Implementation of Good Manufacturing Practices in Halal Certified Cattle Slaughterhouses in Daerah Istimewa Yogyakarta

Bastoni[1], Nasrul Hidayat[2], Edi Suryanto[3], Rusman[4], Tridjoko Wisnu Murti[5], Yatri Drastini[6]

Faculty of Animal Science, Universitas Gadjah Mada
corresponding email: al_basthonie@yahoo.com

ABSTRACT: The study aims to investigate the implementation of Good Manufacturing Practices (GMP) in Halal Certified Cattle Slaughterhouses (RPH) in Daerah Istimewa Yogyakarta (DIY),to determine meat quality halal certified cattle slaughterhouses in DIY and to determine the relationship of the implementation of the GMP and meat quality halal certified cattle slaughterhouses in DIY. The respondents consisting of halal certified cattle slaughterhouses in DIY were used in the study. The number of respondents were 20 cattle slaughterhouses. They were selected using purposive sampling as much as 50% of halal certified slaughterhouses in DIY. Data collection was carried out using questionnaire. Survey includes observations and assess the activities directly in the assessment with a score of RPH 1 to 5. To determine the quality of meat is done Total Plate Count (TPC) test and acidity (pH). The Spearman Rank test was used to determine the correlation between the implementation of GMP and meat quality in terms of TPC and pH test. The results that the average value of GMP implementation is 368,3 with a score of 4 which shows nearing the correct application. The average pH meat value is 5.9 and the average TPC value is 2,6 x 103 cfu/g. In terms of the correlation between the implementation of the GMP with a pH test was the value of the Rank Spearman was 0,655, it indicates that there was a highly significantly correlation. In terms of the correlation between the implementation of the GMP with a TPC test was the value of the Rank Spearman was 0,637, it indicates that there was a highly significantly correlation. It could be concluded that the implementation and application of GMP in halal certified RPH in DIY has not been entirely implemented well. There was a highly significantly correlation between the implementation of the GMP with meat quality (pH value and TPC) on the halal certified to cattle slaughterhouses in DIY.

Keywords: Good Manufacturing Practices (GMP), Cattle Slaughterhouses (RPH), Halal Certificate, and Meat Quality

INTRODUCTION

Population of Indonesia in 2014 of approximately 250 million people and approximately 85% of the majority of the population of Indonesia is Muslim, it requires the willingness of animal food of high quality, safe and lawful consumption. Total meat consumption is a national consists of 56% is chicken meat, 23% of beef, 13% of pork, 5% of mutton and 3% other (Fajria, 2007). There are four main problems of national food safety and quality (Fardiaz, 1996), namely: first, food products that do not meet the quality requirements of food safety, secondly, there are still many cases of food poisoning occur. Third, the low level of knowledge, skills, and responsibilities of food manufacturers about the quality and food safety, which was marked by the discovery of a means of distribution of products and food that does not meet the requirements of Good Manufacturing Practices (GMP), especially on a small industrial or household. Fourth, consumers lack of quality and food safety caused a limited knowledge and capabilities of the low purchasing power, so they are still buying food products with a low level of quality and security.

Basic health quality assurance which is used in food production that is GMP, GHP, and HACCP. It is emphasized that GMP is a staple food safety assurance is to be done, especially in the food sector. Global picture concerning RPH in DIY there are some who have already done the production process well but there are still many some that do less hygienic production process so that the need for supervision and implemantasi GMP at RPH on DIY. This study was conducted to find out the level of knowledge of GMP and know the level of participation of the businessmen in the implementation of GMP in RPH at DIY.

MATERIAL AND METHODS

This study was carried out during the five month i.e. September 2014 until March 2015. The implementation of this study was done at the LPPOM MUI and RPH at DIY. The analysis was conducted at the Faculty of Animal Sciene, Gadjah Mada University, Yogyakarta. Study material used was the respondent who was the perpetrator of the attempt at DIY RPH. Tool used to test the acidity (pH), namely pH meters and test total total plate count: erlenmeyer flask, magnetic stirer, test tubes, autoclave, incubators and laminar flow cabinet. Study tools are used, namely: sheets of paper questionnaires, labels, bulpoint and data. Materials used for testing of total plate count that was sterile, aquadest pepton water and medium Plate Count Agar (PCA). Data capture techniques this study respondents by means of purposive sampling as much as 50% of RPH certified halal in DIY. The number of respondents is 10 RPH at DIY. This criterion is based on study that the respondents have the ability to implement the agreed GMP from the LPPOM MUI to have halal certificate. The variable in this study include: (1) variable x is the implementation of GMP in halal certified RPH at DIY, (2) the variable y is the quality of the meat at a Kosher certified RPH at DIY.

Assessment of GMP Aspects

Assessment of aspects of GMP in the charging process was carried out by RPH questions about the State of the place and the production process. Assessment of the parameters refer to the National standards bodies and carried out according to the standard method (Standard National Indonesia, 1999).

Table 1. Indicator assessment of GMP aspects

Score	Description
1	If it does not meet the requirements
2	When a quarter of the eligible
3	If half the eligible
4	When one-third of eligible
5	If it meets the requirements

The Quality Of The Meat

Test the pH of the meat was done according to the standard method (Bouton and Harris, 1972) and the test of Total Plate Count (TPC) was done according to the standard method (Fardiaz, 1993).

Date Analysis

Spearman Rank correlation was used to find out the correlation between the implementation of GMP (variable x) with the quality of the meat (variable y). Data collection and analysis was carried out using a questionnaire and standard methods (Singarimbun and Effendi, 1995).

RESULTS AND DISCUSSION

Table 1. The implementation of all aspects of GMP RPH certified halal in DIY

No	Name RPH DIY	Implementationi Good Manufacturing Practices (GMP)									
		Building		Slaughtering process		Human Resources		Production & Transportation		All Aspects Of GMP	
		Value	Criterion Score	Va-lue	Criterion Score	Va-lue	Criterion Score	Va-lue	Criterion Score	Number value	Criterion Score
1	RPH 1	118	3	114	4	21	2	46	4	299	3
2	RPH 2	118	3	111	4	20	2	36	3	285	3
3	RPH 3	141	4	141	5	35	3	46	4	363	4
4	RPH 4	79	2	69	3	15	2	30	3	193	2
5	RPH 5	136	4	112	4	30	3	36	3	314	4
6	RPH 6	161	4	144	5	34	3	46	4	385	4
7	RPH 7	107	3	59	2	22	2	36	3	224	3
8	RPH 8	136	4	111	4	30	3	36	3	313	4
9	RPH 9	134	4	127	4	32	3	46	4	339	4
10	RPH 10	167	4	145	5	34	3	52	4	398	4
11	RPH 11	167	4	145	5	34	3	52	4	385	4
12	RPH 12	112	3	100	4	22	2	41	3	284	3
13	RPH 13	133	4	120	4	31	3	48	4	329	4
14	RPH 14	116	3	112	4	24	3	42	3	291	3
15	RPH 15	208	5	174	5	59	5	52	4	454	5
16	RPH 16	208	5	174	5	59	5	52	4	468	5
17	RPH 17	208	5	174	5	59	5	52	4	456	5
18	RPH 18	208	5	174	5	59	5	52	4	464	5
19	RPH 19	208	5	174	5	59	5	52	4	466	5
20	RPH 20	208	5	174	5	59	5	52	4	468	5
21	RPH 21	208	5	174	5	59	5	52	4	468	5
22	RPH 22	208	5	174	5	59	5	52	4	456	5
								Total		8102	89
										368,27	4,045

Criterion	Score	Description
Not very good	1= ≤ 101	Not applying the correct way
Less Good	2= 102 – 202	Apply a small portion of the right way
Good Enough	3= 203 – 303	Apply half the right way
Good	4= 304 – 404	Almost close to the correct application of the
Very Good	5= 405 – 505	Apply the correct way

The Implementation of GMP Building

The results of this study show that the value of the implementation of the GMP RPH building on 15, 16, 17, 18, 19, 20, 21 and 22 was very good with a value score of 5, meaning that it has already implemented the right way. RPH on 3, 5, 6, 8, 9, 10, 11 and 13 there good with a value score of 4, meaning that it's almost approaching the implementation of that right. RPH on the 1, 2, 7, 12, and 14 there fairly good with a value score of 3, meaning that it only apply half the right

way. On RPH 4 was less good with a value score of 2, meaning that it only apply a small portion of the right way. The floor was made of material which was waterproof, it was not easy, was not toxic, corrosive resistant to crunch, easily cleaned and disinfected and was not easily peel off (standard National Indonesia, 1999). The wall at RPH already coated ceramic tile about 1 metre from the floor, while according to Permentan (2010) the terms High wall at the site of the slaughtering process and manufacture the minimum 3 meters carcass. Almost all of the RPH all doors not equipped draperies plastic that serves to inhibit entry of insects or other foreign matter except RPH Giwangan.

The Implementation of GMP Slaughter Procesing
The results showed that the value of the implementation of GMP engineering cuts on RPH 3, 6, 10, 11, 15, 16, 17, 18, 19, 20, 21 and 22 was very good with a value score of 5, meaning that it has already implemented the right way. RPH on the 1, 2, 5, 8, 9, 12, 13, and 14 there good with a value score of 4, meaning that it's almost approaching the implementation of that right. On RPH 4 was pretty good with a value score of 3, meaning that it only apply half the right way. On RPH 7 was less good with a value score of 2, meaning that it only apply a small portion of the right way. Based on the results of the study shows that most still RPH equipment manuals from the overthrow of livestock, livestock Agency, adoption and the slaughtering process a carcass, this means means largely unresolved by SNI. On RPH Giwangan already has connected restainbox, adoption agency cattle with machinery, and carcass slaughtering process with this machine was in compliance with the standard, where each RPH should already have a complete equipment and well as carcass, restrain penggantung tool box and others (standard National Indonesia, 1999).
Slaughtering Process. The slaughtering process was done with a disconnected three channels i.e. channel breath, gastrointestinal tract and blood channels (Soeparno, 2005). The killing was done in accordance with the Islamic Shari'a which confronts a cow to the Qiblah direction then read basmallah resonate or bismillahi Allahu akbar before the knife cut three channels across the neck. The slaughtering process was process which is very important to do the production process as the process of slaughtering and processing to be a carcass. This relates to the Halal and quality of a product.

The Implementation of GMP Human Resources
The results showed that the value of the implementation of the GMP HR RPH 15, 16, 17, 18, 19, 20, 21 and 22 was very good with a value score of 5, meaning that it has already implemented the right way. RPH on 3, 5, 6, 8, 9, 10, 11, 13 and 14 was quite good with a value score of 3, meaning that it only apply half the right way. RPH on the 1, 2, 4, 7, and 12 there less well with a value score of 2, meaning that it only apply a small portion of the right way. Human resources (HR) was an important factor to do well because the production process with a good HR was expected to easily be directed to become better at work and have knowledge about sanitation, surveillance and capability as the process of slaughtering and processing until it becomes the product. This has to do also with the Halal and quality products so that the resulting products are safe, healthy, whole, healthy and delicious. Some employees have provided training on RPH importance of slaughtering of animals especially in Islamic organized by related Service. Each livestock can slaughter only employees who have attended training on slaughtering of animals, so that the quality of the resulting meat is safe, healthy, intact and lawful. Training of sanitation in the RPH generally haven't done nearly as well except RPH couple Giwangan and. Every employee has provided training on the importance of sanitation in RPH.

The Implementation of GMP production and Transportation
The results showed that the value of the implementation of GMP production and transport on RPH

1, 3, 6, 9, 10, 11, 13, 15, 16, 17, 18, 19, 20, 21 and 22 was good with a value score of 4, meaning that it's almost approaching the implementation of that right. RPH on 2, 4, 5, 7, 8, 12 and 14 was quite good with a value score of 3, meaning that it only apply half the right way. Each of the RPH has a means of transport used to send meat to the depot, meat to markets and customers that was open pick up cars and motorcycles. This has not been in accordance with SNI because according to SNI (1999) armoured vehicle cribs meat for transporting meat should be covered. Layers in the box on the vehicle to transport the meat must be made of materials that are not toxic, not corrosive easily, easily cleaned and disinfected, easily maintained and has good insulation properties. Cribs equipped with refrigerators that can maintain the temperature of the inside of the fresh meat +7 0c and the temperature of the inside of the offal +3 0C.

The Average Value of Implementation of All Aspects GMP

The results showed that the value of all aspects of the implementation of the GMP on RPH 15, 16, 17, 18, 19, 20, 21 and 22 was very good with a value score of 5, meaning that it has already implemented the right way. RPH on 3, 5, 6, 8, 9, 10, 11 and 13 there good with a value score of 4, meaning that it's almost approaching the implementation of that right. RPH on the 1, 2, 7, 12 and 14 was quite good with a value score of 3, meaning that it only apply half the right way. At RPH on DIY in RPH 4 was less good with a value score of 2, meaning that it only apply a small portion of the right way.

The Quality of The Meat

The pH value of the meat. The results showed that the value of the pH of the meat in RPH 9 votes less well with a value score of 3 when compared to other value RPH 1 lowest, meaning only apply half the right way. RPH on 2, 4, 7 and 8 there good with a value score of 4, meaning that it's almost approaching the implementation of that right. RPH on 3, 5, 6, 9 and 10 was very good with a value score of 5, meaning that it has already implemented the right way. The pH value was one of the criteria in determining the quality of the meat, especially for the meat industry as RPH. PH value of the meat by the time the animals living around 7.0 to 7.2 (pH neutral). After slaughter animals (dead), the value of pH in muscles (the pH of the meat) will decrease due to the accumulation of lactic acid. The decline in the value of pH in muscles of healthy animals and dealt with well before the cuts will run in stages, i.e. from pH values of approximately 7.0 to 7.2 will reach pH values decreased gradually from 7.0 to 5.6 to 5.7 within 6 to 8 hours postmortem and would reach the final pH value of around 5.5 to 5.6. Final pH value (ultimate pH value) was the lowest pH values achieved in the muscle after the slaughtering process (of death). The pH value of the meat will never reach the value under 5.3. This was because at pH values below 5.3 enzymes involved in anaerobic Glycolysis was not actively working (Soeparno, 2005).

The value of TPC meat. The results showed that the value of TPC in RPH 1, 2, 4 and 8 was quite good with a value score of 3, meaning that it only apply half the right way. RPH on 3, 4, 5, 6, 7, 9 and 10 was good with a value score of 4, meaning that it's almost approaching the correct application and still in accordance with the standards of the SNI, although there are some are approaching a threshold LEVEL. Microbiology in the flesh can affect the quality, safety and durability of these foodstuffs. Microbiology on food animal products are bacteria, molds, and yeasts. In case of damage of food, food becomes unpleasant because of the color, flavor and appearance after the change, though it may do no harm (Gaman and Sherington, 1992).

The Correlation Between The Implementation Of The GMP With The pH Values and TPC

Rank correlation analysis results showed that there were Spearmen very real relationships between GMP implementation with pH values at RPH on DIY. Spearman Rank correlation was

used to find out the GMP implementation relationships with keeratan pH values. The data collected as rank after the observation. These relationships can be seen in table 2.

Table 2. The correlation between the implementation of the GMP with the pH values and the value of TPC

Name of Test	Corelation Rank Spearman	t-count	t 0.05
Test of Acidity (pH)	0.655	2.454*	2.306
Test of TPC	0.637	2.337*	2.306

Description: *Superscirpt the correlation between the implementation of GMP with the pH values and the value of TPC was significant

Spearmen correlation values of the GMP implementation with pH values i.e. 0,655 and t-test results from the retrieved value t calculate t value, i.e. 2,454 count compared to the value of the t table on probability 5% free by degrees N–2 = 10-2= 8. The results were values t count greater than t 0.05 table this means there are relationship very closely and positive influence between the implementation of GMP with the pH of the meat. That was when the positive influence the implementation of GMP quality meat was good, it was also good in terms of the pH Test. Based on the results of the study there shows the influence between the implementation of GMP with pH values of meat. These influences indicate that implementation of GMP has already approached the technique and facility but still needs a lot of improvement. This was indicated by the condition of the space supplies still inadequate except in Giwangan RPH and Mancasan. The value of the correlation of GMP implementation Spearmen Rank with TPC, namely 0,637, t test results obtained the value t calculate i.e. 2,337, this value was compared with the value of t a 5% probability on a table with a degree of non N-2 = 10-2 = 8, the results were values t count greater than the value of the table t 0.05 means there was a relationship very closely and positive influence between the implementation of the GMP by total plate count. That was when the positive influence the implementation of GMP quality meat was good, it was also good in terms of test of TPC.

CONCLUSIONS AND SUGGESTIONS

The conclusions of the study results is the implementation and application of GMP in the halal certified RPH in DIY have not entirely done well. The results of the quality of the meat is either still in accordance with the SNI. There is a significant correlation between the implementation of GMP quality meat (pH values and TPC) on RPH certified halal in DIY. It is suggested the existence of further study as to the implementation of good manufacturing practices to the quality of the meat is physically (color, power tie, and texture), chemical (moisture, protein, fat, and ash) and level of knowledge. Need for scrutiny are serious about the implementation and application of GMP in the halal certified RPH at DIY so that it can be done well. Needs improvement and quality as there are places of influence between the implementation of GMP quality meat at a Kosher certified RPH at DIY.
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