

Utilization of Wild Melon in Human and Poultry herbal medicine among communities of Kwara and Ekiti States, Nigeria

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ABSTRACT

The utilization of wild melon (*Adenopus breviflorus* Benth) in human and poultry herbal medicine among communities of Kwara and Ekiti States in Nigeria was undertaken using a participatory rural approach, administration of structured questionnaire and interview were conducted on resident users within 35 randomly selected communities of Irepodun, Ifelodun, Oke-Ero and Ekiti LGA of Kwara State, Moba and Ijero LGA in Ekiti State of Nigeria, where the plant is ecologically adapted as a wild plant species of family Cucurbitaceae. Demographic information on respondents was analyzed using the percentage while research hypotheses were investigated using the chi-square statistics at a 4-point likert scale. The data obtained was therefore analyzed using descriptive and inferential statistics. Results show that there were more female users of wild melon (84.62%) who spread across the age groups, 46.15% of respondents were between 40-49 years while 51.05% had no formal education. The communities considered WM fruits as herbal remedies for some diseases of man and livestock especially poultry, this is however without any scientific supports. The fruits are obtained from the wild, the communities does not attach any nutritional value to it. Intensive scientific experiments should be conducted on the WM fruits which should include the claim of its therapeutic potentials and husbandry.

Keywords: *Adenopus breviflorus*, Ethnoveterinary medicine, utilization, poultry.

INTRODUCTION

The traditional ethnoveterinary knowledge of local African farmers have been in existence for ages. It is estimated that about 80% of the African population relies on traditional medicine for meeting their health care needs (ICS-UNIDO, 2004). Africa has a unique diversity of geographic and climatic factors which make the continent exceptionally rich in varied flora where more than 68,000 plant species are found (Adedeji *et al*, 2013). Ethnoveterinary medicine (EVM) practices is as old as the domestication of various livestock species (SriBalaji and Vikrama, 2010). In most part of Africa, medicinal plants have been widely used as a primary source of prevention and control of livestock diseases (Hoareau and DaSilva, 1999). Ethnoveterinary knowledge was mostly in the custody of old men and women but later passed it orally to younger generations by word of mouth (Gueye, 2002; Masimba *et al*, 2011), with very little documentation and therefore is in danger of extinction. This has made the knowledge base differ not only from region to region but also among and within communities (Matekaire and Bwakura, 2004). Moreki *et al*, (2010), showed that 86.7% of family poultry keepers used EVM. In recognition of this large dependence on traditional health practices, the World Health Organization (WHO) approved the role of herbal medicine in 1978 and American veterinary Medical Association Officially recognized botanical and holistic veterinary medicine in 1996 (Schillhorn and Veen, 1997; Fajimi and Taiwo, 2005).

In Nigeria, animal disease remains one of the major causes of poor livestock performance, this explains why plants that are of higher medicinal values have gained unprecedented acceptance, for the treatment of diseases nowadays. Different types of herbal preparations are being used for both human and animal health care systems in urban but most especially in the rural areas, (Dawang *et al.*, 2016). Small scale livestock farmers with low incomes engage in a long tradition of the use of herbal remedies to care for their sick and infected animals, Sawadigo *et al*, (2012) and Aihanuwa *et al*, (2017) had observed that their attention given to EVM has been explained by the fact that it is an important part of tradition of people who use it, it provides low cost alternatives where pharmaceutical drugs and veterinary services are not available or very expensive, farmers can prepare and use herbal home remedies without any expenditure since the plants are locally available. Fulani, Bororo herdsmen and others who keep animals have been involved in the treatment of animal diseases prior to the onset of modern medicine (Nwude, 1986).

One of the most widely, acclaimed ethnobotanically important plant family for human and livestock diseases in tropical Africa, Asia and Latin America are the Cucurbitaceae (Franco *et al*, 2012; Revathi *et al*, 2013,). Some are cultivated for their edible oil seeds while some are cultivated for both their edible pulp and seeds. Examples of cultivated cucurbits are water melon (*Citrulus vulgaris*), melon (egusi) (*Cucumeropsis edulis*), squash (*Cucurbita maxima*) and pumpkin (*Cucumeropsis moschata*). There are also wild species that are underutilized by man and livestock, although some like the wild melon (*Adenopus breviflorus*), is gaining much recognition in many

rural villages in the tropics, especially in Nigeria, as a medicinally active antidote for many diseases affecting man such as measles (Odebiyi and Ekong, 1982; Idu *et al*, 2010; Borokini *et al*, 2013), diabetes (Soladoye *et al*, 2012) small pox and chicken pox (Oladunmoye and Kehinde, 2011; Ariwaodo *et al*, 2011) and those affecting poultry (Sonaiya *et al*, 1992;Gueye, 1999). However, there is little documentation of accredited uses and effects of wild melon in poultry.

The current study was undertaken to provide information on the awareness, traditional knowledge and practices in the use of wild melon fruit (*Adenopus breviflorus* in poultry health among and within communities comprising about 35 villages and towns in Kwara and Ekiti States of Nigeria where the plant is ecologically adapted as a wild plant species of family Cucurbitaceae.

MATERIALS AND METHODS

A survey was conducted to collect information on the use of wild melon in Kwara and Ekiti State. The survey covered 35 village communities where the plant is ecologically adapted as a wild plant species of family Cucurbitaceae. The 35 communities are spread over Irepodun, Ifelodun, Oke-Ero and Ekiti L.G.A. of Kwara State, Moba and Ijero L.G.A. in Ekiti State of Nigeria. The survey was conducted between January 2015 and October 2016. The main sources of data consisted of structured questionnaire as well as interviews administered on local herb sellers, farmers, traditional herbal health practitioners and other people who are rich in knowledge of traditional medicine. A total of 155 questionnaires were distributed.

Research Questions

The following research questions were asked.

Does the people in the communities make use of any part(s) of the wild melon (Tagiri)?

Does the people in the communities attach any nutritional importance to any part of the wild melon?

Does average user of wild melon in the communities obtain fruits from the wild?

Does an average user of wild melon use them to treat or prevent diseases in man or livestock?

Do poultry farmers put wild melon fruit inside pen or sliced pieces in drinking water to control some diseases?

Research Hypotheses

The following null and alternative hypotheses were written.

H₀: The people in the communities make use of wild melon fruit

H_i: The people in the communities does not make use of wild melon fruit

H₀: The people in the communities attach a nutritional importance to some parts of the wild melon

H_i: The people in the communities do not attach any nutritional importance to any part of the wild melon.

H₀: The average user of the wild melon in the communities obtain fruits from the wild

H_i: The average user of the wild melon in the communities does not obtain fruits from the wild.

H₀: The average users of wild melon fruit use them to treat or prevent diseases of man or livestock.

H_i: The average user of wild melon fruit does not use them to treat or prevent any disease of man or livestock.

H₀: small scale or rural producers of poultry put chopped pieces or whole fruit of *Adenopus breviflorus* (AB) in pen houses or in drinking water for birds.

H_i: small scale or rural producers of poultry do not put chopped pieces or whole fruit of AB in pen houses or drinking water for birds.

H₀: Chopped or whole fruit of AB put in poultry house or in drinking water prevents or cures some diseases

H_i: Chopped or whole fruit of AB put in poultry house or in drinking water does not prevent or control any disease.

The questionnaire administration and interviews were conducted using the participatory rural approach in their native language; the participants were assured that their responses would be used only for research purposes. All respondents are resident within their community.

A 4-point likert scale of strongly agreed (SA), agreed (A), Disagreed (D) and Strongly Disagreed (SD) was adopted. The percentage was used for analyzing information about gender, age groups, highest educational background and occupation of respondents, while the chi-square (X^2) statistical method of analysis was used to analyze the data obtained for test on the hypothesis, for the research questions, using SPSS package (2001). The data obtained was analyzed using descriptive and inferential statistics.

RESULTS

Table 1: Frequency of demographic information on respondents

S/N	DEMOGRAPHIC INFORMATION	FREQUENCY (n=143)	PERCENTAGE (100)
1.	Gender		
	Male	22	15.38
	Female	121	84.62
2	Age range (years)		
	20-29	6	4.19
	30-39	33	23.08
	40-49	66	46.15
	50-59	31	21.68
	60 and above	7	4.90
3	Highest Level of education		
	No formal	73	51.05
	Primary	52	36.36
	Secondary		
	Junior	2	1.40
	Senior	9	6.29
	Diploma (OND or NCE)	3	2.10
	Degree (HND or B.A, B. Ed, B.Sc. etc)	4	2.80
4.	Occupation		
	Farmers	30	20.98
	Traders	70	48.95
	THHP	17	11.89
	Unspecified	26	18.18

KEY

THHP= Traditional Herbal Health Practitioners

Table 2: Null Hypothesis and inference from chi-squared result for the research questions

H0:	STATEMENT	OBSERVED VALUE	EXPECTED VALUE	X ² CALCULATE	X ² TABULATE	INFERENCE (P ≤ 0.05)
A.	The people in the communities make use of AB fruit	393	429	3.02	12.6	Accept H0
B.	The people in the communities attach a nutritional importance to some parts of AB	82	286	145.51	7,81	Reject H0
c.	The average user of AB in the communities obtain fruits from the wild	357	429	12.08	12.60	Accept H0
D.	The average user of AB fruit in the communities use them to treat or prevent diseases of man or livestock	254	286	3.58	7.81	Accept H0
E.	Small scale or rural producers of poultry put chopped pieces or whole fruit of AB in pen houses or in drinking water for birds.	51	60	1.35	7.81	Accept H0
F.	Chopped or whole fruit of AB put in poultry house or in drinking water prevent or control some diseases.	68	90	5.38	12.60	Accept H0

$$\text{Chi square } X^2 = \frac{(\text{observed} - \text{expected})^2}{\text{expected}}$$

AB = *Adenopus breviflorus*

DISCUSSION

The result in Table 1 shows frequency of demographic information on respondents. A high percentage (84.62) of women were observed to be involved in this study spread in all the age groups, majority of the respondents were in the 40-49 years age group (46.15%). 73 (51.05%) respondents from 143 retrieved questionnaires had no formal education while 36.36% had primary education. 2.80% of the respondents had Higher National Diploma (HND) or a first University degree. 48.95% were traders while 20.98 were farmers. Borokini *et al*, (2013), reported 58.1% female among herbal sellers/collectors in Oyo State which is lower than was obtained in this study and about 58% had no formal education. Results revealed that only one of the set hypotheses was rejected (Table 2.2). People in the communities did not attach any nutritional importance to the *Adenopus breviflorus* fruits, unlike other cultivated members of its family Cucurbitaceae. This explains why arable crop farmers in the area have not placed any premium on including it among economic crops in the area. The people in the area of study make use of the fruit as stated in hypothesis A (H0:A) the users claimed that the fruits are used for the treatment and prevention of some diseases of man and livestock as indicated in (H0:D), their major source is from the wild (hypothesis C) during which matured fruits are gathered between the months of November - April corresponding to the flowering and fruit maturation of the plant. The fruits are also sold in the local herbal markets in the communities, although may be costly, but its benefits are more important. Users of *Adenopus breviflorus* in the community cannot say when they began to use it for the purposes the fruits were gathered as they inherited this cultural practice from their parents. Oladunmoye and Kehinde (2011), made similar observation among Yoruba tribe of South Western Nigeria that knowledge on herbal remedies is handed down from the older members of the community between 51 – 70 and 71 – 80 years of age. On whether the fruits can be processed for future use, they agreed that it is possible, but have not been tried. The people allow the fruit balls to roll on the floor of the house, by this way, they claim it prevent measles in children as was also observed by Odebiyi and Ekong(1982), Sonibare *et al*, (2009), Ariwaodo *et al*, (2011)and Borokini *et al*, (2013) among different Yoruba communities in Osun and Oyo State, Nigeria.

Keepers of indigenous poultry and some small scale producers of chicken meat and eggs place the fruit balls on floor of deep litter houses or in the range where chickens may peck on them,

some are cut and soaked in their drinking water and is claimed to prevent or cure some parasitic diseases such as Newcastle disease, known locally as “Lukuluku” in the area. Similar reports on the use of the fruit for the treatment of Newcastle and other diseases of poultry have been reported by Sonaiya *et al.*, (1992) and Gueye, (1999). This ethno-biological claims have not, however been adequately and scientifically proved

CONCLUSION

For many years, the people in the communities have attached medicinal importance to *Adenopus breviflorus* fruits for the prevention or treatment of some viral and bacterial diseases of man and livestock. The plant is not cultivated because less value is placed on it as food, users collect the fruits from the wild. The ethno-biological claims of *Adenopus breviflorus* fruits needs to be scientifically proved and investigated for possible nutritional benefits, especially for poultry.

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