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Proceedings of the 31st Annual Conference Nigerian Society For Animal Production 12th -15th March 2006

I.R.Muhammad, B.F.Muhammad, F.Bibi-Farouk, Y. Shehu
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Bayero University Kano, P.M.B. 3011
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MRS. KEMI AKANDE

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ISSN 1596-5570

Proceedings Produced By:
The Department of Animal Science
Bayero University Kano
P.M.B. 3011, Kano,
Nigeria

Published by:
The Nigerian Society for Animal Production

Copies of the Proceedings can be purchased from:
The National Secretariat, The Nigerian Society for Animal Production (NSAP)
National Animal Production Research Institute (NAPRI),
Ahmadu Bello University, P.M.B. 1096, Shika-Zaria Nigeria

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CHEMICAL COMPOSITION OF SOME COMMON FEEDSTUFFS IN BAUCHI TOWN

ISHAYA[1], S. AND AKANDE, K. E.
Animal Production Programme
Abubakar Tafawa Balewa University
P. M. B. 0248, Bauchi
1. Veterinary Services Division
Ministry of Agriculture and Natural Resources (M.A.N.R.)
P. M. B. 0068, Bauchi State.

Summary

A study was conducted to examine the chemical composition of some feedstuffs in Bauchi town, with a view to assessing their nutritive value. The highest dry matter was obtained in beniseed 98.02% and the lowest was found in acha seed (hungry rice) 89.00%. Generally, legumes and animal by-products were higher in crude protein with blood meal having 65.58% crude protein, while the least crude protein of 5.68% was found in rice offal. The highest crude fibre was obtained in rice offal (33.20%) and the lowest value of 1.35% was obtained in fishmeal. The ether extract were higher in local groundnut cake (23.58%) and soya bean 19.00% than in the other feedstuffs. The highest ash content was observed in fishmeal (22.53%) while maize seed has the lowest value of 1.23%. This study gave a clue to the nutritive value of common feedstuffs in Bauchi town. It will also assist feed-millers and farmers in formulating animal feeds, through the use of cheap and locally available feedstuffs.

Introduction

In the topics, the most important problem in animal production has been increasing unavailability and consequent high cost of feed. This problem of unavailability is due in part to competition between man and livestock for items such as grains and root crops. It has therefore become very necessary to search for alternative sources of feedstuffs, with little competition between man and animal (Murdeck, 1981). Therefore good nutrition is one of the fundamentals of livestock production. It involves the wise use of available feeds in formulating a palatable economical, and nutritionally balance ration for livestock and poultry production (Cole, 1966). Abubakar (1998) stated that once the supply of available nutrients for feeding livestock is increased, especially from unconventional sources, the sustainability of animal agriculture will be ensured. The significance of chemical composition in determining the nutritive value of a feedstuff is well known. The proximate composition of feedstuffs should be determined as a routine to enable farmers as well as feed-millers formulate balanced feed of adequate quality for the various classes of animals. Chemicals analysis of feedstuffs is valuable in determining the nutritive value and describing feed characteristics, which is important in diet formulation (Klopfenstein and Owen, 1981). This study was thus undertaken to provide data on the chemical composition of some common feedstuffs readily available in Bauchi town that may play an important role in animal nutrition.

Materials And Methods

The feedstuffs were obtained from main and small markets in Bauchi metropolis. These feedstuffs were analyzed in the Animal Production Laboratory of the Abubakar Tafawa Balewa University, Bauchi. The common feedstuffs were collected from various locations. Soya bean, bambaranut, maize seed and cowpea were collected from a backyard farm. Maize offal, sorghum offal, millet offal, rice offal, was collected from small-scale flour mills that processed different cereals into offal and flour for human consumption. The local groundnut cake, beniseed, fish meal (local), were purchased from Muda – lawal market in Bauchi. Acha (hungry rice), sorghum seed, millet seed, were purchased from Yelwa Tudu market in Bauchi. Zobo chaff was collected from those processing zobo drink for sale at Nassarawa/Jahun quarters in Bauchi. Buruktu waste (spent sorghum residue) was collected from Mami market situated in Army Barracks, Bauchi. Calabash seed was collected from Muda – Lawal market where chickens are dressed. Blood meal was collected at Bauchi Abattoir. After the feedstuffs were collected, they were sun-dried, grinded and

sieved with 1mm sieve, before it was taken to the laboratory for analysis.

Chemical Analysis:
The proximate analysis of feedstuffs (Table 1) were carried out according to the methods of Association of Official Analytical Chemists (AOAC, 1990). Crude protein was determined by Kjedahl procedure. Crude fat (ether extract) was determined by subjecting samples petroleum ether (boiling point 60 – 80 degree) extraction, using the Soxhlet apparatus. Crude firbre content was also determined. Ash content was determined by combustion of the sample at a temperature of 600°C for three hours in muffle furnance.

Results and Discussion

The proximate composition of some common feedstuffs in Bauchi town is presented in Table 1. The result showed that dry matter (DM) value of the feedstuffs ranged from 89 – 98%. The highest DM value of 98.02% was recorded for beniseed. This observation is slightly above the value reported by Blakely and Bade (1982). The differences in DM could be due to how long the plants stayed on the field before harvest or the nature of rainfall in the area and the stage of maturity. The lowest DM was found in acha (hungry rice) 89.00%. The animal protein sources showed a low percentage of DM compared to other feedstuffs. The crude protein (CP) value obtained ranged from 5.68 – 65.58%. The animal protein sources had higher crude protein than the other plant products and by-products. The blood meal had the highest CP of 65.58%. This result agrees with the report of FormuKong (1995), who reported a CP of 65.40%. Local fish meal had 56.80% CP and poultry offal with CP of 47.87%. Local groundnut cake had a considerable amount of protein of 43.00%, followed by soyabean (36.62%), cowpea (26.66%) and bambaranut (20.75%). The result showed that crude fibre (CF) values ranged from 1.35% - 33.20%. The highest value of 33.20% crude fibre was found in rice offal, being a fibrous material. This result is higher than that, reported by Church and Pond (1988) of 18.7% CF. The differences could be due to the variety of rice used or method of processing. It could be that the rice contained more rice husks than the rice bran. Spent sorghum residue (burukutu waste) had 30.46% CF. Zobo chaff, which is a sorrel by-product contained 20.36% CF, while millet offal and sorghum offal had the values of 9.51% and 18.48% respectively. Carbohydrate and protein feedstuffs were generally lower in fibre content. The highest ether extract (EE) of 23.58% was obtained in groundnut cake, a plant protein, while the lowest value of 0.54% was found in bloodmeal. Calabash seed which is also a plant protein had 8.47% EE, beniseed had 6.47% EE. The by-product feedstuffs had an average of 3.93% EE. From the results obtained the value of ash ranged from 1.23% – 22.53%. The highest ash content of 22.53% was obtained in fishmeal, which was followed by rice offal with 16.56% of ash.

Blood meal had 7.08% ash. Poultry offal had a value of 8.62% ash, the value obtained is comparable with the result of Cole (1966) who reported 8.07% ash for poultry offal. The plant protein had an average of 4.60% ash, with soya bean seed having the highest percentage of 6 %. This observation is slightly higher than result obtained by Faryna (1977), who reported the ash content of 5.00% for soyabeans. The differences in the reported values could be due to the rainfall pattern or soil fertility.

Conclusion

Nigeria is blessed with abundant feedstuffs that could be converted into meat. It must be emphasized that the chemical composition of feedstuffs vary to a limited extent between varieties of the feedstuffs and to greater extent varies with the method of processing, type of storage, harvesting handling and stage of maturity of the plant and the level of soil fertility. The common feedstuffs available could be important ingredients for those formulating feeds for commercial purposes, and these will lessen the amount spent on buying commercially prepared ingredients. However, there is the need for further research into their acceptability, digestibility, amino acid profile, vitamin, mineral and energy content of these locally available feedstuffs.

References

Abubakar, M. M. (1998). **Utilization of unconventional feedstuffs for sustainable livestock production** (Inaugural lecture series No. 9). Abubakar Tafawa Balewa University, Bauchi, pp. 1 – 5.

A.O.A.C. (1990). **Official Methods of Analysis**. 15th edition. Association of Official Analytical Chemists. Washington, DC.

Blackely, J. and Bade, D. H. (1982). **The Science of Animal Husbandry**. Reston Publication Company, 3rd edition, pp. 20 – 233.

Church, D. C. and Pond, W. G. (1988). **Basic Animal Nutrition and Feeding**. Oregon State University, Corvallis, USA, pp. 14 – 201.

Cole, H. H. (1966). **Introduction to Livestock Production, Including Dairy and Poultry**. University of California Davis. 2nd edition, pp. 487.

Faryna, P. J. (1977). Agricultural Extension, Research and Liason Service. *Nigerian Diets*. Extension Bulletin No. 21. Home Economics Series.

Formukong, B. (1995). **Chemical composition and in-situ rumen degrability of urea treated crop residues and blood meal**. B. Tech. Thesis. Abubakar Tafawa Balewa University, Bauchi, 48pp.

Klopfenstein, T. and Owen, F. G. (1981). Value and potentials of crop residues and by-products in dairy rations. *Journal of Dairy Science*. **64**: 1250 – 1268.

Murdeck, F. R.; Hadgson, A. S. and Riley, R. E. (1981). Nutritive value of wet brewers grains for lactating dairy cows. *Journal of Dairy Science*. **64**: 1828 – 1832.

Table 1: Proximate composition of some common feedstuffs in Bauchi town

Feedstuffs	DM (%)	CP (%)	CF (%)	EE (%)	ASH (%)
Soya bean	94.58	36.62	5.51	19.00	6.02
Bambaranut	92.14	20.75	5.04	5.35	3.55
Maize offal	91.41	11.81	4.21	6.51	5.16
Groundnut cake (local)	94.24	43.00	3.75	23.58	4.77
Fish meal (local)	93.52	56.80	1.35	13.69	22.53
Acha (hungry rice)	89.00	8.37	2.64	1.30	1.58
Zobo chaff	90.15	10.93	20.36	0.86	7.03
Maize seed	89.68	9.69	3.41	3.48	1.23
Sorghum seed	90.70	10.82	3.24	4.81	1.63
Sorghum offal	91.31	11.43	18.48	5.86	4.57
Millet offal	91.49	11.75	9.51	3.56	5.36
Cowpea	93.78	26.66	1.56	1.96	4.81
Millet seed	90.50	10.62	1.54	2.03	2.43
Rice offal	92.64	5.68	33.20	5.02	16.56
Beniseed	98.02	17.12	4.46	6.47	6.33
Burukutu waste (spent sorghum waste)	92.26	15.68	30.46	2.09	3.82
Calabash seed	96.00	11.87	3.46	8.47	2.98
Poultry offal	90.99	47.87	3.52	3.38	8.62
Blood meal	89.52	65.58	1.39	0.54	7.08

Key: DM = Dry matter
CP = Crude protein
CF = Crude fibre
EE = Ether extract