

Perception of Ethno-veterinary practices in selected villages in Ogun state

¹Ekunseitan, D.A*., ¹Adeyemi, M.A., ¹Abiola, S.S., ²Oluwatosin, O.O., ¹Sogunle, O.M. and ³Fabusoro, E.

¹Department of Animal Production and Health,

²Department of Animal Nutrition,

³Department of Agricultural Extension and Rural Development,
Federal University of Agriculture, PMB.2240, Abeokuta-NIGERIA.

*corresponding author: ekunseitandjeji@yahoo.com; ekunseitanda@funaab.edu.ng

Abstract

The study was designed to examine perception of ethno-veterinary practices and information gathering among rural dwellers in selected villages in two local government areas (LGAs) of Ogun state, Nigeria. The aim was to assess the involvement of rural poultry farmers in the use of herbs as alternatives to antibiotics. A multi-stage sampling technique was employed to administer one hundred and fifteen structured questionnaires while participatory rural appraisal group discussion was also conducted. Results showed that 66.70 % female respondents were mainly involved in rural poultry production than their male counterparts (33.30 %) in Ifo LGA while 52.20 % (male) and 47.80 % (female) was observed in Odeda LGA. Backyard and free-range system of management (44.9 and 46.70 %) was prominent in both LGAs (Odeda and Ifo respectively) than the conventional system. Poultry birds were raised for income, household consumption and festivity. Results further revealed that traditional remedies were more preferred because they are locally available, cultural, effective and cheaper relative to modern veterinary animal health care practice. It was therefore concluded that to improve poultry health and production, local knowledge of medication through herbs should be gathered and used as basis for development of drugs and conduct research programs to study clinical actions of these plant extracts and categorize active ingredients.

Keywords: Rural dwellers, herbs, Phytobiotics and Ethno-veterinary.

Description of Problem

Plants have been used as a source of medication to treat illness since time immemorial. For a long time, it has provided a source of emerging modern medicines and drug compounds, as plant derived medicines have made large contributions to health. They have become the basis for development of a medicine, a natural blue print for the development of the new drugs or a phyto-medicine to be used for the

treatment of diseases (1).

Smallholder poultry production systems which are common in African rural areas have been previously described by various workers (2, 3, 4). Birds kept under these conditions experience high mortality resulting from accidents, predation and disease. Moreover, high occurrence of disease is one of the principal limitations to these production systems (2; 5, 6). Farmers in rural and peri-urban areas have restricted access to

veterinary services, information about the prevention and treatment of livestock diseases, and prophylactic and therapeutic veterinary medicines (7). This leads to farmers utilizing Ethno-veterinary medicine (EVM) for health management of livestock. EVM is widely used by resource-poor poultry farmers, especially women. Natural products, especially plant products that are locally obtainable and in abundance, are generally used (8).

All ethno-veterinary knowledge tends to be in the custody of older people, both men and women, who pass it on to the younger generations by word of mouth – which still the most widespread means of communication in local villages in Africa. According to (9), while a fraction of this knowledge is accessible to all poultry keepers, another portion is a protectively guarded family secret. Given these considerations, there is however, little documentation on the use of EVM, as some researchers and health practitioner's view these practices as backward and old fashioned. The need for the documentation of herbal plants is necessary because they are likely to be more important in the future, especially given the escalating costs of drugs and the recent focus on organic agricultural practice in most advanced and to some extent, developing countries. In addition, with the development of resistance of pathogens to drugs, EVM might be a practicable choice since herbs tend to be broad spectrum in action. The aim of this study was to gather findings from various farmers working in the area of phytobiotics in selected villages in Ogun state.

Materials and method

Participatory Rural Appraisal in Odeda and Ifo Local Government Areas

A total of one hundred and fifteen (115) dwellers in Odeda and Ifo Local Government Areas of Ogun state were surveyed in respect of their perceptions of the status of poultry health delivery in their areas. Respondents were selected at random from Odeda and Ifo communities. The respondents were household elders who kept livestock. Odeda Local Government area with headquarters at Odeda, is one of the 20 local government areas in Ogun State, southwest Nigeria. It is located in the North-eastern zone of the State, on Longitude 7°31' to 7°32' and Latitude 3°32' and 3°62'. The local government area, shares boundary with Abeokuta south local government area, Obafemi-Owode local government area and Oyo state. Odeda LGA falls within the derived savannah vegetation which dominated the northernmost part of Ogun state. Odeda LGA is principally a rural community with numerous villages spread across the land area while farming is the major occupation of rural dwellers. Ifo is a Local Government Area in Ogun state with Headquarters located in Ifo. It is located in the eastern zone of the state with a population size of 524,837 on Latitude 6°49'N and Longitude 3°12'E (10). Ifo LGA is majorly an urban community with electricity supply, tarred roads and other modern facilities.

Research Methodology

A multi-stage sampling technique was used to select the study villages within the two LGAs. Firstly, 9 rural villages were randomly selected from the list of

villages in Odeda LGA (15) and 5 rural villages were selected from Ifo LGA (10). These villages were selected because of livestock rearing particularly poultry birds while excluding villages which prohibit poultry enterprise most especially Lerin (Odeda). Second stage, seven houses were randomly selected from each of the 9 sampled villages except in Idi-ose where 8 was selected (Odeda LGA) and 9 in Ifo LGA. Structured questionnaire elicited poultry farmers' bio-data, common poultry ailments the farmers had encountered and diagnosed ailments they had treated by traditional means, and medicinal materials used, their preparation, application, route of application and expected results. A total of 69 questionnaires was administered in Odeda Local Government Area while 46 questionnaires was administered in Ifo/Odeda Local Government Area.

Data Analysis

The data collected from the two sources were subjected to descriptive and inferential analyses using the statistical package for Social Sciences (SPSS version IBM 20) and 2013 Microsoft excel. Statistical approaches were used to categorize plants used most frequently, based on: the frequency of association of a particular plant species with a particular medicinal value (Botanical consistency) and the frequency of a particular plant species being associated with or used to treat a particular disease (consistency of veterinary usage).

Results

Socio-Economic Characteristics of Respondents

Socio-economic characteristics of respondents in Odeda and Ifo local

Government areas are presented in Table 1 revealed that 52.20 % of respondents were male while 47.80 % were female. This reveals a balance in the gender of respondents. A total of 66.70 % of the respondents were married while 1.40 % of the total population sampled were separated. Majority (36.20 %) of the respondents were Muslims which was slightly higher than Christian respondents (34.80 %) while the lowest percentage was recorded for traditional worshippers (29.00 %). The level of education was largely low (56.50 %), 21.70 % attaining tertiary education, 14.70 % of the respondents had secondary education whereas only 7.20 % accomplished primary education. A good percentage (47.80 %) of respondents were crop farmers showing a substantial dependency on food production necessitated by their proximity to major markets (Olodo, Osiele, Odeda, Kila, Orile-Ilugun); 10.10 % of respondents were livestock farmers, 18.80 % were traders involved in retail sales of foodstuffs/household consumables, 7.20 % were government workers and artisans while 8.7 % were engaged in various occupation (such as tailoring etc). A total of 97.10 % of respondents did not keep poultry as a major occupation compared to 2.90 %. Poultry keeping was mostly done for pleasure (75.40 %) or as part-time (21.70 %) while 2.50 % engage in it as an occupation.

A total of 46 structured questionnaires was administered in Ifo LGA, majority of respondents were female (66.70 %) while 33.30 % were male revealing a dominance of female population in the poultry business. A total of 68.90 % of

Table 1 : Socio-Economic Characteristics (%) of respondents

| Local Government Area | Odeda | | Ifa | |
|-------------------------------|------------|-----------|------------|-----------|
| | Percentage | Frequency | Percentage | Frequency |
| Gender | | | | |
| Male | 52.20 | 36 | 33.30 | 15 |
| Female | 47.80 | 33 | 66.70 | 30 |
| Marital status | | | | |
| Single | 21.70 | 15 | 13.30 | 6 |
| Married | 66.70 | 46 | 68.90 | 31 |
| Widowed | 10.10 | 7 | 13.30 | 6 |
| Separated | 1.40 | 1 | 4.40 | 2 |
| Religion | | | | |
| Christianity | 34.80 | 24 | 51.10 | 23 |
| Islam | 36.20 | 25 | 35.60 | 16 |
| Traditional | 29.00 | 20 | 13.30 | 6 |
| Educational attainment | | | | |
| Tertiary | 21.70 | 15 | 31.10 | 14 |
| Secondary | 14.50 | 10 | 15.60 | 7 |
| Primary | 7.20 | 5 | 17.80 | 8 |
| No formal education | 56.50 | 39 | 35.60 | 16 |
| Major occupation | | | | |
| Crop farming | 47.80 | 33 | 24.40 | 11 |
| Livestock farming | 10.10 | 7 | 8.90 | 4 |
| Trading | 18.80 | 13 | 22.20 | 10 |
| Civil servant | 7.20 | 5 | 20.00 | 9 |
| Artisanal work | 7.20 | 5 | 13.30 | 6 |
| Others | 8.70 | 6 | 11.10 | 5 |
| Poultry keeping | | | | |
| Yes | 2.90 | 2 | 8.90 | 4 |
| No | 97.10 | 67 | 91.10 | 41 |
| Poultry Keeping | | | | |
| Full time | 2.90 | 2 | 6.70 | 3 |
| Part time | 21.70 | 15 | 20.00 | 9 |
| Pleasure | 75.40 | 52 | 73.30 | 33 |
| Minor occupation | | | | |
| None | 13.04 | 9 | 0.00 | 0 |
| Crop farming | 30.43 | 21 | 24.40 | 11 |
| Livestock farming | 15.94 | 11 | 8.90 | 4 |
| Trading | 18.84 | 13 | 22.20 | 10 |
| Civil servant | 2.90 | 2 | 20.00 | 9 |
| Artisanal work | 13.04 | 9 | 13.30 | 6 |
| Others | 5.80 | 4 | 11.10 | 5 |

respondents were married, 13.30 % were single, 13.30 % were widowed and 4.40 % were separated. This trend in value shows a well stable village entity since married people are more experienced in co-ordination and organization. A total of 51.40 % were Christians, 35.60 % were practicing Islam while 13.30 % were traditional worshippers, showing a Christian dominated environment. The result of the study reveals that 64.50 % of total respondents had one form of education while 35.60 % received no formal education. Out of the sampled population, 24.40 % did crop farming as a major occupation, 8.90 % (Livestock farming), 22.20 % (Trading), 20.00 % (Civil servants), 13.30 % (Artisanal work). The level of education in the community could be the reason for the perceived increase in the percentage of civil servants in the employment of state government. Poultry keeping among respondents was mostly done for pleasure (73.30 %) with 20.00 % of respondents doing it on part-time while 6.70 % did it as a full-time job.

Poultry Management Practices in Odeda and Ifo LGA

Result of Management Practices in Odeda and Ifo LGA are presented in Table 2. In Odeda Local government Area, the production system commonly used was backyard system of management (44.9 %) which confines birds within an area at the back of respondents' building, 40.6 % reared birds on free-range (this system allows birds to forage around without restriction to movement, birds are subjected to hazards of weather, theft, diseases, predators etc.) while 14.5 % used conventional system of management. Birds kept under

conventional system were intensively managed from day 1 to slaughter (broiler) or laying phase (layers). Feed offered to birds varied among respondents, 23.20 % offered grains, 1.40 % offered combination (grains, finished feed and others), 37.70 % fed their birds grains and others, 13.00 % offered finished feed, 10.10 % of respondents compounded feed while 14.50 % offered others (kitchen wastes, maize milling waste, milling wastes etc.).

The production systems engaged in Ifo LGA revealed that 46.70 % of poultry farmers used the backyard system of management in rearing their birds, 37.80 % used the free-range while 15.60 % used the conventional system of management. A total of 26.70 % of poultry farmers fed their birds with grains and other alternative feedstuffs (Agricultural by-products, kitchen wastes, crop residues)., 17.80 % supplemented grain feeding with others, 15.60 % fed commercial finished feed (mostly those rearing exotic species), 4.40 % of respondents fed a combination of grain and finished feed while 2.20 % of respondents fed compounded feed, finished feed + others, finished feed + compounded feed and grains + finished feed + others respectively.

Figure 1 shows the respondents purpose of keeping birds in Odeda LGA. The purpose of keeping birds was diverse with larger numbers of respondents (29.00 %) kept birds for household consumption and festivity, 27.50 % kept birds for household consumption; 17.40 % of respondents reared birds purposely for generating additional source of income; 5.80 % kept birds for festivity period and income + household

Table 2 : Poultry Management Practices in Odeda and Ifo LGA (%)

| Local Government Area | Odeda | | | Ifo | | |
|--|------------|-----------|------------|------------|-----------|-------------|
| | Percentage | Frequency | Percentage | Percentage | Frequency | (Frequency) |
| Production system | | | | | | |
| Backyard | 44.90 | 31 | 46.70 | | 21 | |
| Free range | 40.60 | 28 | 37.80 | | 17 | |
| Conventional | 14.50 | 10 | 15.60 | | 7 | |
| Total | 100.00 | 69 | 100.00 | | 45 | |
| Feed type | | | | | | |
| Grains | 23.20 | 16 | 26.70 | | 12 | |
| Grains and finished feed | 0.00 | 0 | 4.40 | | 2 | |
| Grains and finished feed and others | 1.40 | 1 | 2.20 | | 1 | |
| Grains and others | 37.70 | 26 | 17.80 | | 8 | |
| Finished feed | 13.00 | 9 | 15.60 | | 7 | |
| Finished feed and compounded feed | 0.00 | 0 | 2.20 | | 1 | |
| Finished feed and others | 0.00 | 0 | 2.20 | | 1 | |
| Compounded feed | 10.20 | 7 | 2.20 | | 1 | |
| Others (Agricultural by-products, kitchen wastes, crop residues) | 14.50 | 10 | 26.70 | | 12 | |
| Total | 100.00 | 69 | 100.00 | | 45 | |

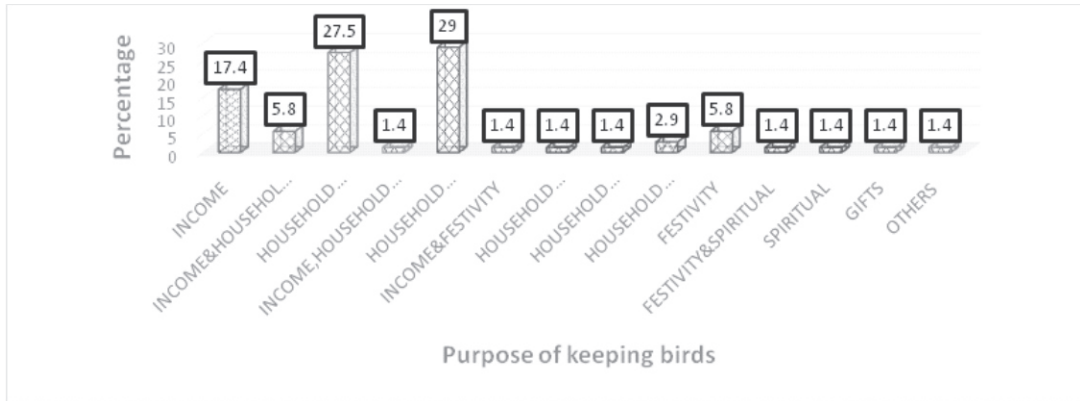


Figure 1: Purpose of keeping birds in Odeda LGA (%)

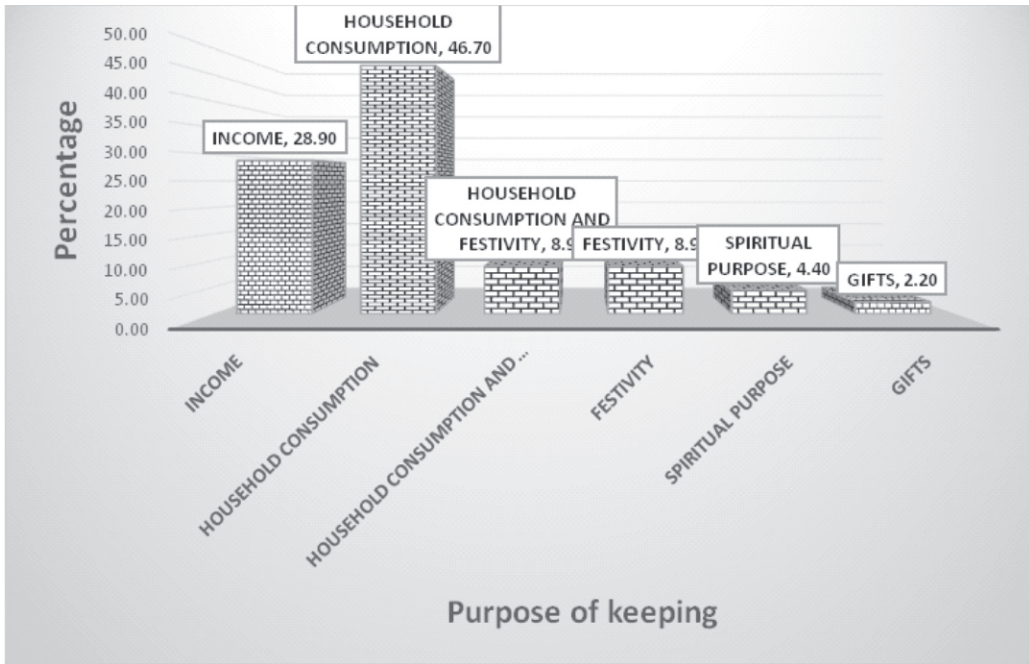


Figure 2: Purpose of keeping birds in Ifo LGA (%)

consumption, 2.90 % reared birds for household consumption + others (parties, naming ceremonies) while similar percentage of livestock farmers (1.40 %) kept birds for similar drive of income + festivity, income + household consumption + festivity + spiritual , household consumption + spiritual,

household consumption + gifts, festivity + spiritual, spiritual, gifts and others respectively.

Figure 2 shows the respondents purpose of keeping birds in Ifo LGA. The quest to meet the protein requirement of household in village poultry production could be the reason for higher percentage

(46.70 %) of respondents keeping birds for household consumption, while the need to generate additional source of income could be the reason for the percentage recorded for income generation (28.90 %), 8.90 % kept poultry for festivity and household consumption + festivity respectively, 4.40 % for spiritual purpose and 2.20 % for gifts.

Poultry Health management Practices in Odeda and Ifo LGAs

Table 3 presents Poultry Health management Practices in Odeda and Ifo LGAs.

In Odeda LGA, A total of 69.60 % of respondents in Odeda LGA indicated they used only traditional methods to treat flocks, 15 % indicated veterinary option, 2.90 % used both options as preventive and curative methods (traditional and veterinary methods) while 11.60 % of respondents used none and left their birds to natural selection. 78.60 % of keepers applied traditional method of treatment as prophylaxis, 11.60 % applied it once in whereas 11.60 % applied it at onset of infection. Traditional method of treatment was mostly preferred with 21.70 % of respondents asserting it to be effective, 17.40 % (economical), 13.00 % (cultural), 11.60 % (economical and culturally indigenous), 2.90 % (cultural and effective), 1.40 % were of the opinion that it was cultural + religious, accessible , economical + cultural + religious, economical + cultural + effective, economical + accessible + effective while 11.60 % were indifferent.

In Ifo LGA, the commonly used method of prevention was traditional method (57.80 %), 20.00 % used veterinary

medicine and combination of both (veterinary medicine and traditional method) respectively while a small percentage of respondents used no disease preventing method. The period of administration recorded the highest percentage in livestock farmers who applied the method (traditional) “Every time”, 6.70 % used it “once in a while” while 20.00 % of livestock farmers did not provide it as prophylaxis but applied it at onset of disease infection. Ethno-veterinary option as a medical aid was ventured into because it was economical as indicated by 26.70 % of respondents, 17.80 % of respondents opined it was effective, 8.90 % indicated the option was economical + effective, with others: 6.70 % (Accessible), 4.40 % (Accessible+ Cultural, Cultural, Cultural + Effective respectively), 2.20 % (Economical + Accessible, Economical + Cultural, Accessible + Effective in that order). The distribution of medicinal plant parts used in village poultry health management is shown in figures 3 and 4. Respondents reported usage of various parts of plant as herbal treatment option. Several parts were used which included above ground parts (stem, leaves, seed and fruit) and below ground parts (root and root nodules). In Odeda LGA, the most frequently used was above ground parts with a percentage of 95.33 % while the remaining was for below ground parts. Fruit (seed inclusive) was mostly used (62.50 %) in treatment of poultry diseases, 27.08 % used leafy part while some used tuber (2.08 %). 97.50 % usage of above ground parts was reported in Ifo LGA with the remaining (2.50 %) accounting for use of root parts as herbal options. 50.00 % of

Table 3: Poultry Health management practices in Odeda and Ifo LGAs

| Local Government Area | | Odeda | | Ifo | |
|---|---------------|-----------|---------------|-----------|-----------|
| Method of treatment | Percentage | Frequency | Percentage | Frequency | Frequency |
| None | 11.60 | 8 | 20.00 | 9 | 9 |
| Traditional | 69.60 | 48 | 57.80 | 26 | 26 |
| Veterinary medicine | 15.90 | 11 | 20.00 | 9 | 9 |
| Others | 2.90 | 2 | 2.20 | 1 | 1 |
| Total | 100.00 | 69 | 100.00 | 45 | 45 |
| Period of administration of Traditional method | | | | | |
| Onset of disease | 11.60 | 8 | 20.00 | 9 | 9 |
| Every time | 76.80 | 53 | 73.30 | 33 | 33 |
| Once in awhile | 11.60 | 8 | 6.70 | 2 | 2 |
| Total | 100.00 | 69 | 100.00 | 45 | 45 |
| Preference for Traditional Method | | | | | |
| None | 11.60 | 8 | 20.00 | 9 | 9 |
| Economic | 17.40 | 12 | 26.70 | 12 | 12 |
| Economic, accessible and effective | 1.50 | 1 | 0.00 | 0 | 0 |
| Economic and cultural | 10.10 | 7 | 2.20 | 1 | 1 |
| Economic, cultural and effective | 1.50 | 1 | 0.00 | 0 | 0 |
| Economic, cultural and religious beliefs | 1.50 | 1 | 0.00 | 0 | 0 |
| Economic and effective | 7.20 | 5 | 8.90 | 4 | 4 |
| Accessible | 1.50 | 1 | 6.80 | 3 | 3 |
| Accessible and cultural | 8.60 | 6 | 4.40 | 2 | 2 |
| Cultural | 13.00 | 9 | 4.40 | 2 | 2 |
| Cultural and effective | 2.90 | 2 | 4.40 | 2 | 2 |
| Cultural and religious beliefs | 1.50 | 1 | 0.00 | 0 | 0 |
| Effective | 21.70 | 15 | 17.80 | 8 | 8 |
| Economic and accessible | 0.00 | 0 | 2.20 | 1 | 1 |
| Accessible and effective | 0.00 | 0 | 2.20 | 1 | 1 |
| Total | 100.00 | 69 | 100.00 | 45 | 45 |

Table 4: Summary of Frequency of Usage of Plant Species

| Botanical Name | Common Name | Ifo | Ifo(%) | Odeda | Odeda (%) | Total (%) |
|-------------------------------|-----------------|-----|--------|-------|-----------|-----------|
| <i>Elaeisguinensis</i> | Oil Palm | 7 | 15.56 | 3 | 6.67 | 11.11 |
| <i>Ficus coronate</i> | Ficus | 12 | 26.67 | 1 | 2.22 | 14.44 |
| <i>Lagenariabreviflora R.</i> | Spotted Pumpkin | 9 | 20.00 | 24 | 53.33 | 36.67 |
| <i>Nicotianatabacum</i> | Tobacco | 4 | 8.89 | 5 | 11.11 | 10.00 |
| <i>Capsicum frutescens</i> | Chilly Pepper | 11 | 24.44 | 9 | 20.00 | 22.22 |
| <i>Petiveriaalliacea</i> | Awogba | 2 | 4.44 | 3 | 6.67 | 5.56 |

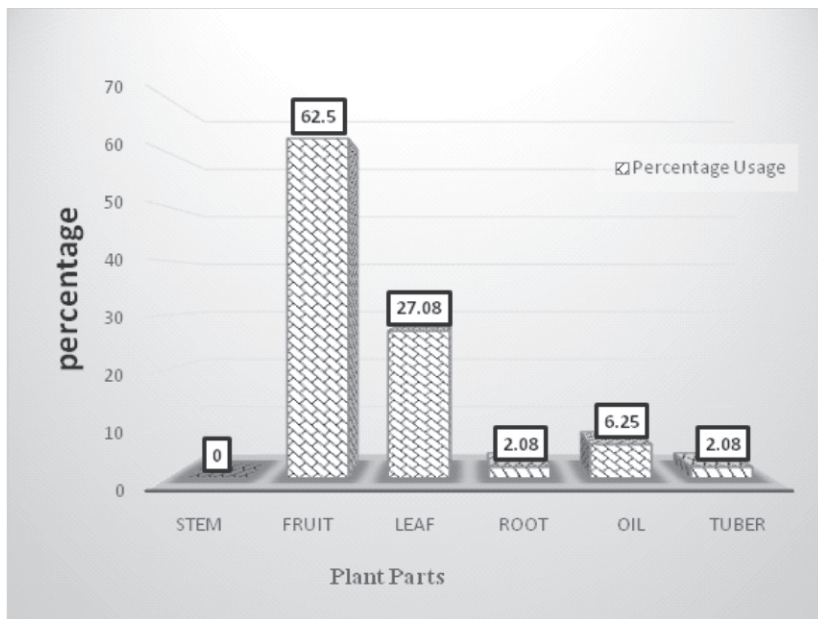


Figure 3: Percentages of Plant Part used in Odeda LGA (%)

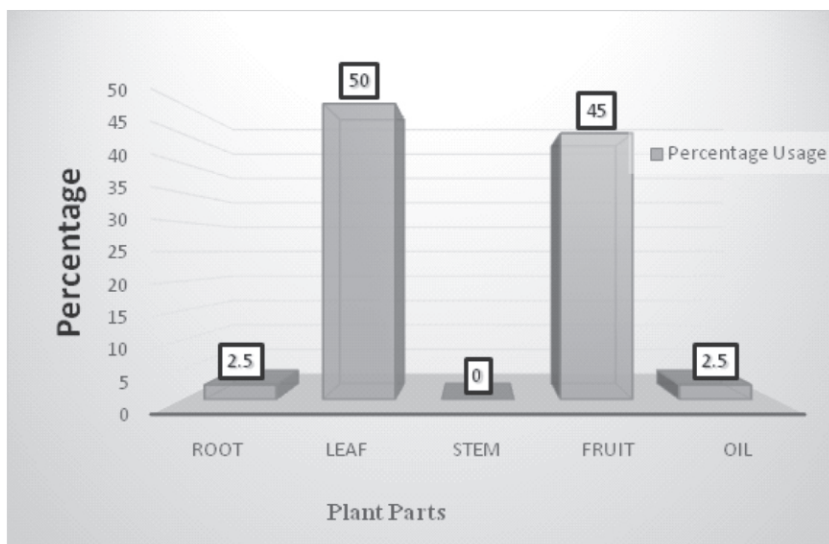


Figure 4: Percentages of Plant Part used in IfoLGA(%)

Table 5: Plants used as herbs with frequency of usage in Odeda LGA

| S/N | Disease (Local name) | Disease (English name) | Common plant name | Botanical Name | Part used | Consistency of usage | Method of application |
|-----|----------------------|------------------------|--|--|--|----------------------|--|
| 1 | Ogodo/okoso | Fowl pox | Palm tree Palm tree + Kerosene Palm tree + Ash Awogba | <i>Elaeisguineensis</i> <i>Elaeisguineensis</i> <i>Elaeisguineensis</i> <i>Petivriallitacea</i> | Palm oil Palm oil and kerosene Palm oil + Ash Leaf | 1 1 1 3 | Rub on the face Rub on the face Rub on the face Put inside drinking water + Liquid on face |
| 2. | Iyoro | Pediculosis | Epin Ashes | <i>Ficus coronata</i> Ashes | Leaf Ashes | 1 4 | Leaves are placed on housing floor Leaves are placed on housing floor |
| 4 | Koli/lukuluku/esurun | Newcastle | Tagiri Tobacco Isu-ego Ata ijosi | <i>Lagenariabreviflora R.</i> <i>Nicotianatabacum</i> Chilly Pepper (<i>Capiscum frutescens</i>) Chilly Pepper (<i>Capiscum frutescens</i>) | Tagiri Fruit Dry Tobacco leaf Tuber Whole fruit | 19 3 4 4 | Put in drinking water Put in drinking water Cut and put in drinking water Soak in drinking water |
| 5 | Ogenente | Pneumonia | Ata ijosi | Chilly Pepper (<i>Capiscum frutescens</i>) | Grounded dried whole fruit | 5 | Put in drinking water |
| 6 | Italu | Stomatitis | Tagiri Awogba Tagiri + | <i>Lagenariabreviflora R.</i> <i>Petivriallitacea</i> <i>Lagenariabreviflora R.</i> + | Leaf Root Tagiri Fruit + | 1 1 2 | Put in drinking water Put in drinking water Put in drinking water |
| 7 | Awoku | Sudden Death | Tobacco Tagiri + 3 stones | <i>Nicotianatabacum</i> <i>Lagenariabreviflora R.</i> | Tobacco leaf Tagiri leaf + 3 stones | 2 | Put in drinking water |

Table 6: Plants used as herbs with frequency of usage in Ifo LGA

| S/N | Disease (Local name) | Disease (English name) | Common plant name | Botanical Name | Part used | Consistency of usage | Method of application |
|-----|----------------------|------------------------|---|--|---|-----------------------|--|
| 1 | Ogodo/okoso | Fowl pox | Palm tree Kerosene Palm tree + Ash | <i>Elaeisguineensis</i> <i>Elaeisguineensis</i> | Palm oil Kerosene Palm tree + Ash | 5 4 2 | Rub on the face Rub on the face Rub on the face |
| 2. | Iyoro | Pediculosis | Epin Ashes | <i>Ficus coronata</i> Ashes | Leaf Ashes | 8 6 | Leaves are placed on housing floor Ashes are placed on housing floor |
| 4 | Koli/lukuluka/esurun | Newcastle | Palm tree Itagiri Tobacco Tobacco Ata ijosi | <i>Elaeisguineensis</i> <i>Lagenariabreviflora</i> R. <i>Nicotianatabacum</i> <i>Nicotianatabacum</i> Chilly Pepper (<i>Capsicum frutescens</i>) | Sakatiope Tagiri Fruit Dry Tobacco leaf Dry Tobacco Root + Leaf Whole fruit | 4 9 3 1 4 | Bum with fire in the pen Put in drinking water Put in drinking water Put in drinking water Put in drinking water |
| 5 | Owore | Body weakness | Ata ijosi Awogba Ata ijosi | Chilly Pepper (<i>Capsicum frutescens</i>) <i>Petivriaalliacea</i> Chilly Pepper (<i>Capsicum frutescens</i>) | Grounded dried whole fruit Leaf Whole fruit | 3 2 4 | Put in drinking water Put in drinking water Put in drinking water |

respondents used leaves in treatment of birds', 45.00 % was reported for use of fruit while 2.50 % of farmers used oil extracted.

Preparation and Application of Herbal Medicines in Ifo and Odeda LGAs

The preparation and application of herbs in treatment of disease conditions varied with respect to areas of occurrence (Local Government Areas), disease type and part of body affected (Tables 5 and 6). Whole plant or in combination with other parts was used. The parts were prepared in various forms for administration such as concoction or powder. The prepared materials were administered through different routes such oral, dermal or nasal openings. In the two LGAs, a higher number of respondents used oral route as means of administration. The use of oral administration was mostly done for internal diseases in the two LGAs; koli/lukuluku (Newcastle disease), awoku (plague) while skin diseases were treated by rubbing prepared portions into it.

Frequency of usage of Plant species

Table 5 shows the summary of frequency of usage of plant species. The study revealed varieties of plant species considered effective by respondents against different poultry disease conditions. These include oil palm, *Ficus coronata*, *Lagenariabreviflora R.*, *Nicotianatabacum*, *Capsicum frutescens* and *Petivriaalliacea*. The most prominently used plant in the two LGAs was *Lagenariabreviflora R.* (Tagiri) which gave the highest percentage of usage (36.67 %) for treatment of Newcastle disease. In Odeda LGA in particular, spotted

pumpkin (*Lagenariabreviflora R.*), (Tagiri) fruit was used as prophylaxis and therapeutic for most of the diseases domiciled in the area such as boil and sore on bird's body (italu), plague (awoku), Newcastle disease (koli/lukuluku/esurun). *Lagenariabreviflora R.* (Tagiri) fruit also had the second highest frequency of usage in Ifo LGA when considered against disease condition and not external parasites and was mostly used at onset of Newcastle disease outbreak in poultry flock. The commonly used species was *L. brevisflora* against Newcastle disease which had the highest frequency of usage as shown in Tables 5 and 6.

Discussion

The Socio-economic characteristics of respondents revealed a near balance in the gender of respondents in Odeda local government area unlike in Ifo LGA where majority 66.3% of the of the respondents were females. The larger female livestock farmers indicated dominance in the poultry business since women and children play a key role in management of homes and marketing and processing of farm produces (11, 12). In most developing countries, most chicken husbandry practices and management are the sole responsibility of women since it was always done on a small-scale that did not require heavy manual labour (13,14). Bradley (15) was of the opinion that family poultry production could be easily managed within homesteads and that women have been saddled with the management for various historical and social factors.

The level of education was largely low (56.5 %) in Odeda LGA, 21.7 % had tertiary education, 14.5 % had secondary

education while only 7.2 % had primary education. However, the literary level was higher in Ifo LGA with larger percentage acquiring tertiary education (31.1 %), secondary (15.6 %) and primary education (17.80 %). The implication of this findings is that majority of the respondents might have acquired knowledge and skills involved in poultry production through various forms of education during schooling.

The Housing systems commonly used in the two LGAs were backyard system of management and free range. The free range system is known to expose birds to predators and unfavourable weather conditions. It was modified in each area with makeshift houses covered with roofing sheets or thatches as the case may be to provide minimal protection against hazards of weather, theft, diseases, and predators. Sonaiya (2) indicated that village (family) poultry suffer mostly from predators, theft and diseases. This management system is archaic and posed serious setback to birds in attaining its full potential (16), since the system predisposed them to malnutrition, disease and predation.

Many birds were reared at the backyard and on free-range system. This allows for scavenging around the compound for locally available feed resources and kitchen waste. Feed cost was reduced in village poultry production by offering grains, kitchen left-over and other agricultural by-products as supplementary feed (17). These supplements (milling wastes and agricultural by-products) are mostly given in periods of scarcity especially in dry season when other feedstuffs are scarce and expensive. Chickens reared extensively (free range) are known to

scavenge in order to acquire part of their nutritional needs from lush herbage, seeds and insects. This feeding habit/condition (scavenging) can also predispose them to health challenges and consequently their survival rates, as waste products were the main sources of disease causing bacteria and parasites that affected the birds all year round (18). Village chicken also plays a significant role in converting household leftovers, wastes and insects into valuable and high quality protein (19) required to meet the important components of diets of young children (20).

Larger percentage of livestock farmers in both local government areas were influenced by culture, religion, food and monetary gains in poultry keeping. These factors are social elements governing the sustainability of family poultry. Since chicken is a rich source of quality protein, minerals and vitamins, village chicken production plays a significant socio-economic role to farmers and people in developing countries in meeting their protein requirement as shown in the percentages obtained in the two LGAs; Odeda (27.5 %) and Ifo (46.7 %). They also provide regular household revenue through sales and as a starting capital for young people and petty cash for livestock farmers (21, 22). Poultry keeping is practiced by almost all livestock farmers, especially women and children in rural areas since it is an important food and socio-economic pillar for rural families (23,24). The philosophy of giving live chicken as gifts to people and being considered as an important animal for religious sacrifices (12) to deities in village poultry requires the upkeep of

flocks of chickens in most village families as demonstrated in each local government area.

Personal communication during administration of questionnaire revealed some common diseases that occurred within their flock in each LGA whereby the order of prevalence are Newcastle disease (NCD), coccidiosis and fowl pox. Diseases have been implicated as one of major constraint to family poultry. This is avowed by (25) who attributed higher percentage of loss to diseases (36.70 %). Newcastle disease being the most widespread disease in Africa (26) and has been identified and implicated as the major problem in village poultry production resulting in nearly absolute (100%) mortality in severe cases (27). Since birds are reared on extensive system of management, they are never vaccinated and only received little care when infected. Diseases seriously affect these poultry birds because they are principally susceptible to infection and parasite since no shelter is provided. Local chickens were mostly reared in the two local government areas, thus affirming reports that chickens are of great importance to African households in villages and constitute about 80-90 % of total poultry in Africa (28). The little or no use of vaccines and drugs by rural poultry farmers is mostly due to inaccessibility to modern medicines and literacy level which was lower in Odeda LGA; and this negates the knowledge required in the use of chemical remedies. Poultry farmers in both local government areas continually used ethno-veterinary interventions at every given opportunity with limited numbers using it at onset of disease and once in a

while. This negates the observations by (29) who reported that most village livestock farmers' start treating their birds at onset of disease infection therefore they treat symptoms instead of ailments and link specific prepared concoctions to specific disease symptoms or conditions.

The wealth of plants within their communities occasioned the use of traditional remedies in controlling diseases predominating in village poultry production where drugs and vaccines are not available. The use of human drugs in treating birds illustrated by use of tetracycline, dagaquine, phensic and paracetamol shows the divergent views by livestock farmers in efficacy of methods selected either traditional or unconventional means. This affirms the findings by (8) that birds are given drugs most especially antibiotics originally intended for use by humans.

The use of herbs as an intervention in disease control was reported to be economical in Ifo and effective in Odeda LGA. This can be as a result of easy accessibility of plant species by village poultry owners at little or no cost (30) and also by dissemination of knowledge by words of mouth by older men and women to younger generation (31). The problem of access to good veterinary and extension services (7) and enormity of working territory affects the efficiency of veterinary services in these areas which has allowed rural poultry farmers to seek a more direct and cost-effective method. Herbs are ecologically friendly and it's perceived influence on health of birds makes it rank first as the first option at onset of infection or in treatment of diseased birds. Appreciable

percentage of respondents in Odeda LGA considered herbs as effective as well as culturally accepted norm (32) but these traditional ideas and knowledge is gradually been lost through the generations (33) since most younger generations are reluctant to take up poultry keeping as a profession, therefore the need to document these priceless entities.

Village dwellers are always hesitant to transmit this information because the knowledge is widely treasured and they are not always comfortable especially when interacting with an outsider or government personnel. The great biodiversity in the tropical forests of Africa has provided indigenous cultures with a diverse collection of plants and as a consequence a wealth of traditional knowledge about the use of the plants for medicinal purposes. These plants have found use in the control of external parasites; common insect parasites identified as menace to rural poultry by respondents are lice, mites and ticks. This is in line with NVL reports (34, 35) which acknowledged these insects as threat to getting the best productivity from rural family poultry. Leaves of *Ficus coronata* was used by livestock farmers in both LGAs, it was placed on chicken nest/house/sleeping area to repel/immobilize ecto-parasites especially lice. Moreki (25) reported the use of *Thamnosma Rhodesia* leaves as repellent of insect parasites when used in similar manner. Parasite control in Ifo and Odeda LGA also involved the burning of palm tree fronds on poultry shelter floor to eradicate lice and mites which was also similar to burning of Mexican marigold by Kenyan rural farmers in period of infestation (36).

Ashes were also poured on shelter floor and rub on birds. The wide use of traditional options in the treatment of parasites may be attributed to the availability of end materials which most small holder poultry farmers use in treating illness caused by pests. The plant parts used in poultry farming varies with respect to knowledge acquired and recognized medicinal properties perceived (5). The distribution of medicinal parts utilized revealed that above ground parts were mostly used in preparation of solutions with parts below the ground accounting for the rest. This affirms the opinion of (37) who reported that all plant parts (aerial and below parts) were used in medicinal preparation.

Leaves were the most cited plant parts used by the healers for the preparation of traditional medicines in Ifo LGA. This observation is in consonance with the results of some ethno-medicinal studies carried out by (38) who stated that aerial parts (leaf specifically) were the most cited plant parts used in rural remedy preparations.

The preparation and use of herbs in treatment of disease condition varied in respect of disease treated and area of infection in the body. The plant parts were used as whole plant or in combination with other parts or other plant species in the two local government areas depending on+ disease condition. The parts were prepared in various forms for administration; plant parts are reduced in size, crushed and homogenized in water (39). The varied forms of herbs usage in the two LGAs include concoction, powdery, fumigation and solution in water. The most common forms of

ethno-veterinary preparations reported by various authors (40, 37) included observations from Odeda and Ifo and also powders, poultice, ointment, decoction, infusion, cold ware extract and tincture. These forms of preparation were administered to birds via different routes namely oral, dermal or nasal openings with oral administrations being mostly preferred as the best and effective route. Farmers use the oral route most frequently because drugs are easy to administer this way and requires less skills. Toyang (40) and Yirga (41) perceived oral application as the most frequently used route closely trailed by topical or dermal application. Materials other than plants were reported in each local government.

Conclusion and Applications

1. The study indicated a low level education in Odeda LGA inferring that extension agents/service communicating and disseminating innovations to respondents and deductively would encounter more difficulty in their level of technology uptake is likely to be low.
2. The discovery from study indicated spotted pumpkin as the most frequently used as phytotherapeutics in rural poultry health management. Poultry birds kept by dwellers majorly serve as a major source of protein with higher percentage of purpose of keeping obtained for household consumption.
3. The use of alternative/medicinal plants will continue to be an important part of health care management of poultry birds in

small holders in villages since available raw materials has proven effective (efficacy) and economical because of difficulty in obtaining services of veterinary doctors.

4. The findings in this study can be used as a direct option in replacing antibiotics and growth promoting drugs in poultry production especially in developing countries.
5. Finally, the study will provide reliable data for Odeda and Ifo LGA that will be useful for further future planning, policy formulation and interventions.

Acknowledgement

The authors acknowledge the Directorate of Grant Management (DGM), Federal university of Agriculture, Abeokuta for the provision of fund for the study.

References

1. Iwu, M., 1993. Handbook of African medicinal plants. CRC Press, Boca Raton, Florida.
2. Sonaiya, E.B., 1990. The context and prospects for development of small holder rural poultry production in Africa. In: CTA seminar proceedings, volume. Smallholder Rural Poultry Production, Thessaloniki, Greece, pp.35-52
3. Guèye, E. F. and Bessei, W., 1996. Gefluegelhaltung in Afrika: Bedeutung und Perspektiven. DGS Magazin, Woche 31: 38-40.
4. Guèye, E.F., 1998a. Village egg and chicken meat production in Africa. *World's Poultry Science Journal* 54 (1): 73-86.
5. Guèye, E.F., 1997. Diseases in

- village chickens: Control through ethnoveterinary medicine. *ILEIA Newsletter*, 13(2): 20-21.
6. Guèye, E.F., 1998b. Poultry plays an important role in African village life. *World Poultry* 14 (10): 14-17.
 7. Dold, A.P. and Cocks, M.L., 2001. Traditional veterinary medicine in the Alice district of the Eastern Cape Province, South Africa. *South African Journal of Science* 97: 375-379.
 8. Guèye, E.F., 2002. Newcastle disease in family poultry: prospects for its control through ethnoveterinary medicine. *Livestock Research and Rural Development*, 14(5). Retrieved 10 May 2012 from <http://www.cipav.org.co/lrrd/lrrd14/5/guey145.htm>.
 9. Bizimana, N., 1994. Traditional veterinary practice in Africa. *Schriftreihe der GTZ*, No 243, Eschborn, Germany.
 10. Wikipedia, 2006.
 11. Banji, O.A. and Okuade, E.S., 2005. Women in agriculture and rural development. In: *Agricultural Extension in Nigeria*. FolaAdedoyin (ed.). ARMT I Press Ilorin pp 69–77.
 12. Gueye, E.F., 2003. Poverty alleviation, food security and the well-being of the human population through family poultry in low income food-deficit countries. Senegalese Institute of Agricultural research (ISRA), Dakar-hann, Senegal.
 13. Bishop, J.P., 1995. Chickens: Improving small-scale production. Echo technical note.
 14. Riise, J.C., Permin, A., Vesterlund, C., Ainsh, M.C. and Frederiksen, L., 2004b. Keeping village poultry. A technical manual for small-scale poultry production. Copenhagen, Denmark.
 15. Bradley, F.A., 1992. A historical review of women's contributions to poultry production and the implications for poultry development process. In: *Proceedings of the 19th World's Poultry Congress*, Amsterdam, the Netherlands. pp. 693–696.
 16. Permin, A. and Hansen, J.W., 1998. Epidemiology, diagnosis and control of poultry parasite, FAO, Rome.,pp: 160.
 17. Ologhobo, A.D., 1990. Feed and feeding in extensive poultry production systems. *Entwicklunglandicher-Raum*, 24(4): 15-17
 18. Williamson, G. and Payne, W.J.A., 1978. *An Introduction to Animal Husbandry in the Tropics*. London. The English Language Book Society and Longman.
 19. Dovie Minh., 2005. Effect of supplementation, breed, season and location on feed intake and performance of scavenging chickens in Vietnam. PhD thesis. Swedish University of Agricultural Sciences. 45 pp.
 20. Alam J., 1997. Impact of smallholder livestock development in some selected areas of rural Bangladesh. *Livestock Research for Rural Development Vol9(3)*. (Available from <http://www.lrrd.org/lrrd9/3/bang932.htm>).
 21. Sonaiya, E.B., Branckaert, R.D.S. and Gueye, E.F., 1999. Research and Development Options for Family Poultry. In: Gueye, E.F. ed. *First INFPD/FAO Electronic Conference on Family Poultry*. Rome, FAO.

22. Alders, R. and Spradbrow, P., 2001. Controlling Newcastle disease in village chicken ACIAR Monograph No.82 pp: 112.
23. Agbede, G.B., Tegua, A. and Manjeli, Y., 1995. Enquêtesurl'élevagetraditionnel des volailles au Cameroun. Notes techniques, *Tropicultura*, 13: 22-24.
24. Aboe, P.A.T., Boa-Amponsem S.A., Butler E. A., Dorward P. T. and Bryant M.J., 2006. Free range village chickens on the Accra Plains, Ghana: Their husbandry and productivity. *Tropical Animal Health and Production*. 38: 235-248.
25. Moreki, J.C., 1997. Small-scale poultry production systems in Serowe-Palapye Sub-district (Botswana). Master of Applied Science (Agriculture) Thesis, University of Melbourne, Melbourne, Australia.
26. Guèye, E.F., 1999, Ethnoveterinary medicine against poultry diseases in African villages. *World's Poultry Science Journal*, 55:188-198.
27. Moreki, J.C., Poroga, B., Dikeme, R. and Seabo, D. 2010. Ethnoveterinary medicine and health management in poultry in Southern and Western Districts, Botswana. *Livestock Research and Rural Development*, 22 (6). Retrieved on 5 November 2011 from <http://www.lrrd.org/lrrd22/6/more22107.htm>.
28. Sonaiya, E.B., 1995. African Network on Rural Poultry (ANRPD): Progress report, November 1989–June 1995. In: Sonaiya E.B. ed. Sustainable Rural Poultry Production in Africa. Proceedings of an International Workshop, June 13–16, 1995 at the International Livestock Research Institute, Addis Ababa, Ethiopia, 134.
29. Guèye, E.F. 1999, Ethnoveterinary medicine against poultry diseases in African villages. *World's Poultry Science Journal* 55:188-198.
30. Wanzala, W., Zessin, K.H., Kyule, N.M., Baumann M.P.O, Mathias, E. and Hassanali, A., 2005. Ethnoveterinary Medicine: a Critical view of its evolution ,Perception, Understanding and the way forward. *Livestock Research for Rural Development* 17:11-15.
31. Masimba, E.S., Mbiriri, D.T., Kashangura, M.T. and Mutibvu, T., 2011. Indigenous practices for the control and treatment of ailments in Zimbabwe's village poultry. *Livestock Research Rural Development* 23 (12). Retrieved 6 May 2012, from <http://www.lrrd.org/lrrd23/12/masi23257.htm>.
32. Mathias-Mundy, E., McCorkle, C.M. and Schillhorn Van Veen., 1996. Introduction. In: C.M. McCorkle, E. Mathias and T.W. Schillhorn van Veen (eds.). Ethnoveterinary Research and Development. Intermediate Technology Publications. London pp 1-23.
33. Sandhya, B., Thomas, S, Isabel, W. and Shenbagarathai, R., 2006. Ethnomedicinal plants used by Valaiyan community of Piranmalai Hills (Reserved Forest), Tamilnadu, India – A pilot study. *African Journal of Traditional Complementary and Alternative Medicines*, 3(1): 101-114.
34. National Veterinary Laboratory

- (NVL) Report., 2004. Department of Animal Health and Production, Gaborone, Bostwana. 52.
35. National Veterinary Laboratory (NVL) Report., 2005. Department of Animal Health and Production, Gaborone, Bostwana. 53.
36. Okotoi, L.O., Ondwasy, H.O., Siamba, D. and Nkurumah, D., 2007. Traditional herbal preparations for Indigenous Poultry Health management in Western Kenya. *Livestock Research for Rural Development* 19(5). (<http://www.cipav.org.co/lrrd19/okit19072.htm>).
37. Sri Balaji, N. and VikramaChakravarthi, P., 2010. Ethnoveterinary practices in India – A Review. *Veterinary World* 3(12): 549-551.
38. Olira, D., Bukenya, R.Z. and Kamoga, D., 2007. Bioprospective studies on Medicinal plants used to Manage poultry Diseases in the Mount Elgon Region of Uganda. *Research journal of Pharmacology* 1: 56-60.
39. Masika, P.J., Van Averbek, W. and Sonandi, A., 2000. Use of herbal remedies by small-scale farmers to treat livestock diseases in central Eastern Cape Province, South Africa. *Journal of South African Veterinary Association* 71, 81–91.
40. Toyang, N.J., Wanyama, J., Nuwanyakpa, M. and Django, S., 2007. Agrodok 44 Ethnoveterinary medicine: a practical approach to the treatment of cattle diseases in sub-Saharan Africa (2nd Edition). Agromisa Foundation and CTA, Wageningen, Netherlands.
41. Yirga, G., Teferi, M., Bhane, G. and Amare, S., 2012. Plants used in ethno-veterinary practices in Medebay-Zana District. *North Ethiopian Journal of Medicinal Plants Resources* 6(3): 433-438.