ORIGINAL RESEARCH PAPER

Botany

NUTRITIVE EVALUATION OF 18 PROMISING WILD EDIBLE AND FODDER LEGUMINOUS SPECIES OF WESTERN MAHARASHTRA.

KEY WORDS: Nutritive Evaluation of wild plant, carbohydrate, protein, fat, mineral, Western Maharashtra, Wildlegumes, Maharashtra

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ABSTRACT

The present paper deal with study of nutritive evaluation of 18 promising widely occurring species of wild edible and fodder legumes of Western Maharashtra, showing good amount of carbohydrate, proteins, fat and minerals.

Introduction

Local inhabitant and tribal's of the carefully use their surroundings to fulfill daily needs like food and fodder for them and their livestock. All the foods are not of the same nutritive value. Therefore, studies of nutritive value of wild edible plants and fodder plant are quite significant. It may also help to identify long forgotten food resources. Determination of nutritive value of wild plants will help to throw light on origin of our ancestor's habits and their agriculture. It will overcome food shortage too.

Satisfaction of hunger is usually a main criterion for a food intake, but the knowledge that we possess today does not confirm to the general belief that satisfaction of hunger is a safe guide for the selection of proper foods. For sustaining healthy and vigorous life, diets should be planned with the full knowledge of the scientific facts and observations concerning the science of nutrition.

Studies on nutritional value of wild edible and fodder plants are considerably significant since they may help to identify long forgotten food resources. Some publication only deal with enumeration of the wild useful plants and their uses. (Jain 1963 & 1965; Vartak 1959a, 1959b, 1959c, 1981, 1982; Vartak & Gadgil 1973, 1975, 1980, 1981; Datar & Vartak 1975; Vartak & Madavgane 1981; Gunjatkar & Vartak 1982, Upadhye et al. 1986; Vartak & Kulkarni 1987; Ghate at al. 1988;Tosh 1988a, 1988b, 1993, 1996, 1997, 2004, & 2012; Yadav et al. 2001; Singh et al. 2004; Rao 1996; Kulkarni & Kumbhojkar 2002; Thakur et al. 1994; Naik 2006; Patil et al. 2017; Chaudhari et al. 2017; Patil et al 2017). A few scattered references are available on evaluating nutritive value of wild edible and fodder plants Intensive works on wild and cultivated legumes are done with a view to compare their Nutritive value (Gopalan et al. 1971; Chandel et al. 1972). Similarly evaluations of nutritive content on wild fodder are even carried out to compare the nourishment value with traditionally fodder (Nas 1979; Debroy et al. 1980). Wild leafy vegetables, tubers and corm are analyzed to check their different constituent in comparative way with the conventional roots and tubers (Nilegaonkar et al. 1985)

Materials and Methods

Study Area: The area under study comprises a total of hilly region of 13 districts (Palghar, Thane, Mumbai city, Mumbai suburban, Raigad, Ratnagari, Sindhudurga, Sangli, Satara, Pune, Ahmadnagar and Nashik). Out of these 07 constitute Konkan along the Western side while remaining form a part of the Deccan plateau. It lies between 15°36' to 20° 52' north latitudes and 72° 54' to 75° 50' East longitudes covering an area of about 1,06,790 square kilometers. It is bounded by Arabian Sea to the west along its entire length, while the Eastern margin coincides with the boundery between Western Maharashtra and Marathwada; part of Gujarat, Dadra and Nagar Haveli, and Khandesh of Maharashtra comes to the north while Solapur district of Maharashtra, Goa and part of Karnataka are situated to the south of the area.

Methodology: Useful parts of the leguminous plants along with the materials were collected and brought to the laboratory for identification (Cooke 1901-1908) and for nutritive value analysis. The collection tours were made to different parts of the study area under study. The chemicals used for all analytical experiments were of Analar grade. For chemical evaluation, representative samples were ground finely by mixers. Their moisture content was determined by drying the known quantities to attain a constant weight in an oven at 100°c. Nitrogen content of samples were calculated by Kjeldhal method (AOAC 1966: Raghuramula et al.1983) and multiplying nitrogen value by the factor 6.25 to get the crude protein value of the samples. The crude fat was determined through extraction of dried ground sample with petroleum ether in a soxhlet extraction unit (AOAC 1966).Mineral matter was estimated by ashing sample at 525°c-550°c.The carbohydrate content given is the difference between 100 and the sum of moisture, protein, fat and ash contents of the proximate principles assuming that proteins, carbohydrates and fats yields 4, 4, 9 Kcals respectively per gm (Gopalan et al. 1971).

Table01:Proximate Chemical Analysis of Different Constituents (Expressed on the 100 gram of fresh material basis)

Sr.no	Name of the species	Part used	Purpose	Moisture %	Protein %	Fat %	Carbohydrate %	Ash %	Energy in Kcal
1	Alysicarpus belgaumensis Wt. Arn.	LVS & YG ST	Fodder	81.86	4.12	1.96	9.04	3.02	70.28
2	Alysicarpus longifolius Wt. Arn.	LVS & YG ST	Fodder	73.71	8.22	1.08	12.80	4.19	93.80
3	Alysicarpus procumbens Schindl.	LVS & YG ST	Fodder	77.19	4.52	2.41	13.53	2.35	93.89
4	Alysicarpus tetragonolobus Edgew.	LVS & YG ST	Fodder	76.32	5.20	2.10	14.05	2.33	95.90
5	Alysicarpus vaginalis DC.	LVS & YG ST	Fodder	73.46	6.52	2.56	11.13	3.33	93.64
6	Desmodium dichotomum DC.	LVS & YG ST	Fodder	73.42	6.88	3.60	13.59	2.51	114.28
7	Desmodium ritchei Sanjappa.	LVS & YG ST	Fodder	79.66	4.53	2.51	11.40	1.90	86.31
8	Indigofera cordifolia Heyne.	LVS & YG ST	Fodder	77.19	5.01	1.90	13.02	2.88	89.22
9	Neonotonia wrghtii Verde.	LVS & YG ST	Fodder	73.69	6.87	3.85	12.86	2.75	113.57
10	Smithia bigemina Dalz.	LVS	Vegetable	68.60	5.58	1.44	18.48	5.90	109.20
11	Smithia hirsute Dalz.	LVS	Vegetable	78.00	4.45	1.19	14.97	1.39	88.39
12	Smithia purpurea Hook.	LVS	Vegetable	70.05	8.59	1.60	15.45	3.86	110.56
13	Smithia setulosa Dalz.	LVS	Vegetable	71.10	7.75	1.72	13.47	5.96	110.36

Sr.no	Name of the species	Part used	Purpose	Moisture %	Protein %	Fat %	Carbohydrate %	Ash %	Energy in Kcal
14	Teramnus labialis Spreng.	LVS & YG ST	Fodder	74.48	5.08	2.28	15.18	2.98	101.56
15 a	Vigna khandalensis Rag. & Wad.	LVS & YG ST	Fodder	86.83	3.62	1.32	6.78	1.45	53.58
15 b	Vigna khandalensisRag. & Wad.	YG Pod	Raw edible	80.40	4.02	0.69	13.57	1.32	76.57
16	Vigna radiate Wil. Var. sublobata Verdc.	LVS & YG ST	Fodder	83.33	3.51	1.86	8.93	2.37	66.50
17	Zornia diphylla Pers.	LVS & YG ST	Fodder	72.92	4.75	2.02	17.95	2.36	108.98
18	Cassia pumila Lamk.	LVS & YG ST	Fodder	71.70	5.50	2.61	17.80	2.39	116.69

Note: LVS -leaves **YG** -young **ST**-stem

Result and Discussion

The data of 18 species of wild edible and fodder legumes are given in **Table no. 1** along with their nutritive content in terms of protein, carbohydrate, mineral, fat and energy. From the observation it is clear that the percentage of protein and mineral content in wild edible and leafy vegetables are equal or even more than the conventional leaf vegetables. These wild edible and fodder legumes also holds ethnobotanical significance and hence were evaluated for their nutritive values. From their chemical analysis it is clear that the protein content (range from 4.45-8.59 percent) and mineral content (range from 1.39-5.96 percent) of the wild edible leafy vegetables are higher or equal to conventional leafy vegetables. The fodder legumes are also rich in protein content (range 3.51-8.22 percent) and mineral content (range 1.32-4.19) which would help to enhance the nutritive status of fodder grasses for the benefit of our livestock. It is essential that these potentially important species occurring in wild condition should be introduced in cultivation. Their botanical as well as agronomical studies should be completed. Some of them will definitely help in solving malnutrition in human as well as livestock population.

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