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PROXIMATE COMPOSITION OF RAW AND PROCESSED FULL-FAT LEBBECK (*Albizia lebbbeck*) SEEDS

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ABSTRACT

This study was carried out to determine the proximate composition of the full-fat composition of raw and processed (boiled) Albizia lebbbeck seeds. The crude protein was in the range of 28.03 to 28.35% for the raw and processed seeds respectively. There was the occurrence of slight changes in the content of crude protein, moisture and nitrogen-free extract after the processing of the lebbbeck seeds but this was with the exemption of the crude fibre, ether extract and ash contents. It was observed from the results that the crude fibre dropped from 18.50 in the raw seeds to 16.98% in the processed seed with a change of 8.22%, and the ash content reduced from 4.52 in the raw seeds to 4.02% in the processed seeds, with a percentage reduction of 11.06 and the ether extract increased from 11.06% in raw seeds to 12.0% upon processing. In this experiment, the proximate analysis showed that Albizia lebbbeck can be a potential plant protein source for incorporation in livestock feeds with proper processing.

KEYWORDS: Proximate composition; full-fat; *Albizia lebbbeck*; processing; raw

INTRODUCTION

Conventional feed sources in Nigeria can no longer meet the ever-growing poultry industry. Additionally, these feedstuffs are expensive. Notwithstanding, in Nigeria, there are several non-conventional leguminous seeds which are underexploited. One of such is lebbbeck (*Albizia lebbbeck*), which is a leguminous plant that produces seed grains that is readily available. It is also a tropical legume and one of the most widespread species worldwide. Lebbbeck is an unconventional feed source that may be capable of boosting poultry production. There is a need to utilize this unconventional feed ingredient that is not fully exploited as a possible potential protein source for poultry. Raw lebbbeck seeds contain antinutritional substances that could be toxic when consumed by animals as such there is the need to know the best processing method that will eliminate these factors and make it safe as well as palatable for the animals. The use of processed lebbbeck seed could serve as a potential protein source for poultry feeding.

According to Fagbemi *et al.* (2005), processing can effectively reduce the antinutritional factors in seeds, notably boiling as a processing method increased the *in vitro* multienzyme protein digestibility of seeds. Proper processing is required to improve the nutritional quality of legume grains, sometimes a combination of more than one processing method may be employed (Akande and Fabiyi, 2010).

Nutritional data on boiled lebbeck seeds is limited to the best of the authors' knowledge, therefore, this experiment was carried out to determine the proximate composition of lebbeck seeds for possible consideration as a potential unconventional feedstuff.

MATERIALS AND METHODS

Sample collection and procedure employed for processing lebbeck seeds

Dry pods of *Albizia lebbeck* were harvested from lebbeck trees in Minna, Niger State, Nigeria. Raw seeds were removed from lebbeck pods by threshing with a mortar and pestle. After threshing seeds were separated from the chaff and other debris. About ten kilogrammes (10 kg) of raw lebbeck are boiled in 20 litres of water at 100°C for 30 minutes. The lebbeck seeds were then poured into a sieve to drain the water from the seeds. After cooling the seeds were sun-dried for 3 days. After drying, the lebbeck seeds were grounded with the use of a hammer mill.

Proximate analyses

The proximate analyses of lebbeck seeds (both raw and processed seeds) were carried out at the Animal Production Laboratory, Federal University of Technology, Minna, Niger State, Nigeria using the methods outlined by the Association of Official Analytical Chemists (AOAC, 2000). The parameters determined were: moisture content, crude protein, ether extract, crude fibre, ash and nitrogen-free extract.

RESULTS AND DISCUSSION

The proximate composition of the raw and processed lebbeck seeds is presented in Table 1. The values obtained from the results showed that some proximate content of raw and processed lebbeck seeds were generally comparably close, for instance, the crude protein, moisture content and nitrogen-free extract, except the crude fibre, ether extract and ash content. The crude protein was in the range of 28.03 to 28.35% for the raw and processed seeds respectively. The crude fibre dropped from 18.50 in the raw seeds to 16.98% in the processed seeds with a change of 8.22%, and the ash content reduced from 4.52 in the raw seeds to 4.02% in the processed seeds, with a percentage reduction of 11.06 whereas the ether extract increased from 11.06% in raw seeds to

12.0% upon processing. The reduction in some proximal content may be due to the loss of nutrients through leaching during the boiling process. Akande (2004) reported a similar observation for raw and processed jack bean seeds. Tsado *et al.* (2018) reported a crude protein of 22.93% for fermented and toasted lebbeck seed, this value is rather lower than the crude protein of 28.35% obtained in this study. However, the crude protein obtained by Adegbehingbe *et al.* (2018) was 36.31% which is much higher than the value recorded in this research study. This variation in the crude protein may probably be due to differences in the method employed in processing the lebbeck seeds.

Table 1: Proximate composition of raw and processed full-fat lebbeck (*Albizia lebbeck*) seeds

Nutrients	Raw	lebbeck	Percentage change (%)
	seeds	Processed lebbeck seeds	
Moisture content	8.19	8.20	0.12
Crude protein	28.03	28.35	1.14
Crude fibre	18.50	16.98	8.22
Ash	4.52	4.02	11.06
Ether extract	11.06	12.00	8.50
Nitrogen free extract	29.70	30.45	2.53

CONCLUSION

In this study, the proximate analysis revealed that lebbeck seeds can be a promising plant protein feed resource for livestock with proper processing. In addition, processing (boiling) did not negatively affect the major proximate fractions which are the crude protein, crude fat and nitrogen-free extract.

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