Study of Nutritive contents two halophytes of chenopodiacae family growing in Loonkaransar, Bikaner western Rajasthan

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Abstract— The IGNP is unique human endeavour to transform the western part of Rajasthan into a land of plenty and property 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 enable most of the vegetation to grow here although some halophytes can grow and survive easily.

The knowledge of chemical composition of food is very essential and has become very important in recent years. The nutritive contents which are present in all green plants are the basic building blocks for the synthesis of other complex substances in a cell. Therefore, the plant as a whole or part may be efficiently, utilized by livestock populations. The present study estimate crude protein other extract, fat, crude, fibre total carbohydrate, nitrogen free extract organic matter, minerals like calcium and phosphorus etc, in two typical halophytic plant species Haloxylon recurvum and Suaeda fruticosa are studies for their nutritive content. The maximum amount of crude protein (14.83%), ether extract (2.08%) and total ash (16.60%) are found in the fruits of Suaeda fruticosa while total carbohydrate (79.12) and phosphorous (1.02) in the roots and calcium (1.57%) in the shoots of Suaeda fruticosa. Maximum crude fibre (22.46%) and organic matter (92.11%) observed in the roots and nitrogen free extract (65.94%) in the fruits of Haloxylon recurvum.

***Index Terms*— Halophytes, Nutritive content, Organic matter**

INTRODUCTION

Loonkaransar is 65 kms away from Bikaner which is facing great problem of water logging and salinity. The harsh conditions enable the most crops and vegetation to grow in this area. Only a few halophytes can grow and survive easily in these adverse conditions (Gupta et al, 1995). 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.

Plant body is composed primarily of carbohydrates, protein, lipids, nucleotides and porphyrins. The plant part 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. Plant can manufacture their food from simple chemicals derived from the soil, water and carbon dioxide of air. Higher organisms do not posses this capacity to manufacture food simple comical and hence they depend on plants or other animals for obtaining the food for their requirements With the increasing demand for natural drug and to fill the void in our knowledge regarding the chemistry of famine food and plants of desert origin, these is urgent need undertake phytochemical survey of halophytic plants to locate the potential sources pharmacologically active principles. The knowledge of chemical composition of food is very essential and has become very important in recent years.

MATERIAL AND METHODS

The present investigation is on the quantitative estimation of nutritive contents of various plants

(roots, shoots and fruits) of following typical halophytes of family Chenopodiaceae.

(1.) *Haloxylon recurvum* (Moq.) Bonge ex. Boiss.

(2.) *Suaeda fruticosa*(Linn.) Forsk.

Roots, shoots and fruits of mentioned halophytic plant species of IGNP stage-1 command area were collected from water logged and saline region of Loonkarsar, Bikaner Western Rajasthan. Plants were collected during morning hours in the polythene bags. Bags were tightened immediately to have no loss of moisture. The sample were brought to the laboratory and cut into small pieces. Different plant parts were subjected to chemical analysis by A.O.A.C (1995) procedure for crude protein (C.P), ether extracts (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 Mathur (1970). 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.

Nutritive value of two commends halophytes growing in Loonkaransar, Bikaner Western Rajasthan.

(Percentage on dry matter basis)

Plant Species	Plant part	Crude protein	Crude fibre	Ether extract	N.Free extract	Total Carbohydrate	Totaln ash	Organic matter	Calci-um	Phosp horus
Haloxylon recurvum	Roots	12.10	22.46	0.78	53.12	78.14	7.89	92.11	1.53	0.29
	Shoots	8.28	16.09	1.32	61.82	77.91	9.46	89.48	0.88	0.48
	Fruits	10.46	12.83	1.09	65.94	78.77	7.12	91.98	1.42	0.54
Suaeda fruticosas	Roots	8.82	16.24	0.24	62.88	79.12	10.89	89.11	0.68	1.02
	Shoots	12.73	11.26	1.54	56.42	69.60	14.24	85.76	1.57	0.54
	Fruits	14.83	7.68	2.08	52.28	63.46	16.60	82.10	1.12	0.26

RESULT AND DISCUSSION

Crude protein concentration on dry matter basis was found to be considerably higher in roots, shoots and fruits of Suaeda fruticosa 8.82%, 12.73%, 14.83% and 12.10%, 8.26%, 10.46% in Haloxylon recurvum when compared with those of crude protein content reported in various plant species of Western Rajasthan carried out by various workers, twings of Corchorus antichorous, 7.76% (Mathur and Karwasara, 1967), above ground part of Panicum turgidum, 5.12% (Purohit and Mathur, 1970), Indigo feracordifolia 6.25% (Mathur and Purohit, 1979), different plant parts as roots, shoots and leaves of Tribulus terrestris 3.14%, 3.13%, 6.25% respectively (Nag et al, 1979), different plant parts as roots, shoots and fruits of Psoraiea odorata7.28%, 9.08%, 28.15% respectively (Mali and Barupal, 2001).

Ether extract was found very low in roots, shoots and fruits of Haloxylon recurvum0.782%, 1.32%, 1.09% and 0.246%, 1.54%, 2.08% respectively in Suaeda fruticosa. However, Harsh and Arora (1993) reported 4.15% in fruits of Citrullus fistulosus.

Maximum and minimum crude fibre concentration was found in roots (22.46%) of Haloxylon recurvum and fruits (7.68%) of Suaeda fruticosa respectively. These values are very low when compared other plant species. Nag etal. (1979). 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 fruits of Suaeda fruticosa (16.60%) and fruits of Haloxylon recurvum (7.12%) respectively Singh et al (1989) found considerable low ash value (5.91%) in pods of Siris and much higher amount (76.44%) in pods of Subabul.

Nitogen free extract was found high in roots, shoots and fruits of Haloxylon recurvum 53.12%, 61.82%,65.94% and 62.88%, 56.42%,52.28% respectively in Suaeda fruticosa, Harsh and Arora (1993) reported 57% in roots of Glinus lotoides and 2.51% in fruits of Citrullus fistulosus. Harsh and Maheswari (2002) reported 65.36% nitrogen free extract in fruits of Capparis decidua.

Concentration of organic matter was found maximum and very much similar in both the halophytic plant species. It was reported in 92.11%, 89.48%, 91.98% in Haloxylon recurvum and 89.11%, 85.76%, 82.10% in roots, shoots and fruits of Suaeda fruticosa.

The total carbohydrate value was also found higher in root, shoots and fruit of Haloxylon recurvum which was 78.14%, 77.91%, 78.77% respectively. It was also higher in Suaeda fruticosa, which was 79.12%, 69.60% and 63.46% respectively.

The amount of mineral contents (Calcium and Phosphorus) was observed comparatively low than land forages. Calcium was maximum in shoots of Suaeda fruticosa (1.57%) while minimum (0.68%) in roots of same plant. Phosphorus was observed maximum in roots of Suaeda fruticosa(1.02%) and minimum in fruits of same plant (0.262%).

The foregoing studies thus indicate that the mentioned halophytic plant species growing in IGNP Stage-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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