

NUTRITIVE STATUS OF SOME ARID ZONE TREE SPECIES

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Nutritive value of stems, leaves and fruits of *Albizia lebbeck* (Linn.) Benth., *Moringa oliefera* Lam., *Pithecellobium dulce* Benth. and *Pongamia pinnata* Linn. was investigated. Crude protein (29.07%), Nitrogen free extract (71.78%) and total carbohydrate (85.53%) were found maximum in *Pongamia pinnata*. Crude fibre (29.30%) was higher in *Albizia lebbeck*. Crude fat (16.84%) and Total ash (14.57%) were higher in *Moringa oliefera*, while Organic matter (95.38%) was found higher in *Pithecellobium dulce*.

Keywords : Arid zone; Nutritive status; Tree species.

The scarcity of vegetation in arid zone of Rajasthan restricts of choice of tree species for their use as food and fodder. The arid zone trees are good and potential source of nutritionally and phytochemically important compounds. The animals and human beings in this region are fully dependent on these trees for food, fodder, fibre and fuel. Their chemical composition and importance as livestock feed have been reported in *Prosopis cineraria*^{1,2}, *Maytenus emarginata*, *Parkinsonia aculeata* and *Telcomella undulata*³, *Azadirachta indica*⁴, *Moringa oliefera*, *Pithecellobium dulce* and *Pongamia pinnata*⁵ and some arid zone forage legumes^{6,7}. In the present investigation, attempts have been made to evaluate the chemical composition of stems, leaves and fruits of *Albizia lebbeck*, *Moringa oliefera*, *Pithecellobium dulce* and *Pongamia pinnata*.

The four tree species growing in the arid region have been selected for the present study. They were collected from two different sites i.e. Public park area (Bikaner) and Junction area (Hanumangarh). The stems, leaves 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 subjected to chemical analysis by A.O.A.C.⁸ procedure for Crude protein, Crude fat, Crude fibre and Nitrogen free extract.

Concentrations of nutritive contents in the stems, leaves and fruits of *Albizia lebbeck*, *Moringa oliefera*, *Pithecellobium dulce*, *Pongamia pinnata* are presented in Table. 1.

The crude protein was found maximum (29.07%) in fruits of *Pongamia pinnata* collected from Junction area (Hanumangarh) while, minimum (7.31%) in its stems collected from public Park area (Bikaner). The crude fibre was found maximum (29.30%) in leaves while, minimum (7.05%) in fruits of *Albizia lebbeck* collected from Public

Park area (Bikaner). The crude fat was found maximum (16.84%) in fruits of *Moringa oliefera* while, minimum (0.66%) in stems of *Pithecellobium dulce* collected from Public Park area (Bikaner). The total ash content was found maximum (14.57%) in stems of *Moringa oliefera* collected from Public Park area (Bikaner) while, minimum (4.62%) in fruits of *Pithecellobium dulce* collected from Junction area (Hanumangarh). The Nitrogen free extract was found maximum (71.78%) in stems of *Pongamia pinnata* collected from Public Park area (Bikaner) while, minimum (29.13%) in its fruits collected from Junction area (Hanumangarh). The total carbohydrate content was found maximum (85.53%) in stems of *Pongamia pinnata* collected from Public Park area (Bikaner) while, minimum (53.69%) in its fruits collected from Junction area (Hanumangarh). Organic matter was found maximum (95.38%) in fruits of *Pithecellobium dulce* collected from Junction area (Hanumangarh) and minimum (85.43%) in stems of *Moringa oliefera* collected from Public Park area (Bikaner).

The present study thus indicates that arid zone tree species are rich from nutritionally point of view so, they can be used as livestock feed.

References

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Table 1. Nutritive value of stems, leaves and fruits of selected tree species in percentage on dry matter basis. Values are mean \pm SE (Five samples for each tree)

Nutritive contents	Sites	<i>Albizia lebbek</i>			<i>Moringa oliefera</i>			<i>Pithecellobium dulce</i>			<i>Pongamia pinnata</i>		
		Stem	Leaf	Fruit	Stem	Leaf	Fruit	Stem	Leaf	Fruit	Stem	Leaf	Fruit
Crude protein	Public Park area (Bikaner)	10.58 ± 0.06	17.88 ± 0.18	25.75 ± 0.21	9.34 ± 0.04	15.88 ± 0.08	19.47 ± 0.09	15.86 ± 0.08	21.49 ± 0.20	17.91 ± 0.19	7.31 ± 0.02	24.56 ± 0.43	28.76 ± 0.56
	Junction area (Hanumangarh)	10.40 ± 0.51	20.99 ± 0.29	28.68 ± 0.42	11.20 ± 0.40	15.50 ± 0.11	18.74 ± 0.16	17.64 ± 0.08	24.48 ± 0.09	17.73 ± 0.18	10.34 ± 0.07	27.25 ± 0.52	29.07 ± 0.76
Crude fibre	Public Park area (Bikaner)	25.28 ± 0.17	29.30 ± 0.14	7.05 ± 0.12	26.16 ± 0.15	9.09 ± 0.81	15.74 ± 0.08	26.72 ± 0.17	18.01 ± 0.19	11.22 ± 0.33	13.75 ± 0.25	16.50 ± 0.66	20.01 ± 0.21
	Junction area (Hanumangarh)	26.60 ± 0.68	26.22 ± 0.48	14.02 ± 0.46	21.33 ± 0.53	11.50 ± 0.61	15.10 ± 0.26	24.30 ± 0.55	17.90 ± 0.26	10.39 ± 0.49	15.15 ± 0.35	21.20 ± 0.41	24.56 ± 0.80
Crude fat	Public Park area (Bikaner)	1.86 ± 0.78	4.65 ± 0.69	2.02 ± 0.41	1.31 ± 0.34	6.94 ± 0.91	16.84 ± 0.10	0.66 ± 0.21	3.03 ± 0.70	5.78 ± 0.38	1.15 ± 0.16	0.95 ± 0.41	3.82 ± 0.58
	Junction area (Hanumangarh)	1.65 ± 0.21	3.95 ± 0.17	1.94 ± 0.59	1.87 ± 0.09	4.97 ± 0.14	2.13 ± 0.41	1.03 ± 0.31	3.64 ± 0.63	3.99 ± 0.21	3.75 ± 0.15	1.61 ± 0.26	5.90 ± 0.51
Total ash	Public Park area (Bikaner)	8.07 ± 0.01	9.78 ± 0.67	7.34 ± 0.24	14.57 ± 0.27	14.12 ± 0.26	7.63 ± 0.79	5.35 ± 0.38	8.53 ± 0.61	4.65 ± 0.76	6.01 ± 0.16	8.34 ± 0.24	10.54 ± 0.46
	Junction area (Hanumangarh)	6.70 ± 0.64	8.08 ± 0.27	7.32 ± 0.25	12.71 ± 0.36	11.96 ± 0.43	7.86 ± 0.16	5.16 ± 0.78	7.11 ± 0.35	4.62 ± 0.37	8.26 ± 0.57	9.07 ± 0.26	11.34 ± 0.87
Nitrogen free extract	Public Park area (Bikaner)	54.21 ± 0.29	38.39 ± 0.47	57.84 ± 0.59	48.62 ± 0.37	53.97 ± 0.76	40.32 ± 0.31	51.41 ± 0.81	48.94 ± 0.87	60.44 ± 0.71	71.78 ± 0.87	49.65 ± 0.74	36.87 ± 0.76
	Junction area (Hanumangarh)	54.65 ± 0.18	40.76 ± 0.21	48.04 ± 0.61	52.89 ± 0.35	56.07 ± 0.66	56.17 ± 0.72	51.87 ± 0.27	46.87 ± 0.21	63.27 ± 0.32	62.50 ± 0.70	40.87 ± 0.14	29.13 ± 0.09
Total carbohydrate	Public Park area (Bikaner)	79.49 ± 0.03	67.69 ± 0.21	64.89 ± 0.35	74.78 ± 0.26	63.06 ± 0.18	56.06 ± 0.32	78.13 ± 0.47	66.95 ± 0.48	71.66 ± 0.38	85.53 ± 0.07	66.15 ± 0.19	56.88 ± 0.39
	Junction area (Hanumangarh)	81.25 ± 0.27	66.98 ± 0.64	62.06 ± 0.76	74.22 ± 0.43	67.57 ± 0.61	71.27 ± 0.32	76.17 ± 0.02	64.77 ± 0.17	73.66 ± 0.53	77.65 ± 0.72	62.07 ± 0.04	53.69 ± 0.76
Organic matter	Public Park area (Bikaner)	91.93 ± 0.38	90.22 ± 0.16	92.66 ± 0.51	85.43 ± 0.12	85.88 ± 0.32	92.37 ± 0.14	94.65 ± 0.87	91.47 ± 0.10	95.35 ± 0.64	93.99 ± 0.06	91.66 ± 0.23	89.46 ± 0.08
	Junction area (Hanumangarh)	99.30 ± 0.20	91.92 ± 0.03	92.68 ± 0.18	87.29 ± 0.27	88.04 ± 0.22	92.14 ± 0.30	94.84 ± 0.54	92.89 ± 0.24	95.38 ± 0.24	91.74 ± 0.54	90.93 ± 0.15	88.66 ± 0.18

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