

NUTRITIVE CONTENTS OF SOME HALOPHYTES OF I.G.N.P. PHASE-I COMMAND AREA, LOONKARANSAR, BIKANER, WESTERN RAJASTHAN

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The IGNP is unique human endeavour to transform the western part of Rajasthan into a land of plenty and prosperity but its improper management also causes some serious problems like water logging and soil salinity. Loonkaransar is also suffering from these problems. These types of adverse conditions enables most of the vegetation to grow here although some halophytes can grow and survive easily. The present study estimated crude protein, ether extract, fat, crude fibre, total carbohydrate, nitrogen free extract, organic matter, minerals like calcium and phosphorus etc. in two typical halophytic plant species growing in the region. *Chenopodium murale* and *Salsola baryosma* are studied for their nutritive contents. The maximum amounts of crude proteins (32.28%), ether extract (2.02%), calcium (3.12%), and phosphorus (1.02%) are found in the roots of *C. murale* while nitrogen free extract (70.02%) and total carbohydrate (77.46%) are maximum in the roots and the fruits of *S. baryosma*. Maximum crude fibre (15.72%) and organic matter (92.76%) is observed in the roots of *C. murale* while total ash (18.72%) is observed in roots of *S. baryosma*.

Keywords: *Chenopodium murale*; Halophytes; Nutritive contents; Organic matter; *Salsola baryosma*.

Loonkaransar, 65 kms away from Bikaner, is facing great problems of water logging and soil salinity. Only a few halophytes can grow and survive easily in these adverse conditions¹. Nutritive contents are the basic building blocks in the synthesis of other complex substances in the cell. Some halophytes of Western Rajasthan are good and potential source of nutritionally and phytochemically important metabolites. The animals and human beings residing in such areas are fully dependent on these plants. As these plants are very few in number and only those, which are quite resistant to extreme arid environment, can survive.

The plant parts used by desert dwellers has not been analyzed fully from nutritive value point of view. Life cannot be sustained without adequate nourishment. Human being and animal needs adequate food for growth, development and to live a healthy and active life.

With the increasing demand for natural drug and to fill the void in our knowledge regarding the chemistry of famine foods and plants of desert origin, there is urgent need to undertake phytochemical survey of halophytic plants to locate the potential sources of pharmacologically active principles. The knowledge of chemical composition of food is very essential and have become very important in recent years.

The present investigation is on the quantitative estimation of nutritive contents of various plant parts (roots, shoots and fruits) of following typical halophytes of family Chenopodiaceae.

(i) *Chenopodium murale* Linn. (Goyalo)

(ii) *Salsola baryosma* (Roen and Schutt)(Lani).

Roots, shoots and fruits of mentioned halophytic plant species of IGNP Phase-1 Command area were

collected from water logged and saline region of Loonkaransar, Bikaner, Western Rajasthan. Plants were collected during morning hours in the polythene bags. Bags were tightened immediately to have no loss of moisture. The samples were brought to the laboratory and cut into small pieces. Different plant parts were subjected to chemical analysis by A.O.A.C.² procedure for crude protein (C.P.), ether extract (E.E), crude fibre (C.F.), ash, nitrogen free extract (N.F.E.) and phosphorus (P). Calcium (Ca) was however, estimated as per Purohit and Mathur³ procedure. The plants were hand washed to remove any extraneous material that may contribute to high ash and mineral values. Thus ash and mineral values represent endogenous plant level.

Crude protein concentration on dry matter basis was found to be considerably higher in roots, shoots and fruits of *Chenopodium murale* which was 32.28%, 29.41%, 30.71% and 8.63%, 12.25%, 10.12% respectively in *Salsola baryosma*, as compared to crude protein content, reported in various plant species of Western Rajasthan by various workers; twigs of *Corchorus antichorous*, 7.76%⁴ above ground part of *Panicum turgidum*, 5.12%³; *Indigofera cordifolia*, 6.25%; different plant parts as roots, shoots and leaves of *Tribulus terrestris*, 3.14%, 3.13%, 6.25% respectively; different plant parts as roots shoots and fruits of *Psoralea odorata*, 7.28%, 9.08%, 28.15% respectively⁷.

Ether extract was found very low in roots, shoots and fruits of *S. baryosma* 0.962%, 1.70%, 1.02% and 1.36%, 2.02%, 1.34% respectively in *C. murale*. However, Harsh and Arora⁸ reported 4.15% in fruits of *Citrullus fistulosus*.

Maximum and minimum crude fibre concentration was found in roots (15.12%) and shoots (9.22%) of *C. murale*. These values are very low when compared with

Table 1. Nutritive value of two common halophytes growing in IGNP Phase-I, Command Area, Loonkaransar, Bikaner, Western Rajasthan.

Plant species	Plant parts	Crude protein	Crude fiber	Ether extract	N. Free extract	Total carbo.	Total ash	Organic matter	Ca	P
<i>Chenopodium murale</i>	Roots	32.28	15.12	1.36	46.48	60.28	11.46	92.76	3.12	1.02
	Shoots	29.41	9.22	2.02	53.22	61.12	12.88	90.27	2.84	0.997
	Fruits	30.71	10.36	1.34	43.72	53.82	11.36	86.94	2.37	0.408
<i>Salsola baryosma</i>	Roots	8.63	9.46	0.962	70.02	76.17	18.72	85.25	1.75	0.405
	Shoots	12.25	11.78	1.70	62.88	70.12	13.88	87.12	1.07	0.342
	Fruits	10.12	11.97	1.02	66.75	77.46	11.77	86.88	1.53	0.216

other plant species. Nag *et al.*⁶ reported 56.90% and 52.70% crude fibre in roots of *T.alatus* and *T.terrestris* respectively.

Total ash value was also found very low in both the plant species. Maximum and minimum ash value was found in roots of *S.baryosma* (18.72%) and fruits of *C.murale* (11.36%). Singh *et al.*⁷ found considerable low ash value (5.91%) in pods of Siris and much higher amount (76.44%) in pods of Subabul. Shahid⁸ observed 17.42% total ash in shoots of *Maytenus emarginata*.

Nitrogen free extract was found high in roots, shoots, and fruits of *S.baryosma* 70.02%, 62.88%, 66.75% and 46.48%, 53.22%, 43.72% respectively in *C.murale*. Harsh and Arora⁸ reported 57.00% in roots of *Glinus lotoides* and 2.51% in fruits of *Citrullus fistulosus*. Bishnoi and Gautum¹¹ reported 62.1% in shoots of *Calligonum polygonoides*.

Concentration of organic matter was maximum and very much similar in both the halophytic plant species. It was reported 92.76%, 90.27%, 86.94% in *C.murale* and 85.25%, 87.12%, 86.88% in roots, shoots and fruits of *S.baryosma*.

The total carbohydrate value was also maximum in root, shoot and fruit of *S.baryosma*, which was 76.17%, 70.12%, 77.46% respectively. It was also higher in *C.murale*, which was 60.28%, 61.12% and 53.82% respectively. However, Mali and Swami¹² reported 55.29% in leaves of *S.persica*.

The amount of mineral contents (Calcium and Phosphorus) was observed comparatively low than land forages. Calcium was maximum in roots of *C.murale* (3.12%) while minimum in shoots of *S.baryosma* (1.07%). Phosphorus was observed maximum in roots of *C.murale* (1.02%) and minimum in fruits of *S.baryosma* (0.216%). Mali and Swami¹² reported 0.61% in leaves of *S.persica*.

The foregoing studies thus indicate that the mentioned halophytic plant species growing in IGNP Phase-1, Command Area, Loonkaransar, Bikaner, Western Rajasthan have sufficient amount of nutritive contents which may be useful forages for the cattle. Although considerable variation existed among the various plant parts of both the plant species.

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