

## APPRAISAL OF SUITABILITY OF SHEEP CARCASS IN A COMMERCIAL SLAUGHTER HOUSE

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### ABSTRACT

The study identified the common causes of organs and whole carcass condemnation of slaughtered sheep in a commercial abattoir in Bangladesh. A total number of 8046 sheep were slaughtered during the period from July 2007 to June 2008. Animals were undertaken into three ante-mortem inspections from arrival to slaughter. The first inspection was done immediately after unloading of animal, second during resting of the animals and the last inspection was performed before slaughtering of the animals. A total number of 703 organs from carcasses were condemned due to several reasons. The liver (42%) and lungs (39.1) were the most condemned organs in sheep. Fascioliasis was the leading cause of liver condemnation in sheep (86.8%). Pneumonia was the main cause of lung condemnations at the rate of 54.5% in sheep. Hydatidiosis caused both liver (6.4%) and lungs (40%) condemnation in sheep. Abscess was also responsible for organ condemnation affecting liver (6.8%), lungs (5.5%) and kidney (30.8%) in sheep. The major cause of muscles condemnation of sheep were due to cystocercosis (75.0%) and grass seed poisoning especially sorghum poisoning (25.0%). Grass seed poisoning was the only cause that was responsible for three sheep carcass whole condemnation. The results of the present study concluded that liver and lungs were the mostly affected organs to be condemned caused by mainly fascioliasis and pneumonia in sheep and grass seed poisoning was the single cause for whole carcass condemnation in sheep.

**Keywords:** organs, whole carcass, condemnation, sheep, abattoir

### INTRODUCTION

The animals usually brought to the abattoirs are cattle, buffaloes, goats and sheep in Bangladesh. Abattoirs produce various meats viz. beef, chevon, mutton and buffen. Pigs and horses are not slaughtered due to religious restriction in Bangladesh. There are many self-made field abattoirs in Bangladesh. In rural and urban areas, small towns and even in cities, slaughtering is still carried out by unauthorized or authorized butchers in fields, bushes, backyards or in some open street corners, where killed animals are eviscerated and dressed. There is neither any preslaughter care nor any humane method of slaughtering. Antemortem and postmortem examinations are practiced limited cases and these do not constitute integral parts for the hygienic production of meat. Due to unawareness and non-enforcement of laws in the country, public usually purchase meat which cannot ensure protection to consumers from the effect of many potential danger of inferior meat (Rahman, 2007).

Abattoir provides excellent opportunities for investigating diseases of both economic and public health importance and can play an important role in the control and prevention of those diseases. The use of abattoirs as monitoring stations in national animal disease eradication programmes is highlighted in Nigeria (Alonge and Fasanmi, 2005). Meat borne diseases and problems relating to the sanitary and microbiological quality of meat foods continue to be of major interest and great concern in Bangladesh and other countries of the world. It is evident and well recognized those conditions of pre-harvest and post-harvest handling

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and mechanical, physical, chemical, and microbial effects owe to the leading causes of reduced shelf life, deterioration and spoilage of meat foods involving the occurrence of potential risks of health hazards (Rahman, 2007). There are several diseases and disease conditions which causes condemnation of portion of the organ, whole organ and even whole carcass that eventually bring financial loss in abattoir. Alonge and Fasanmi (2005) estimated 500 tons of meat valued at about US\$1.8 million are condemned each year throughout Nigeria. It is reported that the major causes of organ condemnations were fascioliasis, hydatid cysts, tuberculosis and pneumonia of various origin. Bengal Meat Processing Industries Limited (BMPIL), Korial, Santhia, Kashinathpur, Pabna, Bangladesh is the only one complete international standard abattoir in Bangladesh. There is no available research performed on the investigation of diseases and disease conditions in slaughtered sheep at abattoir level in Bangladesh that lead to the condemnation of organs or carcasses.

The causes of partial or whole organ and carcass conditions are also not studied yet. The present study was, therefore, undertaken to indentify the common causes of condemnation of slaughtered sheep or its whole organ or parts of organs in a commercial abattoir in Bangladesh.

## MATERIALS AND METHODS

### Animal selection

A total number of 8046 sheep were slaughtered during the period from July 2007 to June 2008 under the inspection of registered veterinarians of quality assurance team of Bengal Meat Processing Industries Limited (BMPIL), Korial, Santhia, Kashinathpur, Pabna, Bangladesh.

### Antemortem inspections

From arrival to slaughter, animals were undertaken into three ante-mortem inspections according to the standard operating procedure (SOP) (FAO, 2000). The first ante-mortem inspection was done immediately after unloading of animal, second one was done during resting of the animals and last one was done immediately before slaughtering of the animals. Animals showing signs of infectious diseases like foot and mouth diseases, rabies, peste-des-petits ruminants and tuberculosis that may affect other animals or having zoonotic importance were rejected and removed from Bengal premises. Through my studies I have not find any cases like the above mentioned diseases, but Bengal Meat Processing Industries Limited (BMPIL), Korial, Santhia, Kashinathpur, Pabna, Bangladesh strictly maintains this ante-mortem inspection.

### Postmortem inspection

Three postmortem inspections were performed in the slaughter house according to the SOP (FAO, 2000). The first postmortem inspection was performed in the head region. The second postmortem inspection was done in offal tray for viscera. The final postmortem inspection was carried out in the washing area of slaughter line for whole carcass. The diseases and diseased conditions were diagnosed on the basis of gross pathological lesions of the organ(s). Usually the following organs (Tongue, Liver, Spleen, Kidney, Lungs) are inspected to observe any gross lesions (colour, outer surfaces) or any swollen lymphnodes in this organ(s).

### Condemnation

Portion or whole carcass condemnation was done according to gross pathological lesions (changes in the shape/architecture of the organs, breaching of the outer surfaces of the organs, abnormal colour of the organs that are not usual to the organs) of organs and whole carcass and emphasizing the public health significance of the diseases and diseased conditions.

The percentage of organs condemned, portions condemned and whole organ condemned were calculated using the following formulae:

Percentage of organ affected =  $\frac{\text{number of a named organ affected}}{\text{total number of organs affected}} \times 100$

Percentage of portion condemned =  $\frac{\text{number of portion of a named organ condemned for specific reason}}{\text{total number of a named organ condemned for specific reason}} \times 100$

Percentage of whole organ condemned =  $\frac{\text{number of a whole organ condemned for specific reason}}{\text{total number of a named organ condemned for specific reason}} \times 100$

## RESULTS AND DISCUSSION

A total number of 8046 sheep were slaughtered during the study period of which 85.1% was male and 14.9% was female. The male and female percentage of sheep depends on the decision or choice of the management of BMPIL. The BMPIL asked suppliers to provide the animal according to its requirement. The causes of condemnation of different organs, part of organs or whole carcasses of infected sheep are detailed shown in the following Table 1. A total of 703 organs were condemned. Liver (42.0%) was the mostly condemned followed by lungs (39.1%), muscles (Thigh region, abdominal region, muscles parallel to the vertebral column) (14.9%), thigh region (9.8%), pelvic organs (2.1%) and kidney (1.9%). Similar findings have been reported by Benard, et. al., (2011). They reported that liver and lungs were the most condemned organs in cattle, sheep, goat and pig.

**Table 1. Causes of condemnation of organs or carcass in sheeps slaughtered at Bengal meat abattoir**

Affected organ	Reasons for condemnation	No. of organ affected by a specific cause (%)	Portion condemned to a specific cause (%)	Whole organ condemned due to a specific cause (%)	Whole carcass condemned (%)
Liver	Fascioliasis	256 (86.8)	50(19.5)	206(80.5)	-
	Hydatidiosis	19 (6.4)	0(0.0)	19(100.0)	-
	Abscess	20 (6.8)	8(40.0)	12(60.0)	-
	<b>Sub total</b>	<b>295 (42.0)</b>			
Lung	Pneumonia	150 (54.5)	102(68.0)	48(32.0)	-
	Hydatidiosis	110 (40.0)	0(0.0)	110(100.0)	-
	Abscess	15 (5.5)	0(0.0)	15(100.0)	-
	<b>Sub total</b>	<b>275 (39.1)</b>			
Kidney	Hydronephrosis	9 (69.2)	0(0.0)	9(100.0)	-
	Abscess	4 (30.8)	0(0.0)	4(100.0)	-
	<b>Sub total</b>	<b>13 (1.9)</b>			
Thigh region	Tumor	69 (100.0)	57(82.6)	12(17.4)	-
	<b>Sub total</b>	<b>69 (9.8)</b>			
Muscle	Cysticercosis	27 (75.0)	27(100.0)	0(0.0)	-
	Grass seed poisoning	9 (25.0)	6(66.7)	-	3 (33.3)
	<b>Sub total</b>	<b>36 (14.9)</b>			
Pelvic organs	Pelvic abscess	15 (100.0)	12(80.0)	3(20.0)	-
	<b>Sub total</b>	<b>15 (2.1)</b>			
	<b>Total</b>	<b>703 (100.0)</b>			

Liver was mainly condemned due to fascioliasis (86.8%) of which 80.5% whole liver were condemned. This finding has been supported by Ezana, (2008). who reported that a high number of livers were condemned in sheep (87.7%) due to liver fluke. Hydatidiosis (6.4%) and abscess (6.8%) were also responsible for liver condemnations. Daniel, et. al. (2012) have been reported that the prevalence of hydatidiosis in sheep was found to be 7.7%. The small variation between the findings of the present study and the findings of Daniel, et. al. (2012) may be due to variation of environment. The second most condemned organ was lungs (39.1%), where 54.5% of lungs were condemned due to pneumonia followed by hydatidiosis (40%) and abscess (5.5%). Hydronephrosis and abscess were responsible for 69.2% and 30.8% of kidney condemnations, respectively. Thigh (100.0%) was condemned due to tumor. Muscles bear 14.9% of total organ condemnations. Muscles were condemned because of cysticercosis (75.0%) and grass seed poisoning (25.0%). Total three sheep carcasses were totally condemned for grass seed poisoning.

The results of the present study concluded that liver and lungs were the mostly affected organs to be condemned caused mainly by fascioliasis and pneumonia, respectively and grass seed poisoning was the single cause for whole carcass condemnation in sheep. Further study is needed to analyse the financial losses due to organs and carcass condemnation in abattoir.

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