# ETHNO-VETERINARY PRACTICE AMONG SMALL RUMINANT FARMERS IN ODO-OTIN LOCAL GOVERNMENT AREA OF OSUN STATE

[1]**Adelusi, F.T*., Adedokun, S.A**[2]**, Babatunde, R.O**[1]**, Eniola, O**[1]**, Ojo-Fakuade, F.F**[1]

[1]Department of Agricultural Extension and Management, Federal College of Forestry, Forestry Research Institute of Nigeria, Ibadan

[2]Department of Basic and General Studies, Federal College of Forestry, Forestry Research Institute of Nigeria, Ibadan

*E-mail: temmytdoks@gmail.com; +234 7038153579

**ABSTRACT**

*Small ruminant management is seriously hindered by disease in the "Tropic". Diseases are important to farmers and affect the production of small ruminant in several ways. It increases cost of production, lower production level and cause great loss to the farmers. The study was carried out to investigate the ethno-veterinary practices among small ruminant farmers in Odo-Otin local government of Osun state. Multistage sampling procedure was used for the study. 90 questionnaire were administered while 86 questionnaire were retrieved. Statistical analyses used were frequency table, simple percentage, Chi-square and Pearson product moment of correlation. 68.8% and 37.2% of the respondents revealed that liver disorder and aspergillosis occurred more than twice in a production cycle. Moringa leaf, cowpea seed, palm oil, neem leaf, and engine oil are the ethno-veterinary practices used to a larger extent in the study area. Also, 56.9% of the respondent had low usage of ethno veterinary practice while 43.1% had high usage of ethno veterinary practice. Majority of the respondents indicated that lack of technical know-how, level of education, weather condition, and government policy were major constraint. Chi-square relationship between socioeconomic characteristics of the respondents and the use of ethno-veterinary practices shows that there is no significant relationship between them except period of rearing and management system (P< 0.05). PPMC shows that there is significant relationship between disease occurrence among the small ruminant farmers and the use of ethno-veterinary practice (r=0.625, p= 0.000). Government needs to encourage researchers to improve on existing indigenous systems through grants.*

*Keywords: Ethno-veterinary practices, small ruminant, farmers.*

**INTRODUCTION**

The application of indigenous knowledge to treat animal disease is also known as ethno-veterinary medicine, defined as an indigenous animal healthcare system that includes the traditional beliefs, knowledge, skills, methods and practices of a given society (Yineger *et al.,* 2008). Ethno-veterinary medicine comprises the traditional management of veterinary diseases, their remedies and the spiritual elements associated with the healing procedures practiced by a local community (Mathias 2004). Traditional practices can be used to provide economical solutions to improve productivity of animals and reduction in poverty

of the poor farmers (Soji-eze, 2012)

Ethno-veterinary practice provide valuable alternative to areas having limited access to veterinary care. Due to over population, urbanization and continuous exploitation of herbal reserves, the natural resources and their related traditional knowledge are depleting day -by-day. Very little of this traditional knowledge has been documented in developing countries (Sanyasi *et al.,* 2008)

In Nigeria, (Chah *et al.,* 2009) reported that farmers use traditional remedies because they are more readily available and are cheaper. The use of plant derived remedy is given further impetus by the rising financial costs associated with treating livestock infections and diseases using orthodox practices, high cost of drugs and other medication. The Food and Agriculture Organization (2010) estimates losses of more than 35% due to diseases in the livestock sector among smallholder farmers in developing countries, and farmers resort to alternative practice is a way to reduce these losses from animal infections and diseases. This study therefore investigates the ethno-veterinary practice among small ruminant farmers in Odo-otin local government area of Osun state.

**Hypotheses of the Study**

The hypotheses stated in the null form were tested;

$H_o1$: there is no significant relationship between socio-economic characteristics of the respondents and ethno-veterinary practice

$H_o2$: there is no significant relationship between disease occurrence among small ruminant farmers and ethno-veterinary practice

**Research Methodology**

**Area of Study**

The study was carried out in Odo-Otin local government area of Osun state with headquarters in the town of Okuku. It has an area of 294km$^2$ and a population of 134,110 at the 2006 census.

Odo Otin Local government area, is subdivided into fifteen wards which are: Asi/ Asaba, Baale, Ekosin / Jijeku, EsaOtun, Baale-odo, Faji/ Opete, Igbaye, Ijabe/Ila-odo, JagunOsi Bale ode, Oba/ Ojomu, Okua/ Ekusa, Oloyan Elemosho/ Esa, Olukotun, Olunisu Ore/Agbeye, 0solo/Oparin/Ola.

**Study Population**

The study population consists of small ruminant farmers in Odo Otin local government area of Osun State.

**Sampling Procedure and Sampling Size**

Multistage sampling technique was used for this research. The first stage involves the selection of the study area, Odo-Otin local government was purposively selected because it contains a considerable number of small ruminant farmers. The second stage involves the selection of wards; 40% of the wards were randomly selected i.e 6 wards which are; Agbeye, Ekosin, Faji, Ila/odo, Asi/Asaba, Okua/Ekusa. The third stage involves the identification of villages in each selected ward, 50% of these villages were randomly selected, which are; Inisa, Asi , Ekosin, Imuleke, Opete, Igbaye, faji, Ila-Odo, Oyan. Ekusa .

The fourth stage involves the selection of farmer in each village; 50% of the farmers in each village

were randomly selected: Inisa; 10, Asi; 5, Ekosin; 10, Imuleke; 10, Faji; 5, Igbaye; 9, Ijabe; 15, Ila-Odo; 5, Oyan; 11, Ekusa; 10.

90 questionnaire were distributed while 86 questionnaire were retrieved.

| Local Govt. Area (Purposive) | Wards | Selected Wards (40%) (Random Sampling) | Villages | Selected Villages (50%) (Purposive) | No of Farmers | Selected Farmers (50%) (Random Sampling |
|---|---|---|---|---|---|---|
| Odo-Otin | Asi/Asaba | Agbeye | Inisa, Ore | Inisa | 20 | 10 |
| | Ekosin/Iyeku | Ekosin | Elesin-Funfun, Ekosin, Asi, Olokunmodu | Ekosin, | 20 | 10 |
| | | | | Asi | 10 | 5 |
| | Esa otun | Faji | Imuleke,Faji, Idiroko, Igbaye, Ago-Ayo, Opete | Igbaye | 18 | 9 |
| | | | | Faji | 10 | 5 |
| | | | | Imuleke | 20 | 10 |
| | Baale-odo | Ila Odo | Igbotele, Ijabe, Ila - Odo, Opanda | Ijabe, | 30 | 15 |
| | | | | Ila-Odo | 10 | 5 |
| | Faji/Opete | Asi/Asaba | Oyan, Kosemani | Oyan | 22 | 11 |
| | Igbaye | Okua/Ekusa | Okua, Ekusa | Ekusa | 20 | 10 |
| | Ijabe/Ila-Odo | | | | | |
| | Jagun Osi/Bale Ode | | | | | |
| | Oba/Ojomu | | | | | |
| | Okua/Ekusa | | | | | |
| | Oloyan Elemoso/Esa | | | | | |
| | Olukotun | | | | | |
| | Olunisi | | | | | |
| | Ore/Agbeye | | | | | |
| | Osolo/Oparin/Ola | | | | | |

## DATA COLLECTION AND DATA ANALYSIS

Data for this study were collected using primary source through the use of well structured questionnaire and personal interview method. Categorization of respondents was measured and mean obtained was used to categorise the respondent based on mean index category. Above mean is categorized as high level while below mean is categorized as low level. Data collected were subjected to descriptive and inferential statistical analysis using statistical package for the social sciences (SPSS). Descriptive statistical tools used include frequency count, mean and percentage. Analytical tools such as chi-square and PPMC (Pearson Product Moment of Correlation) were used to analyse hypotheses.

## Results and Discussion

**TABLE 1a: Socio-Economic Characteristics of Respondents in the Study Area**

| Variables | Frequency | Percentage |
|---|---|---|
| **SEX** | | |
| Male | 23 | 26.7 |
| Female | 63 | 73.3 |
| **Total** | **86** | **100** |
| **Age** | | |
| 21-30 | 4 | 4.7 |
| 31-40 | 11 | 12.8 |
| 41-50 | 8 | 9.3 |
| 51-60 | 15 | 17.4 |
| 61-70 | 25 | 29.1 |
| 71-80 | 23 | 26.7 |
| **Total** | **86** | **100** |
| **Religion** | | |
| Islam | 30 | 34.9 |
| Christianity | 54 | 62.8 |
| Traditional | 2 | 2.3 |
| **Total** | **86** | **100** |
| **Marital Status** | | |
| Single | 4 | 4.7 |
| Married | 50 | 58.1 |
| Widow | 32 | 37.2 |
| **Total** | **86** | **100** |

**Academic Background**

| | | |
|---|---|---|
| No Formal Education | 42 | 48.7 |
| Primary education | 20 | 23.3 |
| Secondary Education | 12 | 12 |
| **Total** | **86** | **100** |

**Table 1b: Socio-Economic Characteristics of Respondents in the Study Area**

| Variables | Frequency | Percentage |
|---|---|---|
| **Scope of Rearing** | | |
| Subsistence | 78 | 90.7 |
| Commercial | 8 | 9.3 |
| **Total** | **86** | **100** |
| **Period of Rearing** | | |
| 5-10 | 26 | 30.2 |
| 11-20 | 21 | 24.4 |
| 21-30 | 18 | 20.9 |
| 31-40 | 21 | 24.4 |
| **Total** | **86** | **100** |
| **Other Occupation** | | |
| Yes | 72 | 83.7 |
| No | 14 | 16.3 |
| **Total** | **86** | **100** |
| **Management System** | | |
| Intensive system | 56 | 65.1 |
| Extensive system | 27 | 31.4 |
| Semi intensive system | 3 | 3.5 |
| **Total** | **86** | **100** |

Source: field survey, 2019

Table 1a shows that the male respondents constitute 26.7% while 73.3% constitute female respondents. This means that female are into farming than male in the study area. This disagrees with the findings of Sokoya *et al.,* (2012) that agriculture is generally regarded in Africa as an occupation for men. Majority (29.1%) of the respondents were within the age group of 61-70 years, this implies that there is less involvement of youths in farming activities in the study area.

Most of the respondents (58.1%) were married, 37.2% were widowed while 4.7% were single, the married farmers have more responsibilities to provide for their families hence are more likely to be engaged in small ruminant farming as a complimentary activity to meet up with their economic needs .The study however show that the singles are not left out in small ruminant production as they constitute 4.7% of the respondents. They too have some needs to meet up with which could be for saving towards important life projects like education, housing, marriage and other purposes. 14% had tertiary education, 14% had secondary education, and 23.3% had primary education while 48.8% never attended any school. Education is very important and can likely influence the way farmers treat and handle their animal. It is believed that the respondents who had formal types of education may have been exposed to some theories and practices of animal health to some extent in the subject of agricultural science which forms part of the primary and secondary school curriculum (Adeneye *et* al., 2013). Also, Oladele, (2005) revealed that exposure of farmers to education will increase the farmer's ability to adopt change.

 Table 1b shows that 90.7% of the respondents were into subsistence rearing while 9.3% were into commercial rearing. The table also shows that majority (65.1%) of the respondents practice intensive system, this in contrary to the findings of Adesehinwa and Okunlola (2000) who reported extensive system as the most common system of production in south western Nigeria.

**Table 2: Ethno Veterinary Practices Used Among the Small Ruminant Farmer**

| Diseases | Not at all | Rarely | Lesser Extent | Larger Extent |
|---|---|---|---|---|
| Mango Fruit for Indigestion | 56 (65.1) | 18 (20.9) | 3 (3.5) | 9 (10.5) |
| Moringa Leaf for Diarrhoea | 18 (20.9) | 11 (12.8) | 22 (25.6) | 35 (40.7 |
| Rice Grain for Lactation | 55 (64) | 21 (24.4) | 1 (1.2) | 9 (10.4) |
| Cassia Pod for Indigestion | 52 (60.5) | 16 (18.6) | 8 (9.3) | 10 (11.6) |
| Black Plum for Joint Pain | 22 (25.6) | 30 (34.9) | 23 (26.7) | 11 (12.8) |

| | | | | |
|---|---|---|---|---|
| Cowpea Seed for Cough/ Cold | 14 (16.3) | 2 (2.3) | 14 (16.3) | 56 (65.1) |
| Banana Leaf for Body Heat | 59 (68.6) | 24 (27.7) | 1 (1.2) | 2 (2.3) |
| Wood Apple for Indigestion | 15 (17.4) | 35 (40.7) | 27 (31.4) | 9 (10.5) |
| Neem Leaf for Intestinal Worms | 5 (5.8) | 7 (8.1) | 31 (36) | 43 (50) |
| *Spondias monbii* for Retained Placenta and mastitis | 7 (8.1) | 3 (3.5) | 49 (5.7) | 27 (31.4) |
| Engine oil for Mange/Scabies | 3 (3.5) | 4 (4.7) | 5 (5.8) | 74 (86) |
| Palm oil for Flies/ Mites | 4 (4.7) | 3 (3.5) | 2 (2.3) | 77 (89.5) |

Source: Field Survey, (2019); NOTE: Figures in parenthesis are percentages

Table 2 presents some of plant species and other traditional methods used in the treatment/management of diseases of small ruminants in the study area. About 10 plants were identified by respondents while other indigenous methods employed include: engine oil and palm oil. The major causes of losses in animals reported by Moreki *et al.,* (2010) in order of importance are diseases, predation and a combination of diseases, parasites and predation. Small ruminant farmers in the study area made use of non-conventional approaches in addressing disease and parasite challenges while a few individuals completely ignore it despite their awareness. Remedies were processed and administered orally or topically as the case may require. Plant parts used for drug preparation include barks, leaves, stems, flowers and seeds. This was reported by Jabber *et al.,* 2006 and Dilshad *et al.,* 2008 The common plant parts used in the study area include *Mangifera indica* ( mango) fruit and cassia pod against indigestion, the use of cassia pod for indigestion was also reported by Lans and Brown (1998). moringa leaf for diarrhea, diarrhea is one of the dominant problems for small ruminant (Matovela *et al.,* 1987). Neem leaf as a means of getting rid of intestinal worms for the proper health of the animal. Neem leaf is efficient as an antibiotic, anthelmintic and growth promoter when added to the feed of ruminant. Preliminary studies done by Chandrawathani *et al.,* (2000) showed that feeding Neem foliage is safe, eco-friendly, cheap and palatable to sheep. *Spondias monbin* for retained placenta and mastitis provides multipurpose remedy and prevention. It is suggested that the plants with multipurpose uses may contain more than one type of physiologically active ingredients (chah *et al.,* 2009) *Oryza sativa* (rice) grain for lactation, *Tamarindus indica* for tongue sores. Others include cowpea seed, banana leaf, wood apple, black plum. Some of the plants mentioned in this study contain chemicals that may explain their ethno-veterinary use. For instance, some of the plants influence

the immune system or are effective against internal and external parasites (Abdu and Faya, 2000). Materials than plants used alone or in combination with other plants are engine oil and kerosene for the control of mange and scabies also palm oil for fleas/mites.

**Table 3: Categorization of respondents based on their level of practice**

| Variable | Frequency | Percentage | Mean |
|----------|-----------|------------|------|
| High | 37 | 43.1 | 30.5 |
| Low | 49 | 56.9 | |
| **Total** | **86** | **100** | |

Above mean value= High, below mean value= low

Table 3 Shows that the level of practice of the respondents towards the use of ethno veterinary. Majority (56.9%) of the respondents had low usage of ethno veterinary practice while 43.1% had high usage of ethno-veterinary practice.in the study area. This implies that majority of the farmers did not make use of ethno-veterinary practice which might be due to poor documentation of knowledge of ethnoveterinary medicine, poor knowledge of application rates, inadequate diagnosis or side effects of the concoctions (Mudzengi *et al.,* 2014).

**Table 4: Disease occurrences among small ruminant animal in a production cycle**

| Diseases | Frequency of Occurrence | | | |
|----------|-------------------------|---|---|---|
| | Not at all (none) | Not frequently (once) | Frequently (twice) | Very frequently (more than twice) |
| **Mastitis** | 15 (17.4) | 44 (51.2) | 11 (12.8) | 16 (18.6) |
| **Foot and Mouth** | 23 (26.7) | 31 (36.10) | 22 (25.6) | 10 (11.6) |
| **Diarrhea** | 13 (15.1) | 56 (65.1) | 14 (16.3) | 3 (3.5) |
| **Bloat** | 11 (12.8) | 48 (55.8) | 18 (20.9) | 9 (10.5) |

| | | | | |
|---|---|---|---|---|
| **Brucellosis** | 29 (33.7) | 9 (10.5) | 25 (29.1) | 23 (26.7) |
| **Liver disorder** | 8 (93) | 3 (3.5) | 15 (17.4) | 59 (68.8) |
| **Aspergillosis** | 17 (19.8) | 6 (7) | 31 (36) | 32 (37.2) |
| **Tuberculosis** | 11 (12.8) | 47 (54.7) | 16 (18.6) | 12 (14) |
| **Anthrax** | 19 (22.1) | 34 (39.5) | 4 (4.7) | 29 (33.7) |
| **Foot rot** | 24 (27.9) | 18 (20.9) | 39 (45.3) | 5 (5.8) |
| **Cough** | 16 (18.6) | 53 (61.6) | 10 (13.3) | 7 (8.1) |
| **Bronchitis** | 41 (47.7) | 22 (25.5) | 17 (19.8) | 6 (7) |
| **Endoparasitic** | 23 (26.7) | 48 (55.8) | 11 (12.8) | 4 (4.7) |

Source: Field Survey, (2019);    NOTE: Figures in parenthesis are percentages

Table 4 shows the frequency of disease occurrence among small ruminant in a production cycle. The table indicated that majority (51.2%) of the respondents experience mastitis once in a production cycle. Mastitis in small ruminant is a momentous disease that affects not only meat and milk production, but the wellbeing of small ruminant and human beings as well it is the most common disease in livestock species, and it is one of the major disease in the veterinary field (Abdullahi 2016, Tolone *et al.,* 2016). The findings of this study is contrary to the finding of chah *et al.,* 2013 who indicated that majority of farmers indicated that diarrhea is the very frequent observed health problem in their flocks since 65.1% of the respondents in this study experience diarrhea once in a production cycle.

Tuberculosis remains one of the most important threats to human and animal health. Currently, tuberculosis, particularly bovine tuberculosis (BTB) in humans also known as zoonotic TB which is transmissible between animal and human is gaining awareness as a potentially important problem in developing countries (Adesokan *et al.,* 2019). Animals infected with tuberculosis exhibit clinical signs comparable to those in humans, and in addition, a drop in quality and quantity of milk and meat (Radostits *et al.,* 2000) thereby resulting in serious economic loss (Oragwa *et al.,* 2017).  Animals that are infected with tuberculosis pose a lot of health threat to farmers that are in contact with them. 12.8% of the respondents do not experience tuberculosis at all.

Brucellosis is a contagious systemic bacterial disease primarily of ruminants, characterized by inflammation of the genital organs and fetal membranes, abortion sterility, and formation of localized lesions in the lymphatic system and joints (Awah-Ndukum *et al.,* 2018) This result implies that majority (33.7%) of the respondents reported that brucellosis disease do not affect their animals at all. Brucellosis is endemic in developing countries due to lack of well-structured control programmes and inadequate resources (Ayoola, 2014).
It also shows that 18.6% of the respondents do not experience cough at all, 61.6% do not experience

it frequently and 11.6% experience it frequently, while 8.1% experience it very frequently. This implies that cough is not seriously affecting the small ruminant animal in the study area.

Bronchitis is more common in kids and lambs under 6 months than in other age groups. Majority (47.7%) of the respondents do not experience bronchitis at all in their animals.

Endoparasitic infections are responsible for substantial loss of productivity in the livestock industry. Their harmful effects on these animals range from anorexia, abdominal distention, emaciation etc all of which result in serious economic losses to the farmer and the nation in general (Owhoeli *et al.,*). Few (4.7%) of the respondents experience endoparasitic infection more than twice in a production cycle.

As noted by Otchere (2010) high standard of sanitation and management are essential to control these health problems.

**Table 5a: Constraints to the use of ethno-veterinary practices by small ruminant farmers**

| Constraints | Not Constraint | Minor Constraint | Major Constraint |
|---|---|---|---|
| **Finance** | 56 (65.1) | 21 (24.4) | 9 (10.5) |
| **Lack of technical know-how** | 22 (25.6) | 8 (9.3) | 56 (65.1) |
| **Cost of Treatment** | 43 (50) | 36 (41.9) | 7 (8.1) |
| **Level of Education** | 17 (19.8) | 12 (14) | 57 (66.2) |
| **Weather condition** | 10 (11.6) | 20 (23.3) | 56 (65.1) |
| **Availability of vaccine** | 33 (38.4) | 37 (43) | 16 (18.6) |
| **Government policy** | 22 (25.6) | 10 (11.6) | 54 (62.8) |
| **Religion** | 67 (77.7) | 16 (18.6) | 3 (3.5) |

Source: Field Survey, (2019);    NOTE: Figures in parenthesis are percentages

Table 5 shows that majority (65.1%) and (77.7%) of the respondents indicated that finance and religion respectively is not a constraint. This disagrees with the findings of Aphunu *et al.,* (2011) who reported that the respondents identified inadequate finance as their major constraints that militated against small ruminant production in the study area. Also, religion does not go against the use of this practices in the study area which is the reason there is an increase in the number of small ruminant animal in the study area because the three well known religion support the use of the practices.

Majority of the respondents indicated that Lack of technical know-how, level of education, weather condition and government policy are major constraints. This implies that majority of the respondents have no knowledge about the practices which lowered the effectiveness of the use of ethno-veterinary practices also their level of education could be an hinderance to its use in the study area.

**Table 6: Categorization of respondents based on constraint**

| Variable | Frequency | Percentage | Mean |
|----------|-----------|------------|------|
| High(above mean) | 5 3 | 61.6 | 15.9 |
| Low(below mean) | 33 | 38.4 | |
| **Total** | 86 | 100 | |

Above mean value= High, below mean value= low

Table 6 shows the constraints of the respondents toward the use of ethno veterinary practice. Majority (61.6%) of the respondents experience high level of constraint while 38.4% had low level of constraint. This implies that majority of the farmers were faced with a high level of constraints to the use of ethno-veterinary practice in the study area.

**Table 7:** Chi-square analysis showing the relationship between socio-economic Characteristics of the Respondents and the Use of Ethno-veterinary Practices

| Variable | X-value | P –value | Decision |
|----------|---------|----------|----------|
| Sex | 3.778 | 0.286 | NS |
| Age | 15.853 | 0.392 | NS |
| Religion | 8.874 | 0.181 | NS |

| | | | |
|---|---|---|---|
| Education | 16.553 | 0.056 | NS |
| Period of rearing | 18.464 | 0.03 | S |
| Management system | 16.116 | 0.013 | S |

Source: Field Survey, (2019)

Table 7 Shows that there is no significant relationship between socio-economic characteristic of the respondents and the use of ethno veterinary practices except period of rearing and management system. This implies that period of rearing and management systems have effect on the use of ethno-veterinary practices. This finding reveals that farmer's sex, age, marital status, religion and education do not affect the use of ethno-veterinary practice by the farmers.

**Table 8:** Pearson product moment of correlation (PPMC) analysis showing the relationship between disease occurrence among the small ruminant farmers and the use of ethno-veterinary practice

| Variable | r-value | p-value | Decision |
|---|---|---|---|
| Disease occurrence | 0.625 | 0 | S |
| Vs | | | |
| Ethno-veterinar | | | |
| Practice | | | |

Source: Field Survey, (2019)

From the table above, there is significant relationship between disease occurrence among the small ruminant farmers and the use of ethno veterinary practice (r = 0.625, p= 0.000) in which the null hypothesis is rejected and the alternate hypothesis is accepted. This implies that there is correlation between the disease occurrence and the use of ethno-veterinary practice.

**CONCLUSION**
This study has shown there is potential use of ethno-veterinary practices in treating various small ruminant diseases in the study area and diseases occurred at different frequency of occurrence in a production cycle but lack of technical know-how, level of education, weather condition and government policy has been identified as major constraints to the use of ethno -veterinary practices by the small ruminant farmers. Based on the findings of the result, education for sensitization on the use of ethno-veterinary practices should be provided to livestock farmers through training in order to increase the rate of adoption. Also, there should be competent extension agent that can relate effectively with the rural people that are interested in using the ethno- veterinary practices.

**REFERENCE**

Abdu, P.A and Faya, J.N. (2000). The efficacy of some Nigerian Plants on helminthes found in local chickens. Ethno-veterinary practices research and development. Proceedings of an international workshop on ethno-veterinary practices held 14-18 August 2000, Kaduna, Nigeria. Pp65-71.

Abdullahi, A.H., (2016). Study the inhibitory effect of aqueous extract of *Punica granatum L.* on resistant Staphylococcus aureus Isolate from mastitic milk. *Kufa Journal of veterinary medical Sciences* 5(2):1-8.

Adeneye O.A., Wifaka A. Abd Srag I. (2013). Result curriculum reforms in Primary and secondary school in Nigeria in the Millennium, *Journal of Educational Practice* , 4(5).

Adesehinwa, A.O.K and Okunlola, J.O (2010). Socio-economic constraints to ruminant production in Ondo and Ekiti states. *Moor journal of Agricultural Reasearch* 1:93-97.

Adesokan, H.K., Akinseye, V.O ., Cadmus, S.I and Streicher, E.M (2019). Reverse Zoonotic Tuberculosis Transmission from an Emerging Uganda I Strain between Pastoralists and Cattle in South-Eastern Nigeria. BMC *Veterinary Research* 15, 437.

Akhtar, M.S and Ahmad I (1992). Comparative Efficacy of Mallotusphillpineensis fruit (Kamala) of Nilzan drug against gastro intestinal cestodes n Beetal goat. *Small Ruminant research,*121-128.

Aphunu, A., Okeodo and Okojie, D.U. (2011). Small Ruminant Production Constraint among Farmers in Ika North-east Local Government Area of Delta State, Nigeria. Applied *Science Research*, 3(2),370-376.

Awah-Ndukum, J., Mouiche,M.M.M, Bayang, H.N., NguNgwa,N., Assana, E., Feussom, K.J.M, Manchang, T.K and Zoli, P.A.(2018). Seroprevalence and associated Risk Factors of Brucellosis among Indigenous Cattle in the Adamawa and North Regions of Cameroon. *Veterinary Medicine Int.* 3468596.

Ayoola, M.C. (2014). Prevalence of Brucellosis in Slaughtered cattle, risk behaviours and predictors of brucellosis among livestock workers at selected abattoirs in Ibadan, Oyo state. MVPH thesis, Department of veterinary public health and preventive medicine, University of Ibadan. Pp 145-  150.

Chah, J.M., Igbokwe, E.M and Chah, K.F. (2009). Ethno-veterinary medicine used in small ruminant health in the Eastern Guinea Savanna, Nigeria. Livestock Research Rural Development 2009; 21(12):1-45

Chah, J.M., Obi, U.P and Ndofor-Foleng H.M. (2013). Management practices and Perceived

training needs of Small Ruminant Farmers in Anambra State, Nigeria. *African Journal of Agricultural Research*. Vol 8 (22), Pp 2713-2721.

Chandrawathani, P., Adnan, M. and Zaini, C. M., 2000. Preliminary Studies on Neem (*Azadirachta indica)* as an Alternative Anthelmintic for Sheep. Proceedings of the 12th Veterinary Association Malaysia Scientific Congress, Malaysia, Kuantan.

Dilshad, S.M.R., Rehman, N Iqbal Z., Muhammed, G., Iqbal, A and Ahamd (2008). Annivestory of the Ethnoveterinary practices for reproductive disorder in cattle and buffaloes, Sargodha District of Pakistan, *Journal of Ethnopharmacology*, 117:393-403.

FAO (2010) Food and Agriculture Organization of the United Nations Statistical Databasrs. See http://faostat.fao.org/

Jabber, A., Iqbal, Z and Khan, M.N. (2006). In Vitro Anthelmintic Activity of *Trachyspermum amml* seeds. *Pharcology magazine* 2(6):126-129.

Mathias, E (2004) Ethno-veterinary medicine, harnessing its potential Veterinary Bulletin 2004, 2 (4), 269-273.

Matovelo, J.A., Semuguruka, W.D., Mella, P.N.P and Nwamengele, G.L.M. (1987). Sone indications on the animal disease status in Tanzania. Proceedings of the 5th Tanzanian Veterinary Association of Scientific Confderence Centre. 1st -3rd Decenber, 1987, 5:151-163.

Moreki, J.C., Poroga, B., Dikeme, R and Sebo, D. (2010). Ethnoveterinary Medicine and Health Management in Poultry in Southern Western District Botswana. *Livestock Research for Rural Development* 22 (6).

Mudzengi, C., Dahwa, C., Skosana, J and Murungweni, C. (2014). Promoting the Use off Ethnoveterinary Practices in Livestock Health Management in Masvingo Province, Zimbabwe. *Ethnobotany Research and Application* 2014, 12:397-405

Oragwa, A.O., Oziegbe, S.D., Patbas, M.N., Dunka, H.I., Buba, D.M and Gurumyen, Y.G., (2017). Prevalence of Tuberculosis among livestock Slaughtered for Human Consumption: A Jos Abbatoir based study. *Journal of Medical and Pharmaceutical Sciences*. Vol 3, Issue 7B:777-783.

Otchere, E. O. 2010. Livestock production among pastoralists in Giwa District, Kaduna State, Nigeria. Unpublished mimeo.Livestock Systems Research Project,NAPRI, Shika, Zaria,

Nigeria. Pp. 77-146.

Owhoeli, O., Elele, K and Gboeloh, L.B. (2014). Prevalence of Gastrointestinal Helminths in Exotic and Indigenous Goats Slaughtered in Port Harcourt, South-South, Nigeria. *Chinese Journal of Biology.*Volume 2014, Article ID 435913, 8 pages.

Radostitis, O.M., Gay, C.C., Blood, D.C and Hinchcliff, K.W. (2000). Diseases caused by mycobacterial species. In: veterinary Medicine: a textbook of Diseases of cattle, sheep, pigs, goats and horses, 9th edition. (909-934). New York: saunders.

Sanyasi Rao M. L. Y. R. Varma and Vijay kumar, 2008 Ethonovertinary medicinal plants of the catchmensts area of the river papagni in the chittor and ananthapur Pradesh. Ethonobotanical leaflets, 12,217-226.

Sofowora, A (1993) Medicinal Plants and Traditional Medicine in Africa J O.

Soji-Eze, T. (2012). Nigeria falls to tap 100 billion medical plant fund, tribune Nigeria; 2012. Available:http://www.tribune.com.ngl (Retrieved 2012-08-28).

Tolene, M., Mastrangelo,S., Di Gerlando, R., Sutera, A.M., Monteleone, G., Sardina, M.T and Portolano, B., (2016). Association study between defensin gene polymorphisms and mastitis resistance in Valle del Belice diary sheep breed. *Small Ruminant Research* 136:18-21.

Yineger H. Yewhalaw D, Teketay D, 2008: Plants of veterinary importance in southwestern Ethiopian: The case of Gilgel Ghibe area. *Forests, Tress and Livelihoods.* Vol. 18, Pp165-181.