



Original Research Article

Mineral contents from some fabaceous plant species of Rajasthan desert

B.B.S.Kapoor and Veena Purohit *

Herbal Research laboratory, P.G. Department of Botany, Dungar College, Bikaner, Rajasthan, India.

* Department of Botany, Maharani Sudershana College for Women, Bikaner, Rajasthan, India.

ARTICLE INFO:

Article history:

Received: 11 September 2013

Received in revised form:

14 September 2013

Accepted: 25 September 2013

Available online: 7 December 2013

Keywords:

Mineral contents, Fabaceous plant species, Rajasthan Desert

ABSTRACT

Evaluation of mineral contents from three selected plant species of Fabaceae family growing in arid region of Rajasthan Desert was carried out. The roots, shoots and fruits of *Clitoria ternatea*, *Sesbania bispinosa* and *Tephrosia purpurea* collected from two different areas Chhatargarh area (Bikaner district) and Ratangarh area (Churu district) were analysed for mineral contents. The maximum Calcium (3.86%), Phosphorus (0.48%), Potassium (0.92%) and Sodium (1.08%) contents were found in roots and shoots of *Grewia tenax* collected from study area.

1. Introduction

The scarcity of vegetation in arid zone of Rajasthan desert restricts the choice of various plant species for their use as food and fodder. The plants of this region are good and potential source of nutritionally and phytochemically important compounds. The animals and human beings in this region are fully dependent on these plants for food, fodder, fibre and fuel. The plant species growing in this arid region besides their medicinal importance may contain sufficient amount of nutrients to be considered as livestock feed. A number of plants have been analysed for their nutritive value especially for mineral contents [1-9].

The present investigation describes the isolation and identification of Sterol contents from roots, shoots and fruits of selected medicinal plants of family Fabaceae like *Clitoria ternatea*, *Sesbania bispinosa* and *Tephrosia purpurea*.

2. Materials and Methods

Fully matured and healthy roots, shoots and fruits of all selected plant species were collected from Chhatargarh area (Bikaner district) and Ratangarh area (Churu district). The roots, shoots and fruits were separately dried at 100° C for 15 minutes so as to inactivate the enzymes followed by 60° C till a constant weight was achieved. These dried samples were powdered using 20 mesh screen in Willey mill and then used for their estimation of minerals i.e. Calcium, Phosphorus, Potassium and Sodium. These mineral contents were estimated by the procedures given by some workers [10-11].

3. Results and Discussion

Concentration of the mineral contents in the various plant parts (roots, shoots and fruits) of all the selected plant species collected from two different sites i.e. Chhatargarh and Ratangarh areas are presented in Table-1. Values are mean \pm SE (Five samples for each plant).

Table 1: Mineral contents of selected plant species in percentage on dry matter basis.

Mineral contents	Sites	<i>Clitoria ternatea</i>			<i>Sesbania bispinosa</i>			<i>Tephrosia purpurea</i> .		
		Roots	Shoots	Fruits	Roots	Shoots	Fruits	Roots	Shoots	Fruits
Calcium	Chhatargarh	1.01 ±0.06	1.72 ±0.12	1.12 ±0.21	0.84 ±0.04	2.40 ±0.08	1.80 ±0.09	1.88 ±0.08	3.72 ±0.20	2.32 ±0.14
	Ratangarh	1.04 ±0.51	1.23 ±0.29	1.26 ±0.42	0.44 ±0.40	2.26 ±0.11	1.84 ±0.16	1.84 ±0.02	3.86 ±0.09	2.46 ±0.18
Phosphorus	Chhatargarh	0.22 ±0.11	0.44 ±0.14	0.48 ±0.12	0.29 ±0.18	0.35 ±0.81	0.33 ±0.08	0.19 ±0.17	0.32 ±0.19	0.25 ±0.33
	Ratangarh	0.32 ±0.18	0.46 ±0.08	0.45 ±0.48	0.27 ±0.51	0.32 ±0.21	0.35 ±0.38	0.16 ±0.43	0.31 ±0.17	0.27 ±0.76
Potassium	Chhatargarh	0.72 ±0.78	0.78 ±0.69	0.91 ±0.41	0.10 ±0.34	0.24 ±0.91	0.25 ±0.16	0.14 ±0.21	0.32 ±0.70	0.24 ±0.38
	Ratangarh	0.64 ±0.21	0.89 ±0.17	0.92 ±0.59	0.04 ±0.09	0.32 ±0.12	0.19 ±0.41	0.23 ±0.31	0.22 ±0.63	0.16 ±0.21
Sodium	Chhatargarh	0.42 ±0.01	0.94 ±0.67	0.62 ±0.28	0.32 ±0.27	0.53 ±0.26	0.91 ±0.79	0.84 ±0.38	0.58 ±0.61	0.75 ±0.76
	Ratangarh	0.39 ±0.64	0.82 ±0.24	0.55 ±0.25	0.20 ±0.36	0.48 ±0.43	1.08 ±0.16	0.69 ±0.78	0.79 ±0.38	0.64 ±0.37

Calcium content was found maximum (3.86%) in the shoots of *Tephrosia purpurea* collected from Ratangarh area and minimum (0.44%) in the roots of *Sesbania bispinosa* collected from same area (Table-1).

Concentration of Phosphorus was observed maximum (0.48%) in the fruits of *Clitoria ternatea* collected from Chhatargarh area and minimum (0.16%) in the roots of *Tephrosia purpurea* collected from the Ratangarh area (Table-1).

Maximum (0.92%) Potassium contents was found in the fruits of *Clitoria ternatea* collected from Ratangarh area while minimum (0.04%) in the roots of *Sesbania bispinosa* collected from same area (Table-1).

Sodium content was found maximum (1.08%) in the fruits of *Sesbania bispinosa* collected from Ratangarh area while minimum (0.20%) in roots of *Sesbania bispinosa* collected from same area (Table-1).

The present study indicates that these Fabaceous plant species growing in the arid region of Rajasthan Desert have sufficient amount of mineral contents, which may be useful as feed and fodder for the livestock.

4. Conclusion

The plant species, under study area are potential source of nutrients and minerals. These retain potentialities to synthesize the mineral contents which play active role in metabolism. The present study indicates that these Fabaceous plant species growing in the arid region of Rajasthan Desert have sufficient amount of mineral contents, hence these plants may be useful as feed and fodder for the livestock.

Conflict of interest statement

We declare that we have no conflict of interest.

Acknowledgement

The authors wish to acknowledge the UGC, Bhopal for providing the financial assistance for the project.

References

1. Singh, N., Sharma, K. and Ojha, J.L. Chemical composition and nutritive value of Siris(*Albizia lebbek*)and Subabul (*Leucaena leucocephala*) pods in goats. *Indian J. Anim. Nutr.* 1989;6: 259-261.
2. Mathur, S.K., Kapoor, B.B.S. and Nag, T.N. Proximate composition of some arid zone plants. *Indian J. Anim. Nutr.* 1989;5(2): 170-172.
3. Sharma, T.P. and Sen, D.N. 1993, Mineral status of *Tamarix* sps. In Indian arid zone, *Proceedings* the 3rd conference of association of plant physiologists of SAARC countries (APPSC) and annual convention of PGRSJ on the plant physiology and biotechnology in relation to improving plant productivity (Abstracts), Ahmedabad. 22.
4. Kapoor, B.B.S. and Ritu. Nutritive value of some trees of western Rajasthan. *I. J. of Env. Sciences.* 2001;5(1) 37-39.
5. Kapoor, B.B.S. and Kalla, N.P. Comparative evaluation of mineral contents of some tree species growing in canal irrigated area Western Rajasthan, *Oikoassay*, 2003;16(1): 29-30.
6. Kapoor, B.B.S. and Gaur, Rahul. Comparative evaluation of mineral contents of some herbal plant species growing in Churu district of Shekhawati region. *Indian Journal of Environmental Sciences.* 2006;12(1): 29-30.
7. Kapoor, B.B.S., Khatri, J.S. and Bhumika. Evaluation of Mineral Contents of Some Medicinal Plants of Hanumangarh District of Rajasthan. *Journal of Phytological Research.* 2007;20(2): 329-330.
8. Kapoor, B.B.S. and Mishra, Raksha. Mineral Contents from Some Cappridaceous Plant Species of North-west Rajasthan: *International Journal of Pharmaceutical and Biological Sciences Research and Development.* 2013;1 (2): 1-5.
9. Kapoor, B.B.S. and Kumar Acharya, S.K. Evaluation of Mineral Contents from Some Tiliaceous Plant Species of Arid Region of Rajasthan: *International Journal of Universal Pharmacy and Biosciences.* 2013;1 (5): 278-282.
10. Purohit, G.R. and Mathur, C.S. 1983, Feeding value of some top feeds of arid and semi arid region for camels. *Proceedings* of Symposium on top feed resources, their production, utilization and constraints held at C.S.W.R.I., Avikanagar.
11. Bhargava, B.S. and Raghupati, H.B. 1993, *In methods of analysis of soil, plants, water and fertilizers.* H.L S. Tandon (Ed.) F.D.C.O., New Delhi. 41.

Cite this article as: B.B.S.Kapoor and Veena Purohit. Mineral contents from some fabaceous plant species of Rajasthan desert. *Indian J. Pharm. Biol. Res.*2013; 1(4):35-37.