

## PREVALENCE OF FOREIGN BODIES IN STOMACH OF PIGS SLAUGHTERED AT THE KUMASI ABATTOIR, GHANA

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### ABSTRACT

*The study was conducted on pigs slaughtered at Kumasi abattoir to determine the occurrence and nature of foreign bodies in the stomach of pigs. A total of 75 pig stomachs were randomly selected from pig slaughtered within the five month period and 20 out of 75 (26.67 %) were found to contain foreign bodies. There was no statistically significant difference ( $p > 0.05$ ) between sex, age and prevalence bodies in the stomach of pigs, though pigs less than one year had more ingested foreign bodies (10.7 %). Analysis of 20 pigs positive for foreign bodies in the stomach revealed that plastics (polythene bags) was the most prevalent (14.67 %), followed by bristles (6.67%), stones (2.67%) and almond seeds (2.67%). Lack of proper management system and improper waste disposal particularly of plastic materials seems to play a major role towards the frequent occurrence of foreign body in pig stomachs. Therefore, proper disposal of wastes from households should be given the needed attention. Veterinarians and animal health workers should also be aware of this condition in pigs in Kumasi.*

**Keywords:** Slaughtered pigs, Ingested foreign bodies, Stomach content analysis, Kumasi, Ghana

### INTRODUCTION

Swine production is an integral part of the rural economy in most parts of the world. Pigs are raised primarily as sources of food (meat) and are a good source of animal protein enriched with essential amino acids needed in human diet for growth. The swine industry is known to produce approximately 1.3 billion pigs annually worldwide (Seid and Abebaw, 2008) of which Ghana is known to be an emerging player because of the growing daily demand for pork meat (GNAPF, 2014). In Ghana, pigs are actively farmed in the greater Accra and Ashanti regions with herd population and production estimates of 536,000 pigs and 18,026 metric tonnes of pork meat, respectively

(MFA, 2010). The large white, landrace and Ashanti black are the commonest breeds found in Ghana (Ahunu *et al.*, 1995).

Studies on foreign bodies in animals has been skewed with greater focus on ruminants including cattle, sheep and goats (Otsyina *et al.*, 2014), with little to no attention paid to pigs. In the monogastrics, the presence of these foreign materials in the gastro-intestinal tract of animals hampers the absorption of volatile fatty acids and consequently reduces the rate of animals fattening (Igbokwe *et al.*, 2003). In Jordan, an estimated loss of 25 million USD in productivity and health associated with ovine plastic impaction has been reported (Hailat *et al.*, 1996). This study therefore aims at reporting the prevalence, types of foreign bodies and the

association of age and sex to the occurrence of these stomach foreign bodies in pigs slaughtered in Kumasi abattoir, Ghana.

## MATERIALS AND METHODS

**Study Design:** The survey is a cross-sectional study, which sought to evaluate the prevalence of foreign bodies in stomach of pig slaughtered in Kumasi abattoir.

**Study Area:** The study was conducted at the Kumasi, Abattoir; the biggest abattoir in Kumasi which serves most parts of Ashanti Region, a region known for active pig farming (MFA, 2010). The abattoir is in the Kumasi metropolis which is located between latitudes 6°03'5" and 6°04'4"N and longitudes 10°03'0" and 10°03'5" E. It was purposely selected because it is a densely populated city with non Muslim working class who prefer pork to other meat types (Frimpong *et al.*, 2012).

**Sample Size Determination:** The sample size required was determined using the formula:  $n = t^2 \times p(1-p)/m^2$ , where  $n$  = required sample size,  $t$  = confidence level at 95 % (standard value of 1.96),  $p$  = estimated prevalence in the project area was estimated at 5 % (0.05) since there was no previous report on the condition in Ghana and  $m$  = margin of error at 5 % (standard value of 0.05). Therefore,  $n = (1.96)^2 \times 0.05(0.95)/0.05^2 = 73$ . The adequate sample size is 73 and 75 stomach of slaughtered pigs were examined.

**Experimental Technique:** The sampling lasted for five months and a total of seventy five stomachs randomly selected from the total slaughtered pigs within this period were examined for foreign bodies and the type was noted. The data on the age and sex of the pigs were obtained from the owners on presentation and examination of the external genitalia, respectively. Further examination of pig stomachs contents was carried out at the Animal Science Department of Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

**Data Analysis:** The association between identified variables (age and sex) and foreign body occurrence in pigs were analyzed using Chi-square test. Significance was determined at  $p < 0.05$ . Data on evidence and prevalence of different foreign body and types were presented as percentage.

## RESULTS

There was no significant association between the age of pig at slaughter and the prevalence of stomach foreign bodies (Table 1).

There was also no significant association between sex of pigs at slaughter and the occurrence/prevalence of foreign bodies (Table 2). Pigs of both sexes had equal number of animals testing positive for the presence of foreign bodies in their stomach (Table 2).

Further analysis of the type of foreign body in the stomach of pigs revealed polythene bags, bristles, stones and almond seeds as the major foreign bodies (Table 3).

## DISCUSSION

From this current study, foreign bodies' prevalence in slaughtered pig at the Kumasi Abattoir has been revealed to be about 26.67 % of the total pigs examined. This presupposes that the issue of foreign bodies in pigs needs to be addressed. Though there exists no information on foreign bodies prevalence in pigs in Ghana. However, comparing their prevalence to that of small ruminants elsewhere the prevalence was similar (Otsyina *et al.*, 2014). Nuru (2009) further buttressed the need to research into the prevalence of foreign bodies in rumen and reticulum of small ruminants slaughtered for meat in the tropics. The relatively high prevalence rate of foreign bodies in pigs may be attributed to the differences in the feeding habit of pigs as compared to small ruminants and also the type of management system in which the pigs were kept. Since pigs tend not be selective feeders, and are often left on free range or extensive management, pigs may consume feedstuff containing or encased by foreign bodies.

**Table 1: Association between age of pigs and prevalence of foreign bodies in stomach of pigs slaughtered in Kumasi abattoir, Ghana**

Age (Years)	Positive	Negative	Total	Chi-square test	
				Chi-value	P-value
<1	8	31	39	3.65	0.302
1-2	6	16	22		
2-3	6	7	13		
>3	0	1	1		
<b>Total</b>	20	55	75		

**Table 2: Association between sex of pigs and prevalence of foreign bodies in stomach of pigs slaughtered in Kumasi abattoir, Ghana**

Sex	Positive	Negative	Total	Chi-square test	
				Chi-value	P-value
Male	10	23	33	0.40	0.527
Female	10	32	42		
<b>Total</b>	20	55	75		

**Table 3: Type and prevalence of foreign bodies from slaughtered pigs in Kumasi abattoir, Ghana**

Foreign body	Number	Prevalence (%)
Polythene	10	14.67
Bristles	5	6.67
Stones	2	2.67
Almond seeds	2	2.67
<b>Total</b>	20	26.67

These in turn may predispose the animals to feed on unusual materials including plastics, clothes, ropes and even metallic substances (Hailat *et al.*, 1996).

Wide spread use and improper disposal of plastics for goods packing could also contribute to the occurrence of foreign bodies in the stomach of pigs especially those under extensive type of management. Lack of awareness among livestock owners on the risk of ingestion of these foreign materials by animals might also be a contributing factor to the high occurrence of foreign bodies in the stomach as proposed for ruminants (Rossow and Horvath, 1985).

Amongst the foreign body types encountered in this study, polythene bags were the most prevalent followed by bristles. Stones and almonds had relatively least prevalence among the foreign bodies encountered. The present study revealed that there was no

significant association between age, sex difference and foreign body ingestion ( $p > 0.05$ ). However, animals aged less than one year were found more frequently to have foreign bodies in their stomachs compared to the older ones, this showed that age, starvation and extensive system of management predisposes pigs to this condition

**Conclusions:** This study showed that larger number of foreign bodies occurred in the stomach of pigs (26.67 %); this may be due to that the feeding habit and possibly the type management system of pigs in Kumasi. The study showed a very high prevalence of foreign bodies in pigs. Plastic materials (polythene) were found in higher frequency than the other foreign bodies. Improper waste disposal particularly that of plastic materials seems to play the major role for the frequent occurrence of plastic materials in pig stomachs. Differences in age and sex of pigs did not significantly affect the occurrence of foreign bodies hence rules concerning the proper disposal of wastes from households and factories should be applied to reduce pollution of the environment.

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