Socio-cultural and phytochemical ranking of *Ficus microcarpa* in comparison with six selected indigenous browse plants from southeastern Nigeria.

A research paper

presented by

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Introduction

- Domestic animals such as ruminants depend on the availability of **biological diversity** for sustenance which enables the selection of **indigenous available raw materials** in a given location.

- In order to optimize production efficiency, **identification** and **proper utilization** of some **neglected** and **underutilized plant species** available in Southeastern Nigeria becomes imperative.

OBJECTIVES

The objective of this research work was to compare socio-culturally and phytochemically *Ficus microcarpa* with six selected indigenous plants in Southeastern, Nigeria.

MATERIALS AND METHODS

- The study was carried out at Nnobi community in Idemili South Local Government Area (LGA) of Anambra State, Nigeria .

- The location lies between latitude 06°00′N and 06°05′N and longitude 06°57′E and 06°95′E within the south-eastern agricultural zone of Nigeria.

Sample collection and preparation

- The Ficus tree was climbed by the researcher and its branches cut down for collection of its leaves.

- Fresh foliage were collected from three stands of *Ficus microcarpa* at each study village.

- Thereafter, the leaves sampled from each village were plucked and air-dried accordingly. The dried leaf samples were ground with hammer mill through a 1mm screen to produce their respective leaf meals and were collected in sealed polythene bags, labeled and taken to JaaGee Laboratories Nigeria Ltd, Ibadan, Nigeria, for physical and phytochemical analyses. The results gotten from the laboratory analysis were compared with already available results of other six plants; *Garcinia kola*, *Mucuna pruriens* and *Gongronema latifolium* scored by Udedibie (2015) and *Manniophyton fulvum*, *Nuaclea popegnine* and *Manihot utilissima* (Okoli, 2015)

Socio-cultural scores

Numerical scoring of the study plant *F. microcapa* was done alongside the three plants *Garcinia kola, Mucuna pruriens* and *Gongronema latifolium* scored by Udedibie (2015) and another set of three plants *Manniophyton fulvum, Nuaclea popegnine* and *Manihot utilissima* (Okoli, 2015) to obtain a comparison across the plant types. First, the socio-cultural scoring of the plants were carried out to determine their indigenous value ranking across seven scoring scale of **2 (**'0' and '1'**)** to represent 'Yes' or 'No' answers.

Phytochemical scores

Thereafter a scoring scale of 7 was used to rank the seven plants across nine selected phytochemical parameters (Okoli *et al*., 2014). Scoring of the candidacy of the dried leaf meals as possible alternative feed raw materials for livestock feeding trial was based on the crude protein, ash, metabolizable energy, NDF, copper, iron, antioxidants, trypsin inhibitor and cyanide contents of the leaf meals (Okoli *et al*., 2014; Udedibie, 2015, Okoli, 2015). The parameters were selected as important representative components of the physicochemical properties of the study materials in order to arrive at a functional and practical score for candidacy selection based on this scoring protocol. The two score results were then tallied to obtain the final mean score for each plant.

Results and Discussions

Table 1: Socio-cultural and phytochemical ranking of *F. microcarpa* with other plants

Scoring parameters (%)	FM	GL	MP	GK	MU	MF	NP
a) Socio-cultural scores							
Planted by man in the compound	1	1	0	1	1	0	0
Used as browse plant	1	0	1	0	1	1	1
Has human food value	0	1	0	1	1	0	0
Has medicinal value	1	1	1	1	0	1	1
Amenable to vegetative propagation	1	1	0	0	1	0	1
Evergreen all year round	1	1	0	1	0	1	1
Fuel wood	1	0	0	1	0	0	1
Total	6	5	2	5	4	3	5
Total (%)	85.71	71.43	28.57	71.43	57.14	42.86	71.43

FM = *Ficus microcarpa*; GL = *Gongronema latifolium*; MP = *Mucuna pruriens*; GK = *Garcinia kola*; MU = *Manihot utilissima*; MF = *Manniophyton fulvum*; NP = *Nuaclea popegnine*

Table 2: phytochemical ranking of *F. microcarpa* with other plants

Scoring parameters (%)	FM	GL	MP	GK	MU	MF	NP
CP	1	7	6	3	5	2	4
NDF	2	4	1	3	7	6	5
ME	1	4	2	3	6	5	7
Cu content	6	4	5	7	2	1	3
Fe content	7	6	4	6	3	1	2
Total antioxidant	1	2	4	5	6	3	7
Trypsin inhibitor	1	2	4	3	5	7	6
Cyanide content	4	5	7	6	3	1	2
Ash content	7	6	5	3	4	2	1
Total	30	40	38	39	41	28	37
Total (%)	47.61	63.49	60.31	61.90	65.08	44.44	58.73
Percentage difference	38.10	7.94	31.74	9.53	7.94	1.58	12.75

CP = Crude protein; NDF = Neutral detergent fibre; ME = Metabolizable energy; FM = *Ficus microcarpa*; GL = *Gongronema latifolium*; MP = *Mucuna pruriens*; GK = *Garcinia kola*; MU = *Manihot utilissima*; MF = *Manniophyton fulvum*; NP = *Nuaclea popegnine*

Discussion

- The present study has shown that *Ficus microcarpa* recorded the highest socio-cultural score across 6 other indigenous plants compared with it.

- However it recorded relatively lower phytochemical score than plants such as *M. utilissima*, *G. latifolium*, *G. kola*, *M. pruriens* and *N. popegnine* with its overall mean score being higher than those of *N. popegnine*, *M. utilissima*, *M. pruriens*, and *M. fulvum.*

Conclusion

As observed from the study, farmers' socio-cultural practices and chemical indicators serves as a good tool for selection of candidate alternative feed resource instead of basing it solely on chemical indicators.

The combination of socio-cultural and phytochemical parameters led to the development of a more reliable though sophisticated ranking method.

Recommendation

- It is recommended that *F. microcarpa* be promoted as a browse of promise in the hot humid tropical zones of Nigeria and beyond. *Ficus microcarpa* plantations development is recommended for dry zones of Nigeria where year round availability of animal fodder is a problem.

THANK YOU