Short Communication

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TRACE ELEMENTS IN INDIGENOUS MEDICINAL PLANTS (*RHAZYA STRICTA, VINCA ROSEA* AND *FAGONIA CRETICA*)

Kaneez Fatima*, Khaula Shirin, Mahboob Ali Kalhoro, Muhammad Qadiruddin and Yasmeen Badar

PCSIR Laboratories Complex, Off University Road, Karachi-75280, Pakistan

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Three indigenous medicinal plants reported to be anticancer have been selected for the study of trace elements and their possible role in human health. Twelve trace elements (Al. Ag, Co, Cr, Cu, Fe, Mn, Ni, Pb, Sr, Ti and Zn) have been detected and estimated in ash of various parts (leaves, shoots, flowers, seeds and roots) of the *Rhazya stricta, Vinca rosea* and *Fagonia cretica* plants.

Medicinal plants play the most important and vital role in traditional medicine. However, in most developing countries the flora remains virtually unexplored from the point of view of their therapeutic uses. Traditional eastern system of medicine and Allopathic medicines uphold the use of these elements for curing many diseases. As for trace elements such information is widely scattered in the scientific literature. Twelve trace elements were detected from the three medicinal plants i.e. *Rhazya stricta. Vinca rosea* and *Fagonia cretica* belonging to Apocynaecea and Zygophyllaecea families respectively (Hooker 1882) which are grown all over pakistan and have anticancer property (Watt 1890; Chakraborti and Mukherji 1968; Siddiqui and Bukhari 1972).

A large number of healthy plants were collected from sandy areas of Karachi during the month of March to June because of their easy availibility during the season. They were identified at Botany Department University of Karachi and further authenticated by Botany Section, Applied Biology Division of PCSIR Laboratories Complex, Karachi. The samples were well washed, oven dried, powdered and ignited at 600°C to form ash.

Hitachi Z-8000 Atomic Absorption Spectrophotometer equipped with Zeeman background correction and a data processor was used for elemental analysis of the samples. All the parameters were set according to the manufacturer's instruction using flame atomization technique.

1.0 Gram of the ash was digested with 10.0 ml concentrated nitric acid (HNO_3) in acid washed pyrex tube at 120°C till the solution was clear and volume was reduced to about 1.0 ml. The solution was made up to 10.0 ml with distilled water (Syed and Qadiruddin 1993). A sample blank was also prepared similarly. Estimations were made using standard addition technique. The dilutions were made such as to keep the concentration of different elements within the linear range of absorbance.

As is indicated in the table, all the plants screened in present study have large amount of nutrient elements. Out of these five are major and seven are trace elements. Nadkarni (1954) and Chopra *et al* (1958) have described these plants to be

Table 1

Elemental analysis of various parts of different indigenous medicinal plants

S.No.	Test Matrial	Fe (ppm)	Cu (ppm)	Mn (ppm)	Zn (ppm)	Ni (ppm)	Co (ppm)	Al (ppm)
1.	R.S. Leave	$2.65x10^4$	$5.21x10^2$	$3.45x10^3$	$6.53x10^2$	31.70	7.10	$2.44x10^4$
2.	V.R.Leave	$6.24x10^3$	70.30	$1.17x10^3$	$7.82x10^2$	21.2	1.30	$6.83x10^3$
3.	R.S. Shoots	$8.46x10^3$	$7.8x10^2$	$2.54x10^3$	$4.00x10^2$	14.1	2.30	$1.14x10^4$
4.	V.R Shoots	$1.53x10^4$	$1.08x10^2$	$1.90x10^3$	$2.35x10^3$	23.5	9.80	$2.20x10^4$
5.	F.C.Plant	$01x10^3$	42.70	$5.10x10^2$	$2.70x10^2$	35.6	2.70	$1.02x10^4$
6.	F. C Flowers	$4.10x10^3$	$5.13x10^2$	$2.80x10^2$	$2.20x10^2$	30.8	2.90	$5.10x10^3$
7.	V.R Flowers	$1.51x10^4$	70.0	$7.70x10^2$	$7.0x10^2$	31.6	8.2	$1.80x10^4$
8.	R.S. seeds	$5.01x10^3$	$1.91x10^2$	$2.30x10^3$	$7.60x10^2$	14.8	1.80	$6.10x10^3$
9.	R.S Roots	$5.82x10^4$	$1.30x10^3$	$1.70x10^3$	$3.08x10^2$	38.9	14.6	$3.50x10^3$
10.	V.R. Roots	$1.92x10^4$	$1.45x10^2$	$1.10x10^3$	$2.42x10^3$	30.2	11.3	$3.00x10^4$
11.	F.C Roots	$7.02x10^3$	$1.22x10^3$	$6.90x10^2$	$6.70x10^2$	20.7	3.20	$2.04x10^4$

*Author for correspondence

(Table continued)

(Table 1 contd.....)

S.No.	Test Material	Ti (ppm)	Ba (ppm)	Sr (ppm)	Pb (ppm)	Cd (ppm)	Ag (ppm)	Cr (ppm)
1.	R.S Leaves	97.90	$1.0x10^4$	$7.17x10^2$	94.40	Nil	7.40	47.50
2.	V.R Leaves	66.30	$1.20x10^4$	$7.30x10^2$	33.20	" "	1.30	9.30
3.	R.S Shoots	$1.70x10^2$	$5.42x10^3$	$8.22x10^2$	16.40	" "	11.70	32.9
4.	V.R Shoots	$1.60x10^2$	$7.41x10^3$	$3.52x10^2$	74.40	" "	5.90	23.5
5.	F.C Plant	$1.10x10^2$	$1.15x10^4$	$4.50x10^3$	27.60	" "	Nil	8.00
6.	F.C Flowers	82.10	$8.42x10^3$	$4.31x10^3$	24.90	" "	" "	8.80
7.	V.R Flowers	32.90	$8.80x10^3$	$4.93x10^2$	$1.20x10^2$	" "	9.60	19.2
8.	R.S Seeds	$1.11x10^2$	$4.90x10^3$	$3.20x10^2$	16.70	" "	3.70	7.40
9.	R.S Roots	$5.63x10^2$	$7.54x10^3$	$4.40x10^2$	14.60	" "	7.40	47.4
10.	V.R Roots	$1.40x10^2$	$5.24x10^3$	$3.01x10^2$	$1.22x10^2$	" "	13.2	37.7
11.	F.C Roots	$3.30x10^2$	$1.20x10^3$	$4.30x10^3$	19.10	" "	4.80	12.8

R. S, *Rhazya stricta;* V. R, *Vinca rosea;* F. C, *Fagonia cretica.*

Ag, Co, Cr, Cu, Fe, Mn, Ni, Pb, Sr, Ti and Zn are essential for all forms of life and have a wide role in human health and diseases. According to Schwart and Mertz (1952); Curran (1954), and Schroeder (1966) a wide application of the medicinal benefits of these trace elements have been limited due to the insufficient work regarding the detection and estimation of trace elements of the God gifted flora spread all over the earth. Hence it is imperative to analyse the plants for their trace elements content, which have healing power for mankind in numerous ailments and disorders. The data of present work will be useful in this regard.

Key words: Medicinal plants, Trace elements, Human health.

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