COMPARATIVE EVALUATION OF NUTRIENT COMPOSITION FOR ACCESSION OF THREE CULTIVAR OF *Lablab purpureus* LEAVES.

J. A ALALADE[1], J. A AKINLADE[2], A. N FAJEMISIN[3] AND I. A ADEBISI[1]

[1] *Department of Animal Health and Production, Oyo State College of Agriculture and Technology, P.M.B. 10, Igbo Ora.Oyo State.*

[2]*Department of Animal Production and Health, LadokeAkintola University of Technology, P.M.B.4000,Ogbomoso, Oyo State. Nigeria.*

[3]*Department of Animal Production and Health, Federal University of Technology, P.M.B. 704, Akure, Nigeria.*

**Correspondence: alaladeja16@gmail; 08033664270*

ABSTRACT

The leaves of three cultivars of *Lablab purpureus* (Tln-43, Tln-49 and Tln-51) were evaluated for their Proximate and mineral composition in a randomized complete block design experiment. The results showed that the leaves had significantly higher ($P<0.05$) crude protein (16.97%), crude fat (27.35%), ash (9.95%) and Ether extract (5.09%). Also same trend results were observed on mineral contents for Phosphorus (0.37%P), Calcium (0.26%Ca), Magnesium (0.29%Mg) and Iron (192.60mg/kg Fe). The study concluded that the leaves of three accession of *Lablab purpureus* leaves had generally higher nutritional quality on both proximate and minerals contents.

Keywords: Proximate contents, *Lablab purpureus* leaves.

INTRODUCTION

Lablab purpureusis a climbing annual or short-live perennial with long stems. It is a valuable feed resource for livestock production. It is a leguminous plant that can be grazed by both large and small ruminant animals (Muhammed *et al*., 2004). Forages are known to have an important role in the nutrition of ruminant animals in terms of providing energy, protein and mineral element for chewing and rumination (Ranjbar, 2007).The use of forage legume such as lablab as feed supplements has been shown to enhance the intake of poor roughages, improve growth rates and increase production efficiency in ruminants (Orden *et al*., 2000). In order to bring lablab on farmer's field, there is need to identify the most nutritive and the one with less anti nutrient factors in other to be useful for ruminant animals as feed and the one that is considered most preferred among the hosted cultivars.

MATERIALS AND METHODS

Experimental Site

The experiment was carried out at Teaching and Research farm of Oyo State College of Agriculture and Technology, Igboora which is located within 7°15' North and 3°30' East of the equator with an average rainfall of 1278mm and average annual temperature 27° C.

Experimental Layout and Management Practices

The area of land used was $50m^2$, the land was cleared, stumped and leveled manually to obtain a clean seed bed. The experimental plots were laid out in randomized completely block design. Each experimental plot measured 3m×3m with 1m gap between plots. There were three treatments which consist of three different cultivars of *lablab purpureus* (TLn-43, TLn-49 and TLn-51). Each treatment was replicated thrice, and seeds were procured from the International Institute of Tropical Agriculture, (IITA) Ibadan, Oyo State, Nigeria. Treated seeds of lablab were planted at rate of 2 seeds per hole with a spacing of 50cm×50cm.Before flowering 10 weeks age, the herbage sample was taken from three replication pooled and mixed, one representative sub-sample was taken per accession and saved pending chemical analysis after drying.

Chemical Analysis

Collected lablab forage samples were used for determination of crude protein (CP) and ash according to the procedures described by AOAC (1999). Mineral Composition of mixtures

phosphorus (P), potassium (K), and calcium (Ca) were determined using Atomic Absorption Spectrometer procedures described by AOAC (1999)

Statistical Analysis: All data that was obtained were subjected to the analysis of variance (ANOVA). Means were separated using Duncan's Multiple Range Test, (2001) package.

RESULTS AND DISCUSSION

Table 1: Shows the proximate composition of three accessions of *Lablab purpureus* leaves. There were Significant difference (P<0.05) among the three accession and proximate composition of the leaves. The three accessions of *Lablab purpureus* are Tln-43, Tln-49 and Tln-51 respectively. The Crude protein (CP %) content of three accession of *Lablab purpureus* ranged from Tln-51 (14.88%) to Tln-43 (16.97%) respectively. Among the accessions of *Lablab purpureus* leaves, crude protein values were above the critical protein requirement level of 7% for ruminants. The Ether extract contents of all accession fell within the range of (4-10%) EE recommended by Campbell *et al.* (2006). The value of ether extract in the all accession in an indicator of higher energy level for the animal (Babayemi and Bamikole, 2006) and this is a major form of energy stored in plant which is been utilized by the animal for body maintenance and production. The crude fiber contents of all accessions fell within the (15-20%) recommended for improved intake and production in finishing ruminant (Buxton, 1996). The crude fiber content value of all accession of *Lablab purpureus* leaves reported will aid digestion and absorption of water from the body and bulk stool (Ayoola and Adeyeye, 2000). The highest value 9.95% of Ash content in the accession of *Lablab purpureus* was above (5.08%) recorded for *Psophocarpus tetragonolobus* leaves (Alalade *et al.*, 2016). Ash content useful is assessing the quality grading of leaves and also give an idea of amount of mineral element present in the *Lablab purpureus* leaves

Mineral Composition of Three Accession of *Lablab purpureus* Leaves

Table 2: Present the mineral composition of three accessions of *Lablab purpureus* leaves.

Significant (P<0.05) was observed among the three accessions and mineral contents of *Lablab purpureus* leaves. The concentration of Phosphorus (P %) among the three accessions of *Lablab purpureus* leaves was (0.37%). The phosphorus content of all accession of *Lablab purpureus* leaves (0.37%) was higher compared to NRC recommended 0.15% for phosphorus (NRC, 1985). The calcium (Ca) content of all accession of *Lablab purpureus* leaves (0.26%) was higher than (0.09%) observed in *Canavalia ensiformis* leaves by Akinlade *et al.* (2007). The forage Ca values found in this study was considered adequate for the optimum performance of ruminants. The least value (0.28%) observed on magnesium content of three accessions of *Lablab purpureus* leaves was above the range from 0.12% to 0.20% for the requirement of the ruminant's diet suggested by (NRC, 1985). The Iron content of all accessions of *Lablab purpureus* ranged (190.80-192.60 mg/kg) higher compared to (181.65 mg/kg) reported for Iron content of *Psophocarpus tetragonolobus* leaves (Alalade *et al.*, 2016). Accessions of *Lablab purpureus* leaves content in the present study was above (50 mg/kg) sufficient for the requirement of ruminant animals for optimal performance and also above the critical levels of Fe in animal tissue (30-50 mg/kg) (Khan *et al.*, 2005). This implied that leaves are good source of dietary Iron.

CONCLUSION

From the result obtained from the research work, it can be concluded that *Lablab purpureus*leaves have better nutrient value due to high content of protein and mineral in the leaves which are of great benefit to ruminant animals.

REFERENCES

Akinlade J.A, Farinu G.O, Taiwo A.A, Aderinola O.A, Adebayo T.A, Ojebiyi O.O, Olaniran O.A,(2007) Agronomic and nutritive evaluation of Jack beans (*Canavaliaensiformis*) for fodder in the derived savannah zone of Nigeria. *International Journal of Agricultural Research.2007; 2(12):1059-1063*..

Alalade, J.A., Akinlade, J.A., Aderinola, O.A., Fajemisin, A.N., Muraina, T.O and Amoo.T.A (2016).Proximate, Mineral and Anti-nutrient contents in *Psophocarpustetragonolobus*(L) DC.

(Winged bean) leaves. *British Journal of Pharmaceutical Research 10(2):1-7 2016.*

AOAC, (1999).Association of Official Analytical Chemists, Official Methods of Analysis. 18th Edition AOAC Inc, Arlingon, Virginia USA.1094 Pp

Ayoola P.B andAdeyeye A,(2000). Proximate analysis and nutrient evaluation of some Nigerian pawpaw seed varieties. *Science Focus. 2000; 14(4):554558.*

Babayemi O.J. Bamikole M.A.(2006). Some productive and nutritive effects of *Tephrosiabrotealata, Tephrosia candida, Leucaenaleucocephala* and *Gliricidiasepium* hay for West Africa Dwarf goats kept on range.*Journal of central European Agriculture. 2006:7(2):323.*

Buxton D.R, Quality related characteristics of forage as influence by plant environment and agronomic factors. Anim. Feed sci. Technol. 1996; 59: 37-49.

Campbell Kli, Garforth C, Heffernan C, Morton J, Paterson R, Rymer C, Upton M, Small stock in development Natural Resources International LTD. Aylesford, Kent, U k; 2006.

Khan Z.L, Ashraf M, Hussain A, McDowell L.R,(2005). Seasonal variation of trace element in a semi and yield pasture communication. *Soil science and plant Analysis 2005; 37:1471-1484.*

Muhammed, I.R., OlorunjuS.A.S.,Hena, S.W. and Agishi, E.C(2004). Forage yield , crude protein, *in vitro* dry matter digestibility and mineral content of three cultivars of Lablab (*Lablab purpureus*). *J. Anim. Prod.Res., 2:971-975.*

NRC. (1985).Nutrients requirements of beef cattle (17th edition) National Academy Press, Washington D.C. USA; 1985.

Orden, E.A., Abdulrazak, S.A E.M. Cruz, E.M.,Orden, M.E., Ichinohe, T andFujihara,T(2000).*Leucaenaleucocephala*a nd*Gliricidiasepium*supplementation in sheep fed with ammonia treated rice straw: Effect on intake, digestibility, microbial protein yield and live-weight, changes. Asian-Aust. *J. Anim.Sci., 13: 1659-1666.*

Ranjbar, G.A.(2007). Forage and hay yield performance of different berseem clover (*Trifoliumalexandinum L.*) genotypes in mazandaran conditions. *Asian J. Plant sci., 6: 1006-1011.*

SAS (2001).Institute of Statistical Analysis System (SAS) User's Guide. SAS Institute Inc., North Carolina, USA.

Table 1: Proximate composition of three Accessions of *Lablab purpureus* leaves

Parameters	CP	EE	CF	Ash	DM
Lablab purpureus (Tln-49)	15.67^{b}	5.09^{a}	17.18^{b}	9.87	66.90^{c}
Lablab purpureus (Tln-51)	14.88^{c}	4.65^{b}	27.35^{a}	9.95	72.44^{a}
Lablab purpureus (Tln-43)	16.97^{a}	4.07^{c}	21.69^{c}	9.65	71.10^{b}
SEM	0.18	0.04	0.73	0.12	0.45

^{abc} Means with different along the same row are significant (P< 0.05) different

Table 2: Mineral Composition of Three Accessions of *Lablab purpureus* Leaves

Parameters	P (%)	Ca (%)	Mg (%)	Fe (mg/kg)
Lablab purpureus(Tln-49)	0.37	0.26^{a}	0.28^{b}	192.60^{a}
Lablab purpureus (Tln-51)	0.37	0.25^{b}	0.29^{b}	190.80^{c}
Lablab purpureus (Tln-43)	0.37	0.24^{c}	0.29^{a}	191.60^{b}
SEM	0.001	0.002	0.001	0.12

^{abc} Means with different along the same row are significant (P< 0.05) different