
DETERMINATION OF NUTRIENT AND PHYTOCHEMICAL PROFILE OF *XYLOPIAETHIOPICA*

Solomon, F. E., Essien, C. A., and Eyoh, G. D.

Department of Animal Science, Akwa Ibom State University,
Obio Akpa Campus, Akwalbom State, Nigeria

Corresponding Author: feliciasolomon78@gmail.com.

ABSTRACT:

The proximate composition, minerals, vitamins and phytochemical content of *Xylophia aethiopica* was determined. The analysis were done using standard methods of Association of Official Analytical Chemists (AOAC). The result of the proximate composition showed the following. Crude protein (7.83%), Ether Extract (9.07%), Crude fibre (15.23%), Ash (5.02%) and Nitrogen free extract (56.52%) respectively. The mineral profile revealed that potassium (0.89%) and phosphorus (0.46%) as the most abundant mineral. Vitamin was found to be 136.27mg/100g, 238.67mg/100g, 11.69mg/100g for vitamin E, A and C respectively. Photochemicals were 0.79, 1.23, 2.36, 0.51, 0.40 and 0.21 for Tannin, Saponin, Alkaovoids, flavonoids, phytate and oxalate respectively. Based on results of this study, *Xylophia aethiopica* can be a potential phytogenic feed additive which is a good source of essential nutrients.

Key words: *Xylophia aethiopica*, proximate, Minerals, Vitamins, phytochemical.

INTRODUCTION:

Feed additives and medicinal plants are materials which are added to feed with the aim of protecting livestock from diseases. They remain an untapped reservoir for active compounds (phytochemicals) with properties that can potentially deal with various biological activities such as anti-inflammatory, anti-microbial, antihelminthic, antioxidant, etc. (Alagbe *et al.*, 2020), more than 200,000 species of medicinal plants of therapeutic value with contents of different bioactive chemicals (saponins, alkaloids, flavonoids, tannins, phenols, terpenoids) in different concentrations and are loaded with minerals, vitamins and other nutrients are in existence (Olafadehan *et al.*, 2020). These plants are effective, cheap and very safe and produces several physiological actions on the livestock. *XylophiaAethiopica* belong to the family Annonaceae and kingdom plantae.

Its common name includes Selim pepper, African pepper, Negro pepper, spice pepper, guinea pepper, West African pepper and Senegal pepper (Jirovets *et al.*, 1997). It is locally referred to as Ata (Ibibio/Efik), Uda (Igbo), Urheri (Urhoba), and Eeru (Yoruba); (Udofia and Alozie, 2015).

XylophiaAethiopica is an aromatic tree whose origin is Ethiopia. It grows up to 20-30m in height and has a diameter of about 60-70cm (Orwa *et al.*, 2009). The plant has a simple, alternate, oblong and elliptic to ovate leaves and bisexual flowers. The fruits of *xylophiaaethiopica* are small, twisted bean pods, aromatic, quite pungent (when fresh) smooth grey bark and slightly bitter. It is reported to have pharmaceutical and medicinal properties (Isikwenu, 2015). *XylophiaAethiopica* has phytochemical contents such as flavonoids, essential oil, phenols and carotenoids. Recently, experienced gathered on its use in human nutrition is being applied in monogastric animals due to its antioxidant and anti-microbial activities.

In view of these potentials an experiment was carried out to ascertain the proximate, minerals, vitamins and phytochemical composition of *XylophiaAethiopica*fruit powder.

MATERIALS AND METHODS

Source and processing of *Xylophia aethiopica* fruit powder.

The *Xylophia aethiopica* fruit were purchased from the local market in Abak, Akwa Ibom State. The fruits were washed and sundried for seven days. The dried samples were ground into powder using a manual blender (corona 1016, Landersy YCIA, South Africa) to produce *xylophia aethiopica*fruit powder which were later packaged and stored in cellophane bags under room temperature prior to analysis.

Determination of proximate composition: Sample of ground *xylophia aethiopica* fruit were subjected to proximate analysis according to the methods of AOAC (1990). The parameters determined

included crude protein, ether extracts, crude fibre, and ash content. The nitrogen free extracts (NFE) was determined by difference. $NFE (\%) = 100 - (\%CP + \%CF + \%ash + \%EE)$.

Determination of phytochemicals: Phytochemical analysis for tannin saponin, flavonoid, alkaloid, oxalate, hydrogen cyanide (HCN), were determined using standard method of Bradbury *et al* 1999; Swain, 1979).

RESULTS AND DISCUSSION

Table 1 shows the proximate and phytochemical composition values of *xylophia aethiopica* fruit powder. The crude protein value was higher than the values reported by Yusuf *et al.*, (2014) and Okagu *et al.*, (2018), but lower than that of Onmeje *et al.*, (2020), while the crude fibre content was lower than the value obtained by Okagu *et al.*, (2018) 22.71% and similar with Onmeje *et al.*, 2020 (15.20%). Ether Extract and Nitrogen free extract was lower than the values reported by Yusuf *et al.*, (2014), but higher than that reported by Okagu *et al.*, (2018). Value for Ash was similar to that reported by Okagu *et al.*, (2018). Variation in values may suggest different growth conditions, geographical variations in the level of soil fertility, efficiency of mineral uptakes, stage at harvesting, analytical procedure employed and time of evaluation. Agu *et al.*, (2017).

Table 1: Proximate and phytochemical Compositions of *Xylophia Aethiopica* fruit powder

Parameters	Percentage (%)	Phytochemicals	Values (%)
Crude protein	7.83	Tannin	0.79
Crude fibre	15.23	Saponin	1.23
Ether extract	9.07	Alkaloids	2.36
Ash	5.02	Flavonoids	0.51
Nitrogen Free Extract	55.16	Phytate	0.40
Metabolizable Energy (Kcal/kg)	3451.00	Oxalate	0.21
		Hydrogen Cyanide	5.77

The values of oxalate, phytate and hydrogen cyanide obtained in this study fell within range with that reported by Rahman *et al.*, (2013). The values obtained for tannin, saponin, alkaloids and flavonoid were lower than the values reported by Yusuf *et al.*, (2014) and Uzochukwu *et al.* (2019) respectively. Phytochemicals (tannin, alkaloids, flavonoids, phenols, saponin) etc. are biological active naturally occurring chemical compounds present in plant which may provide health benefits to both human and livestock (Hasler and Blumberg, 1999). They are known to possess anti-inflammatory, anti-oxidant, anticarcinogenic, anti-hypertensive, antimalarial, antimicrobial and anti-allergic activities (Saman *et al.*, 2016). Flavonoids possess antioxidant properties as they reduce lipid peroxidation, thus a major factor in the organoleptic characteristics and nutrition value of meat and egg in poultry. Saponin enhances immune stimulation in poultry while tannin enhances body weight, higher erythrocyte count as well as haemoglobin and haematocrit (Essien, 2021)

CONCLUSION

The result from this study revealed that *xylophia aethiopica* could serve as excellent source of some minerals such as iron, potassium, sodium and magnesium. The proximate and phytochemical composition of *xylophia aethiopica* fruit powder revealed the presence of crude fibre, crude protein, ether extract, ash and nitrogen free extract and lower level of tannin, saponin, flavonoid, oxalate, phytate, alkaloid and hydrogen cyanide.

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