

RESEARCH PAPER

Biochemical screening of kodo millets (*Paspalum scrobiculatum* var. L.) grown in region of Vindhyachal eastern U.P.

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ABSTRACT

The present investigation was carried out in the laboratory Department of Biochemistry, N.D. University of Agriculture and Technology, Kumarganj, Faizabad during the year 2011-12. The various biochemical parameters such as protein content NDK-8 (11.12 %), crude fibre content NDK-3 (3.90 %), Total mineral content NDK-3 (4.35 %), tryptophan content NDK-3 (23mg/g), lysine content NDK-5 (134mg/g), methionine content NDK-5 (57mg/g), were also noticed in present investigation. Antinutritional factors such as Phytic acid content NDK-2 (147.05mg/100g) and Tannin content NDK-4 (119.28mg/100g).

Key Words : Biochemical, Screening, Kodo millets, *Paspalum scrobiculatum* var. L.

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Paspalum scrobiculatum Linn. (Poaceae), also known as kodo millet, is a staple food of some areas of Africa and North India. *Paspalum scrobiculatum* is a perennial mat-forming grass regarded as an invasive weed in some places. This unusual grain offers a variety of potential nutritional and health benefits. These millets are grown during *Kharif* (rainy season) and sown with the onset of the southwest monsoon. The kodo grains are recommended as a substituted for rice to the patients suffering from diabetes. The grain contains carbohydrate 59.2 per cent, protein, 10.6 per cent, fat 4.2 per cent, fibre 10.2 per cent, minerals 4.4 per cent, phosphorous 17mg, moisture 11.6 per cent and contains essential amino acids such as cysteine, lysine, methionine and tryptophan etc. (Chhidda *et al.*, 2009). The protein content of this small millet compares well with that of many pulses. They contain more protein, fibre, mineral and vitamins. Which are normally deficient in Animal diet. The districts of eastern U.P. mostly suffer due to problems of malnutrition especially in children, pregnant and lactating mother. Most of the deficiency diseases occur due to deficiency of protein, vitamin A, calcium and iron, which are present in sufficient amount in kodo millet. Kodo foods accommodates all dietary lifestyles.

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The meals and snacks provide an easy way to integrate nutrition into existing treatment of chronic diseases such as diabetes, cardiovascular disease, IBS and obesity. In kodo foods, traditional recipes for those with special diets. We creates health and delicious custom meals and baked good that appeal to all tastes and sensitivities. *Paspalum scrobiculatum* is a perennial mat-forming grass regarded as an invasive weed in some places. This unusual grain offers a variety of potential nutritional and health benefits. *Paspalum scrobiculatum* also decreased cholesterol levels and helped maintain healthy body weight. Additionally, liver levels of glycogen a storage from of glucose increased.

Paspalum scrobiculatum may be contaminated with a mold that has been associated with some cases of toxicity and poisoning.

RESEARCH METHODOLOGY

Ten germplasm of kodo millet namely NDK- 1, NDK-2, NDK-3, NDK-4, NDK-5, NDK-6, NDK- 7, NDK-8, NDK-9, NDK-10 and were collected from different parts of Vindhyachal eastern Uttar Pradesh and used as experimental materials in the field trail. The content of protein was determined by Lowry's method (1951) Tryptophan content was estimated by the method given by Spies and Chamber (1949). The methionine content in biological sample was analyzed by method of Horn *et al.* (1946). Lysine content was estimated by Felker *et al.* (1928). Total mineral content was estimated by the method as described by Hart and Fisher (1971). The content of crude fibre in dried grains of kodo millet were analyses by the method as described by Hart and

Fisher (1971). Phytic acid in the kodo millet has been analyzed by of method of Wheeler and Ferrel (1979). The tannin content in kodo millet was determined by method given by Rangana (1986). The statistical analysis of the data obtained was carried out by the method as suggested by Gomez and Gomez (1984).

RESULTS AND REMONSTRATION

Protein content in various germplasm was obtained between 9.20 to 11.12 per cent. Tryptophan content in various germplasm was obtained between 15 to 23 mg/g protein The tryptophan content in various germplasm of kodo millet was also reported by Gopalan *et al.* (2002). Methionine content in various kodo millet germplasm was ranged from 31 to 57 mg/g protein. Lysine is a basic hydrophobic amino acid which is involved in the number of biochemical reactions. Variation in lysine content may be due to genetic and environmental characters of germplasm. The results are in agreement to www.google.com (2003). Lysine content is various germplasm was obtained between 69 to 134 mg/g protein. Similar range of lysine content in the kodo millet germplasm was also given Gopalan *et al.* (2002). Kodo millet is reported to be a good source of minerals. The mineral content in various germplasm was obtained between and 3.70 to 4.35 per cent. Similar range of total mineral content in kodo germplasm also reported Veena and Desikachar (2005). Kuruppasamy *et al.* (2011). Crude fibre content in various germplasm was obtained between 2.30 to 3.90 per cent similar ranged of crude fibre content was reported by Kulkarni and Naik (2000). Eneche (1999) Phytic acid content in various germplasm

Table 1 : Biochemical and antinutritional parameters of kodo millet germplasm

Sr. No.	Germplasm	Protein content (%)	Tryptophan (mg/ g protein)	Methionine (mg/ g protein)	Lysine (mg/ g protein)	Crude fibre (%)	Phytic acid content (mg/ 100g)	Tannin content (mg/ 100g)
1.	NDK-1	09.80	16	36	78	3.60	136.06	114.28
2.	NDK-2	10.00	15	38	81	3.70	147.05	115.05
3.	NDK-3	09.68	23	54	125	3.90	134.16	113.22
4.	NDK-4	09.89	19	34	69	3.60	135.08	119.28
5.	NDK-5	10.36	18	57	134	2.50	136.11	115.07
6.	NDK-6	10.94	16	39	83	2.80	137.10	116.58
7.	NDK-7	11.08	19	40	87	2.30	127.05	116.08
8.	NDK-8	11.12	20	38	85	3.70	127.32	110.22
9.	NDK-9	09.50	20	31	90	2.80	136.33	110.75
10.	NDK-10	09.20	20	35	70	2.90	140.40	117.82
	S.E. ±	0.33	0.79	1.80	1.96	0.24	0.36	0.16
	C.D. (P=0.05)	0.98	2.36	5.35	5.82	0.73	1.09	0.50

was obtained between 127.05 to 147.05 mg/100g. Dhomne *et al.* (2009) studied the content of phytic acid which is mostly present in the seed coat and is eliminated by milling or heat treatment. Tannin content in the various germplasm was obtained between 110.22 to 119.28 mg/10.

Conclusion :

The results obtained from the present investigation exhibited that colour of seeds was recorded as brown, light brown and dark brown in colour. Highest protein content was noticed in germplasm NDK-8 followed by NDK-7 and NDK-6. The tryptophan content was noticed maximum in germplasm NDK-3, NDK-8, NDK-9 and NDK-10 while high methionine content was observed in genotype NDK-5, NDK-3 and NDK-7. Lysine content among germplasm was reported highest in NDK-5 followed by NDK-3 and NDK-9. Total mineral and crude fibre content was found highest in germplasm NDK-3 followed by NDK-5 and NDK-9. Less antinutritional factors were recorded in germplasm NDK-2 followed by NDK-10.

On the basis of results obtain in the present investigation, germplasm NDK-4 and followed by NDK-10 and NDK-6 were rated superior in nutritional components and contain the less antinutritional factors

best and better for utilization

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