Evaluation of the Quality of Meat in Dr. Abubakar Sola Saraki Memorial Abattoir Akerebiata, Ilorin, Kwara State, Nigeria

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***Abstract*:- Meat quality is a public health issue that requires serious attention of Environmental Health Scientist and the general public. We are what we eat! The rate at which meat animals are handled, slaughter dressed, transported, sold and prepared has a lot of impact on the meat quality. In most cases, butchers give little or no attention to the quality of meat sold at slaughter houses and abattoir in Nigeria which is dangerous to public health. The study was carried out to evaluate the quality of meat in Dr. Abubakar Sola Saraki memorial abattoir, Akerebiata, Ilorin.**

Microbial analysis was carried out on the beef part (offal, carcass and skin). Five organisms were isolated namely: Escherichia coli, staphylococcus, Klebsiella, Shigella and Salmonella and this is attributed to unhygienic practices in the abattoir.Efforts should be made by EHS personnel and the government to regulate meat handling and sale through routine inspection of abattoir and slaughter houses in order to protect consumer health and prevent possible threats to consumers.

Keywords: **Meat, Butchers, Abattoir, EHS, Microbe, Meat inspection**

I. INTRODUCTION

Meat is the dressed flesh or a carcass and it provides the body with protein. Ingestion of contaminated meat leads to food borne diseases[1]. Different studies have shown that exposure of meat to contaminants and pollutants continue to be on the rise in developing and under developed countries.[2,3,4] Red Meat is consumed on a large scale hence, its quality preparation and handling before sale should be treated as important[4,5]. Abattoir is a place or slaughter house where animals are slaughtered and sold for human consumption. Abattoir Acts (1988) defined abattoir as any premises used for or in connection with the slaughter of animals whose meat is intended for human consumption and include a slaughterhouse but does not include a place situated on a farm. Animals include cattle, sheep, pigs, goats and other equine animals. Slaughtering of animals cannot be avoided as people demand on red meat is on the increase daily[5,6]. In the 16th century, Abattoir is traceable to the Roman Empire where there are designated public slaughter slab[8,9,10]. Nigeria has slaughter houses sited in almost all settlements. It was reported that the slaughter of animals in abattoirs of developing countries was carried out in unsuitable buildings by untrained slaughter men and butchers that were unaware of sanitary principles [11,12].In most abattoirs in Africa countries, evidence of cattle dung is dumped noticeable and are not evacuated or removed, blood of animals are not properly drained, fly is not controlled, open waste dump site for animal waste and use of unsterilized slaughtering and dressing equipment which contributes immensely to outbreak of meat borne diseases[13,14].

Objective of the study

The objective of this study is to evaluate the quality of meat in Dr. Abubakar Sola Saraki memorial abattoir, Akerebiata, Ilorin.

II. METHODOLOGY

Dr. Abubakar Sola Saraki memorial abattoir located in Akerebiata in Kwara State, L

Coordinates: Latitude 8.52667 (8°31’36”), longitude 4.55284 (4°33’10”) and altitude 291.3.

Chemicals Reagents

Chemicals and reagents used were of analytical grade.

Cleaning of Glassware

1. Washing of apparatus
2. Soak apparatus in nitric acid for one day.
3. Rinsing with aqua regia
4. Rinse with tap water
5. Rinse in distilled water
6. Glassware dried in hot oven @105°C.

Sampling Procedures, Collection and Preparation

Samples Collected:

1. Ovals
2. Skin
3. Carcass

The above samples were collected from three shops in the abattoir and immediately transported to the laboratory for

meat analysis. Authors prepared the samples in triplicates to ensure accuracy of result. All analysis was done at the Chemistry Laboratory of the University of Ilorin.

- 1g each of the samples were weighed and soaked in a 10ml test tube containing distilled water and was left for proper saturation.
- 1ml of this saturated water was transferred into an agar plate for culture. It was left for days for incubation.
- After the incubation period the plates were read and the following organisms were identified;

Table 1: Identified organisms from the meat analysis.

For offal	Carcass	Skin
Salmonella typhimurium B	Salmonella typhimurium A	Staphylococcus aureus
Shigellaflexen	Klebsiella Species	Staphylococcus epidermis
Escherichia Coli		Shigellaflexen
Salmonella typhimurium A		
% occurrence of Salmonella = 50%	50%	0
% occurrence of Shigella = 25%	0	33.30%
% occurrence of Escherichia Coli = 25%	0	0
% occurrence of Klebsiella = 0	50%	0
%occurrence of staphylococcus = 0	0	66.70%

Figure 1 shows three (3) most identified organisms in offal sample

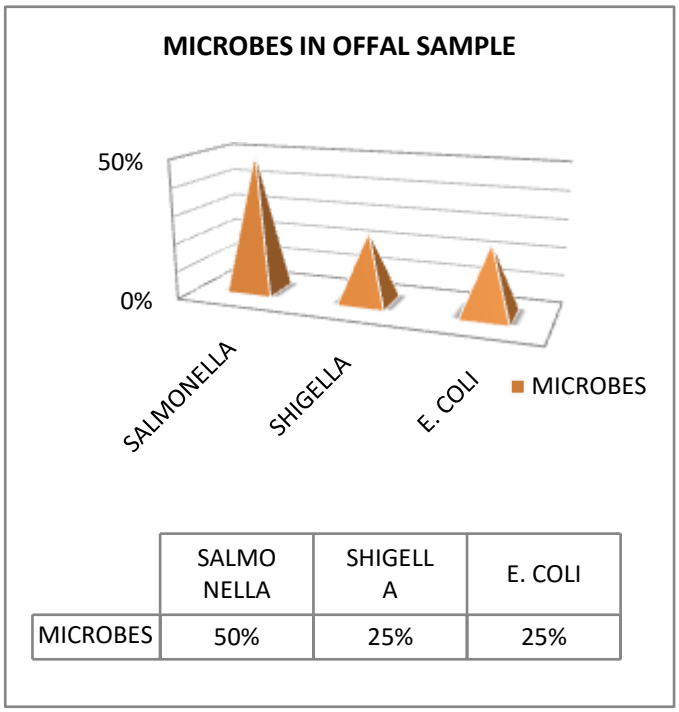

Figure 2 shows two (2) most identified organisms in Skin sample

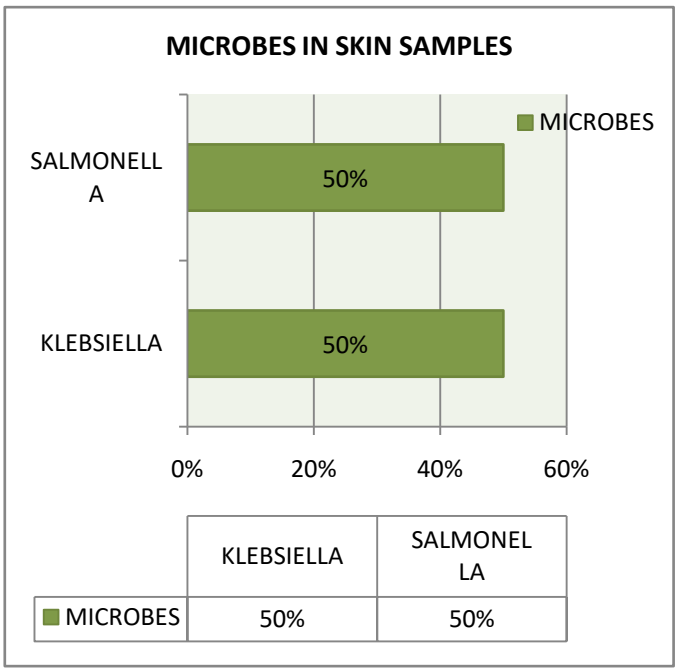

Figure 3 shows two (2) most identified organisms in carcass sample

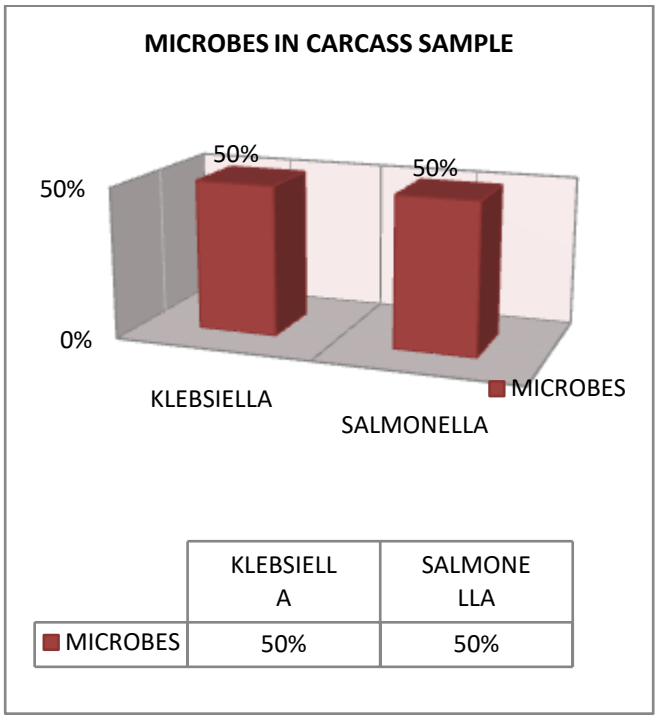

Table 2: Shows the population size of organisms isolated

Body parts	1st replicate	2nd replicate	3rdreplicate
Skin	0.1×10^{3} 1%	0.1×10^{3} 1%	0.1×10^{3} 1%
Offal	1.6×10^{3} 16%	1.8×10^{3} 18%	2.05×10^{3} 20.5%
Carcass	0.2×10^{3} 2%	0.25×10^{3} 2.5%	0.2×10^{3} 2%

III. DISCUSSION

Result showed there were five organisms isolated namely, *Escherichia coli*, *staphylococcus*, *Klebsiella*, *Shigella*and *salmonella* from the three body parts selected for the samples which are offal, carcass and skin. The organism varies in percentages as regards to the body parts. In offal we have 50% occurrence of *salmonella*, 25% occurrence of *Escherichia coli* and 25% Lower *Escherichia coli* count was reported (2.0log10cfu/g) by Delmore (2000). The difference may be attributed to low maintenance of hygiene during processing of meat. There are 0% occurrence of *Klebsiella* and *staphylococcus.* This makes offal has three isolated organisms. From carcass, two organisms were isolated and they occurred at the same percentage, while the remaining three organisms were absent. The organisms present in the carcass are *Klebsiella*50% and *salmonella* 50%. The skin has two isolated organisms thou one of the organism has different species (*staphylococcus*). Staphylococcus isolates from samples were higher than Ashraf *et al.,* (2015) S. aureus (27.08%) and Bhandare*et al.,* (2010) (18.7%) from Mumbai. The result of our study corroborates with the study of Abd Abbas (2010) who detected 40percent S. aureus from Baghdad. In the present study, we obtained 25(35.7%) The organisms isolated are *staphylococcus* which occurred at 66.7% and *Shigella* occurred at 33.7% other organisms were absent. *Staphylococcus* has the highest percentage occurrence out of all the organisms isolated. However, the results of the present study differ from the previous study conducted by Dabassa (2013) who reported lower counts. The results corroborate with the reports by Mohammed et al. (2013) who reported the count to be 4.2log10cfu/g. Similar results were obtained by Krishnaswamy *et al.* (1964) who reported the count to be 4.6 to 5.3 log10cfu/gm. This result may be attributed to the use of unsafe or contaminated water for washing of the animal which may also lead to the contamination of the meat or animal. Another reason for the occurrence of these organism may be as a result of the environmental conditions. If the abattoir or the slaughter house is not in a sanitary condition, it can also lead to the contamination of the animal. Lastly, the result may also be attributed to the use of unsterile equipment for slaughtering or butchering of animals. This can also lead to the gross contamination of the animal parts while handling the animal. Table 2 show the population size of organisms isolated, and in the table, offal has the highest. Population size (205 colonies) while skin has the least population size (100 colonies).

This study shows that the meat sold at Dr. Sola Saraki Abattoir have been contaminated due one or more of the reasons stated above. The presence of these organisms in raw meat purchased from this abattoir, if consumed has an adverse effect on human health..

IV. CONCLUSION

The authors findings in this research work can be noted as an additional knowledge to enhance the proper handling of meat. This study revealed that the meat sold at Dr Shola Saraki abattoir in Ilorin metropolis in Kwara, could be a source of food-borne bacterial pathogens. It has also shown that samples used in the study were grossly contaminated by pathogenic organisms such as *Escherichia coli, salmonella, Shigella, Klebsiella and staphylococcus* and thus, constitute potential public health hazard due to the unhygienic nature of handling the meat which predisposes the meat to contamination by pathogenic organisms which calls for public health concerns and improvements in the handling and processing of meat to minimize the prevalence of the pathogens. The result also constitutes an indicator of microbial contamination of the variety of meats. However, the meat should be properly cooked before consumption and good hygiene practices should be adopted.

V. RECOMMENDATIONS

1. Routine meat inspection by Public health inspectors.
2. Condemnation of contaminated meats and ban from markets.
3. Removal of potential contaminants from the abattoir,
4. Sensitization of meat sellers and butchers in the abattoir.
5. Regulation of the sitting of abattoir.
6. Close monitoring of abattoir activities i.e. animal slaughtering, animal waste disposal, animal dressing, meat transportation and sale.

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