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## Biochemical Studies and Trace Elements Profiles of *Cymbopogon Jwarancusa*

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**Abstract:** This research paper reports the biochemical analysis and trace element analysis of *Cymbopogon jwarancusa*. Biochemical studies indicated that moisture contents, 67.02%; ash contents, 9.52%; carbohydrates, 1.8%; reducing sugar, 1.07%; non reducing sugar, 0.80%; nitrogen, 0.67%; crude proteins, 5.02%; crude fiber, 9.50%. The seed of *Cymbopogon jwarancusa* was used to extract oil, (yield of oil was 2%). Extracted oil indicated acid value, 7.32%; iodine value, 1.6%; saponification value, 155.25%; peroxide value, 18.2%; refractive index, 1.432 and pH of extracted oil was 4.45. Trace element analysis showed sodium (Na<sup>+</sup>) 0.60%, potassium (K<sup>+</sup>) 0.20%, lithium (Li<sup>+</sup>) below detection limit, nickel (Ni<sup>++</sup>) 0.21%, lead (Pb<sup>++</sup>) 0.34%, cadmium (Cd<sup>++</sup>) 0.12%, zinc (Zn<sup>++</sup>) 0.98%, copper (Cu<sup>++</sup>) 0.10%, manganese (Mn<sup>++</sup>) 1.25%, iron (Fe<sup>++</sup>) 1.37% and cobalt (Co<sup>++</sup>) 0.31%, were determined.

**Key words:** *Cymbopogon jwarancusa*, biochemical analysis, trace element analysis

### Introduction

Plants play an important role in our life. Plants not only provide us nutrition but also they have medicinal values. A large number of herbs, shrubs and plants which are grown in Cholistan (Bahawalpur) are used for treatment of various diseases by Hakims. For example *Cymbopogon jwarancusa* plant is useful in diseases of Blood, Skin, Vomiting, Abdominal Tumors, Unconsciousness and Fever (Kirtikar and Basu, 1982). Medicinal properties have been attributed to a large variety of plants (Nadkarni, 1976; Chopra *et al.*, 1956.)

Several studies have been carried out on the biochemical and trace elements analysis of desert plants (Iqbal *et al.*, 1981; Gul-e-Rana *et al.*, 1990. Rashid, 1994; Rashid *et al.*, 1999). Keeping in view, the medicinal importance of the plant, the present study was designed to investigate the chemical composition as well as to explore the trace elements analysis of *Cymbopogon jwarancusa* which is commonly known as Khavi.

### Materials and Methods

Whole plant was washed and dried in shade. The dried sample was then ground, powder sample was used for analysis as described in AOAC (1984). Oil was extracted from seeds by using a Soxhlet apparatus. Analysis of oil was performed as in (AOAC, 1984). Trace elements were determined according to Sondhi *et al.* (1995). Flame Photometer (Corning model 401, USA) was used for Na<sup>+</sup>, K<sup>+</sup> and Li<sup>+</sup> estimation. Trace elements were determined on Atomic Absorption Spectrophotometer (Varian AA 1775; USA); pH meter used Eil 7045 (digital) and Refractometer was Abbe Refractometer Y171 (digital).

### Results and Discussion

The literature survey showed that in the past all research work on various species of *Cymbopogon* has been carried out as a botanical point of view. No attention has been given to chemical analysis as well as trace element analysis of the plant.

The biochemical and chemical analysis of oil, the various parameters are summarized in Table 1. Moisture contents 67.02%, ash contents 9.52%, carbohydrates 1.8%, reducing sugar 1.07%, non-reducing sugar 0.80%, nitrogen 0.67%, crude proteins 5.02%, crude fiber 9.50%. The seed of *Cymbopogon jwarancusa* was used to extract. The yield of oil was 2.00%; extracted oil showed acid value 7.32%; iodine value 1.6%; saponification value 155.25%; peroxide value 18.2%; refractive index 1.432 and pH of extracted oil 4.45.

The findings are in agreement with the results reported for other desert plants (Rashid *et al.*, 1999) for example 0.71% carbohydrates, 6.25% reducing and 0.46% non-reducing, 8% ash contents have been reported in *Fogonia arabiea* (Akbar, 1994). It was found that factors which regulate the growth of plants are dependent on a number of biochemical processes involving inorganic elements present in the soil. Trace

quantities of these elements are essential for enzymatic processes of biological systems. The elements are made available to the human body by the plant kingdom and hence their presence is vital for the health of body and for the cure of diseases (Joya *et al.*, 1998).

Trace element analysis is shown in Table 2 which indicated that Na<sup>+</sup> 0.60%, K<sup>+</sup> 0.20%, Li<sup>+</sup> below detection limit, Ni<sup>++</sup> 0.21%, Pb<sup>++</sup> 0.34%, Cd<sup>++</sup> 0.12%, Zn<sup>++</sup> 0.98%, Cu<sup>++</sup> 0.10%, Mn<sup>++</sup> 1.25%, Fe<sup>++</sup> 1.37% and Co<sup>++</sup> 0.31%.

Table 1: Biochemical Analysis of *Cymbopogon jwarancusa*

Parameter	result (Percent)
Moisture Contents	67.02
Ash Contents	9.52
Carbohydrates	
Total Sugar	1.87
Reducing Sugar	1.07
Non Reducing Sugar	0.80
Nitrogen (Kjeldahl)	0.67
Crude Proteins	5.20
Crude Fibers	9.50
Oil Yield	2.00
Acid value	7.32
Iodine value	1.6
Saponification value	155.25
Peroxide value	18.2
Refractive index	1.43
pH value	4.45

Table 2: Trace Element Analysis of *Cymbopogon jwarancusa*

Parameter	Result (Percent)
Na <sup>+</sup>	0.60
K <sup>+</sup>	0.20
Li <sup>+</sup>	Below detection limit
Ni <sup>++</sup>	0.21
Pb <sup>++</sup>	0.34
Cd <sup>++</sup>	0.12
Zn <sup>++</sup>	0.98
Cu <sup>++</sup>	0.10
Mn <sup>++</sup>	1.25
Fe <sup>++</sup>	1.37
Co <sup>++</sup>	0.31

The result of trace element analysis indicated the importance of medicinal plants, which can be used in curing of different diseases. Sometimes different combinations of mineral elements present in medicinal plants may be essential for the cure of diseases. The results of trace elements are in agreement with the other desert plants. For example Na, K, Cu, Ni, Zn,

value are quite close to the other plants i.e., *Abroma augnsta*, *Abutilom hirtum*, *Alocosia indica*, *Argemone mexieana* etc. (Sondhi *et al.*, 1995).

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