. (A.Rich.)Asch.

### METHODOLOGY

**Collection, identifications and Sample preparation of plants:** All plants were collected from Taluka District Kamber/Shahdadt, Sindh Pakistan, identified from the Institute of Plants Science, University of Sindh, Jamshoro. Fresh leaves and some whole plants (Table 1) were collected and deposited in Nutrition and Food Technology Research Laboratory, Institute of Biochemistry University of Sindh. Plant materials were washed with distilled water and dried under shade for about 15 days and made to a fine powder using a pestle mortar and stored in an airtight plastic bag. Powdered materials were used for further minerals analysis.

**Sample preparation for metal by Wet acid digestion method:** 0.5 g of powdered plant sample was placed in conical flask and 5 ml HNO<sub>3</sub> concentrated was added, heated on a hot plate by covering with watch glass, digested until they become clear semisolid solution. Again 5 ml HNO<sub>3</sub> was added and repeated at least four times. 2 ml of H<sub>2</sub>O<sub>2</sub> was added to the digestion mixture and the contents were heated again until clear and

transparent solution was obtained, filtered through Whatman No. 42 filter paper and the final volume was made up to 25 ml in the volumetric flask with deionized water.<sup>5</sup> Sample was analyzed by Atomic Absorption Spectrophotometer (Perkin Elmer AA Analyst 800) (16).

## RESULTS

Sodium was determined between the range (37.8-365.75mg/Kg) while maximum concentration was recorded in *Chlorophytum Macrophyllum* (A. Rich.). The results also revealed that maximum concentration of Potassium was found in *Althaea rosea* (Linn) Cav. (leaves) as shown Table 2.

**Table 1. Physicochemical analysis from three selected plants.**

Botanical Name Medicinal Plants	Part used	Total Moisture (%)	Total Ash (%)
<i>Iphiona aucheri</i> (Boiss.) Anderb.	Mixture used (Leaves, stem and roots)	70.2	15.0
<i>Chlorophytum Macrophyllum</i> (A.Rich.)	(Leaves)	73.7	20.3
<i>Althaea rosea</i> (Linn) Cav	(Leaves)	67.6	10.0

**Table 2. Minerals analysis from three selected plants.**

Botanical Name of Medicinal Plants	Na Mean	K Mean	Ca Mean	Mg Mean	Fe Mean	Ni Mean	Al Mean
<i>Iphiona aucheri</i> (Boiss.) Anderb. Mixture used (Leaves, stem and roots)	37.8	16.0	323.0	40.5	7.1	1.3	0.0
<i>Chlorophytum Macrophyllum</i> (A.Rich.) (Leaves)	365.8	139.0	489.8	298.5	15.7	1.4	5.1
<i>Althaea rosea</i> (Linn) Cav. (Leaves)	80.8	178.0	670.0	131.5	38.7	1.2	5.7

Concentration of Calcium was recorded in range of 323.0- 670.0 mg/Kg, while maximum concentration was observed in *Althaea rosea* (Linn) Cav. (leaves). Maximum concentration of Magnesium and Iron

were also found in *Althaea rosea* (Linn) Cav. (leaves).

## DISCUSSION

These plants were rich in sodium, which can be used for hypotension, hair loss, fatigue, muscle cramps and dehydration.<sup>6</sup> The higher concentration of sodium in plants has not been recognised, however, 1500 to 2300 mg of sodium intake per day has been recommended.<sup>7</sup> As a macronutrient, potassium (K) is regarded very important in regulation of intercellular activity among living organisms. It is also involved in the regulation of membrane signal transduction, hormone release, insulin secretion and also regulates immunity.<sup>8</sup>

Calcium has an essential role in the absorption of vitamins such as dietary vitamin B. It helps in the formation of the acetylcholine, which is cofactor for the pancreatic lipase activation and also regulates the activity of skeletal muscle, nerves health, heart, and may prevents osteomalacia, rickets and scurvy.<sup>9</sup> Magnesium is an essential component of bones, enzyme cofactors, kinases and have many more health benefits.<sup>10</sup> The recommended dose of Iron is 20 mg/day in the adult and 10 mg/day in the children. Iron (Fe) is the most abundant essential trace element of human body tissues and is required in an optimal concentration for the survival of plants, animals and microorganisms.<sup>11</sup>

Nickel and aluminum were also present in three medicinal plants. Nickel plays important role in pancreas and help in secretion of insulin. Deficiency of nickel can lead to liver disease.<sup>12</sup> The nickel daily intake requirement is less than 1mg/day and more than this level the nickel consumption is toxic.<sup>13</sup> Aluminium is abundant mineral source, contributing 8 percent of earth crust. Drinking water, food additives, tobacco smoke, automobile exhaust, nasal sprays, astringents antiperspirants, use of aluminium foil, aluminium cook ware, and cans are the sources through which aluminium finds its way into human body.<sup>14</sup>

## CONCLUSION

Three plants showed variable contents of different minerals. This finding is most valuable because of

medicinal plants are rich in minerals can be helpful for therapeutic and pharmaceutical application.

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