Residual Antibiotic And Number Of Bacteria Meat Broiler In Makassar

by Ngitung Rosdiana

Submission date: 19-Nov-2019 02:10PM (UTC+0700)
Submission ID: 1216988253
File name: prosiding_icamet_2018.pdf (5.05M)
Word count: 3398
Character count: 18035

CEGeoGTech UNIVERSITI MALAYSIA PERLIS UniMAP European Commission Horizon 2020 European Union Funding for Research & Innovation

International Conference on
Advanced Material Engineering & Technology
(ICAMET 2018),
Green Design & Manufacturing
(GDM 2018) and
International Geopolymer Workshop
(IGeoW 2018)

Eden Star Saigon Hotel
Ho Chi Minh City, Vietnam
April 29-30, 2018

Certificate of Participation

This is to certify that

Dr. Ir. Hj. Rosdiana Ngitung, M.P

Has attended as a ***Presenter*** *in the*

International Conference on
Advanced Material Engineering & Technology (ICAMET 2018),
Green Design & Manufacturing (GDM 2018) and
International Geopolymer Workshop (IGeoW 2018)

29-30 April 2018
Eden Star Saigon Hotel, Ho Chi Minh City, Vietnam

Brig. Gen. Datuk Professor Emeritus Dr. Kamarudin Hussin
Director
Center of Excellence Geopolymer and Green Technology (CEGeoGTech)

Residual antibiotic and number of bacteria meat Broiler in Makassar

Rosdiana Ngitung

Citation: AIP Conference Proceedings **2030**, 020179 (2018); doi: 10.1063/1.5066820
View online: https://doi.org/10.1063/1.5066820
View Table of Contents: http://aip.scitation.org/toc/apc/2030/1
Published by the American Institute of Physics

Residual Antibiotic And Number Of Bacteria Meat *Broiler* In Makassar

Rosdiana Ngitung[1,a)]

[1]*Faculty of Mathematics and Natural Sciences Universitas Negeri Makassar, Biology Department*

Corresponding author: [a)]rosdiana.ngitung@yahoo.com

Abstract. Makassar City distribution *broiler* spread in traditional markets, itinerant traders *(pagandeng)* and supermarkets. Since the compounds are known that antibiotics and others medicines can cause the impacts to the humans who consume livestock products containing residue, then the observation of the residue and drugs in animal foods (especially poultry) need attention. This research aims to determine the quality of meat *broiler* are sold in the city of Makassar in terms of microbiology and health aspects as well as differences in the quality of meat sold in traditional markets, which sold pitchman and supermarkets. This research method using observational sampling technique is *purposive* sampling. The object of research is the source of meat sales *broiler* are comprised of traditional markets, itinerant traders, and supermarkets. Every object taken seven samples. The results showed that meat *broiler* sold on the traditional markets, itinerant traders, and supermarkets in the city of Makassar safely consumed by people because there are no residues of antibiotics in meat *broiler* were sold on three sales resources. The number of bacteria in meat *broiler* were sold in traditional markets less than those sold pitchman and supermarkets, while being peddled in the pitchman is no different from a supermarket. The benefits of this research as information for consumers to see the quality of meat *broiler* circulating in the city of Makassar.

INTRODUCTION

Livestock sub-sector development that has been developed is increasing with increasing number of the population. Livestock is one part of the farm that produces the commodity meat, milk and eggs and the results processed and the results of the rest of the production. One type of mature rapidly growing livestock is *broiler.* In addition to increased demand, meat *broiler* is also a popular source of animal protein in Indonesia. Meat *Broiler* readily available, relatively inexpensive has a delicious aroma and flavor that can be presented in a wide variety of cuisine.

In raising meat *broiler* production, at present has used some kind of animal medicines or antibiotics as growth promoters. The use of antibiotics is required because they feel confident that farm animal diseases can be controlled well and production can be increased by 10-15% [1]. The use of antibiotics in Indonesia from year to year continues to increase rapidly, with the number of veterinary drug company in 1992. Has reached 1387, while there are 1320 types of animal drugs [2].

If the use of antibiotics does not follow the correct usage rules, especially drug doses and drug stop time, new problems will arise, i.e. the livestock produced may still contain animal medicinal remnants as their original compounds and metabolites. Remnants of antibiotic residues in livestock products are known as antibiotic residues [3]. Residues of antibiotics is the origin and the compound or its metabolites are present in tissues of animal products that may arise in humans who consume it [4]. Broccklaus [5] suggests the direct toxicity due to the presence of antibiotic residues in food does not easily occur, because of generally low concentrations of antibiotics in food. Milahud and Person (Wibowo, 1990) suggested there was a report about the effects of poisoning due to low *Cholramphenicol* insertion [6]. Kielwein (1981) suggested several reactions that result from the presence of antibiotic residues in milk, among others [7]: allergic reactions: *penicillin* is the most important substance. *Penicillin* can cause itching, difficulty breathing, and shock; Poisoning: there is a substance *streptomycin, tetracycline,* and *Chloramphenicol* which causes neurological symptoms, blood formation disorders, liver

Green Design and Manufacture: Advanced and Emerging Applications
AIP Conf. Proc. 2030, 020179-1–020179-5; https://doi.org/10.1063/1.5066820
Published by AIP Publishing. 978-0-7354-1752-6/$30.00

damage, kidney damage, and visual impairments; microbiological Disorders: presence of some kind of resistant to certain antibiotics.

Petz (1992) suggests that to learn or know the whereabouts of the body of drug residues in tissues of cattle (dairy products), we need to measuring device that is the method of analysis (method of detection) drug compounds [8]. Correti [6] suggests the screening method first developed antibiotic residues of several methods for testing antibiotic drugs, particularly biological test methods. As the outline of screening method of antibiotic residues can be divided into two groups based on chemical analysis that is used to quantitatively analyze and test analysis of non-specific biological barriers to analyze qualitatively. Some of the techniques used antibiotic residues in meat inspection are,

1. Microbiology Method: This method uses the media and the growth of bacteria.
2. Physicochemical method: This method occurs as more and more known drugs are harmful to consumers where consumers ask for products that are free from material residues and other hazardous materials. This method consists of three stages, namely the stages of extraction, stage, *cleaning-up* and analysis with chromatography procedure.
3. Immunoassay method: This method is intended to detect foreign substances in food such as bacteria, viruses, foreign proteins, toxins, pesticides. Hormone and drug residues.

Edible meat quality factors mainly include color, tenderness, texture, flavor, and aroma include the smells and impression on taste and the meat juices. Besides pH of the meat will determine the quality of the meat [9]. Lawrie (1895) suggests other factors that affect the quality of health of livestock and meat are naturally not only lowers the quality of carcass meat but cause very harmful if consumed [10]. Fardiaz (1989) suggested that the smell of slaughtered meat portions is usually sterile. Meat contamination and decay is usually derived from microorganisms on the surface which are then entered into the meat. The meat sold in the market without refrigeration or ice provision is often contaminated by mesophilic microbes that may be Gramm positive usually a good temperature for mesophilic and psikofilik microbial growth is 20-45 degrees Celsius [11]. Ferdiaz (1989) suggested Proteus sp is proteolytic that cause spoilage bacteria on meat. While Bacteroides numerous in the intestinal tract is found in meat, milk and that the said bacteria are Gram-negative bacilli and an aerobic. [11]

Buckle, et al (1987) sets forth the amount of bacterial contamination of around 1000-10000 / cm and if left on growing conditions corresponding amount will be more and more during storage and further marketing. If the bacteria around 10000000-100000000 / cm will appears in the form of lenders, the meat becomes stink and damaged or unsuitable for sale [12]. From the exposure can be concluded with the increasing needs of the community will be a source of animal protein is in line with population growth. Therefore, an increase in production must be increased separately meet the needs of consumers. And the meat will be consumed must be in lower threshold residue tolerance limits were allowed both in the traditional markets, itinerant traders and supermarkets. The hypothesis in this research are:

1. Meat of broilers marketed to the people of Makassar is good quality and safe to consume.
2. Source meat broiler affect the quality of meat sold in the city of Makassar.

METHODS

This research was conducted in several sources broiler trader in Makassar while the sample analysis performed in laboratories of Microbiology and Animal Health, Faculty of Animal Sciences University of Hasanuddin. The materials used for this research was distilled, aluminum foil, paper newspapers, MgO, labels, filter paper, litmus paper, and media Nutrient Agar and tools used were oven, indicators, Bunsen, funnels, pipettes, pH meters, plastic bags, thermos of ice and water bath.

The method used in this research is an observational research method. The population consists of three subjects, namely P1 (broiler meat sold in traditional markets, P2 (broiler meat were sold by traveling salesmen) and P3 (broiler meat sold in supermarkets). Each object population of each taken seven samples.

Procedure the research was first done is to sterilize all equipment research. After that perform sampling of pickles each of the two tails of traditional markets, itinerant traders and supermarkets. Having taken the sample then tested physically using a sense of taste and vision called test Organoleptic performed by 10 students of S1 Faculty of Animal Science, University of Hasanuddin.

In testing meat samples were coded and then placed in the position scrambled. Samples are shown three kinds of broiler meat derived from traditional markets, itinerant traders and supermarkets. Variables measured is the smell, color and consistency. The hedonic rating scale made to the observed changes: the smell of: 1) the stench 2) somewhat rotten 3) odorless 4) specific / typical smell of chicken, color: 1) pale 2) almost pale 3) white 4) white pink reddish, consistency: 0) very soft 1) soft 2) rather soft 3) springy / elastic and slightly hard. Chemical testing done first is rottenness examination using test and measurement Postma Ph meat. Testing the third is that the first biological testing antibiotics (bacterial retention test), the test sample and test the amount of bacteria.

Data analysis method used is descriptive and statistical analysis. Descriptive analysis conducted on qualitative data in testing and test antibiotics Postma, while the statistical analysis used to test for differences in the quality of meat. To determine the effect of different sources of meat on meat quality of broilers tested multiple comparisons using Least Significant Difference Test and weeks to test this type of data using *Kruskal-Wallis*test.

RESULTS AND DISCUSSION

The observation of residues of antibiotics and early check rottenness in broiler meat were traded in the market:

Table 1. The broiler meat traded in the City Makassar free of residues of antibiotics

Source of Meat	Zone Barriers to	Early Decay
Traditional Market	-	+
Merchant Itinerant	-	+
Supermarkets	-	+

Based on the table above shows that the broiler meat traded in the City Makassar free of residues of antibiotics, it is based on the test that showed no zone of inhibition against test bacteria. This happens because the residue found on broiler meat has been lost after stopping time is achieved. Craken and O'Brien (1976) suggested the antibiotic residues in the network will decrease with increasing time of sampling [13].

Based on the table above shows that chicken traded in Makassar all positive experience despite the initial process of physical decay has not seen signs of decay. The speed with which this process occurs due to the activity of bacteria that contaminate the meat and break down nutrients found in meat. The main cause decay is the growth of microbes on the meat.

Table 2. The difference in pH that occur between the chicken in traditional markets, itinerant traders and supermarkets

Deuteronomy	Origin Meat		
	Traditional markets	PDG Roving	Supermarkets
1	6.96	6.93	7.01
2	6.93	6.93	6.50
3	7.02	7.09	6.42
4	7.00	7.11	6.42
5	6.99	7.11	6.28
6	6.90	7.13	6.38
7	6.93	7.12	6.36
Total	48.73	49.42	45.57
Average	6.96	7.06	6.51

Ballpark have the same superscripts signs indicate no significant difference based Least Significant difference test at level $\alpha = 0.05$. Based on the above table shows the difference in pH that occur between the chicken in traditional markets, itinerant traders and supermarkets are caused by differences in ambient temperature. Soeparno (1994) mortum carcass ph closely linked to temperature [9]. Chicken meat sold in the market and its environment pitchman irregular temperature dependent while the air temperature in the temperature supermarket meat properly arranged and stored in a closet cooling. Based on the analysis of variance shows that the source of the meat was highly significant (P> 0.01) in broiler meat to ph traded. The LSD shows ph chicken meat from traditional markets are no different (P> 0.05) to pitchman and significantly different compared to the supermarket (0 <0:01). Soeparno (1994) suggests stress before cutting, injection of hormones or certain drugs, species, animal parent, kind of muscle, livestock and stimulation of enzyme activity affect glucose are factors that affect the diversity of meat ph [9].

Table 3. The average number of microbes on chicken meat

Deuteronomy	Origin Meat		
	PsrTraditional	PDG Roving	Supermarkets
1	1.3×10^3	2.7×10^4	9.8×10^4
2	1.1×10^3	5.5×10^4	2.8×10^3
3	8.0×10^2	1.6×10^4	3.7×10^4
4	4.3×10^3	5.5×10^3	3.7×10^4
5	1.1×10^4	6.3×10^4	2.1×10^4
6	1.2×10^2	8.6×10^3	3.4×10^4
7	1.9×10^4	1.0×10^4	3.5×10^3
Total	37.68×10^3	$18{:}51 \times 10^4$	$23{:}33 \times 10^4$
average	65.38×10^3	2.64×10^4	$3{:}33 \times 10^4$

Based on the above table shows the average number of microbes on chicken meat coming from traditional market more Traders lower than circumference and Supermarkets. Nurwantoro and Djarijah (1990) suggests the average life poultry containing bacterial1.5 x 10^2 cellscm^{-2} and to 3.5 x 10^3 cells cm^{-2} after processing [14]. The low number of microbes on chicken meat coming from traditional markets compared to the others is due to the traditional markets of chicken meat sold in the morning and still in a fresh state so that the initial microbial contamination less of fewer microbes. Contamination early on pitchman and supermarkets due to occur at the time of slaughter, transport, distribution and marketing to consumers. Soeparno (1994) suggests the contamination can occur through the surface of meat during meat preparation operation, when the carcass cutting and distribution [9].

Soeparno (1994) suggests the growth of bacteria on meat have strong relationships with ph. In normal conditions the meat has a pH 5.3-5.7 which is less favorable to the growth of bacteria. Most bacteria grow optimally at a pH of approximately 7.0. Connecting it with ph chicken on a pitchman with 7:06 then bacterial growth will be faster than the supermarkets that have ph 6:50 whereas at traditional markets although ph no different from traveling traders at the time of sale is still in fresh condition and the bacterial growth is still not fast so that total bacteria it contains are still low. At the supermarket with a lower pH and storage systems in the refrigerator with an average temperature of 5°C then becomes slow bacterial growth. Fraizer (1967) and Forrest et al. (1975) suggested temperature is below 5°C will inhibit the growth of microorganisms and prevent spoilage vandal or almost all pathogenic microorganisms [15-16]. The entire meat broiler traded in Makassar have been contaminated by microbes with traditional market has a 3.73 log cfu / g, pitchman 4:42 cfu / g, and the supermarket 4:52 cfu / g. But despite the contaminated meat is still fit for consumption because of the number of microbes that contaminate still within the threshold set by the Director General of Food and Drug Administration Department of Health Republic of Indonesia that is not more than 1 x $10^6 g^{-1}$ for fresh meat and 5 x 10^6 gr^{-1} frozen meat.

Based on the Kruskal-Wallis test for color, baud concentration can be known to an unknown color chicken meat from three sources were not significantly different. The color of fresh white meat shows wana redness. Lawrie (1979) suggests the ultimate high pH will increase the tenderness but reduces the color and flavor [10]. The color change occurs because of the depletion of the oxygen content in the meat, in order to smell test based organoleptic using Kruskal-Wallis test to the smell of 10 panelius known that chickens from three sources showed no difference in odor. The smell of meat broiler chickens showed a specific odor, and for consistency by Kruskal-Wallis test is known that there are differences in the consistency of chicken meat. Suriawiria (1986) suggests the bacteria will reduce the nutritional value and change the shape and meat compounds that will affect the consistency of the meat [17]. Third *broiler* showed characteristic chewy meat or elastic dam rather loud.

CONCLUSIONS

Based on the research above it can be concluded that there is no antibiotic residues in meat broiler and based on the amount of bacteria that contaminate broiler meat derived from traditional market, Merchants Roving and Supermarkets can be considered safe and healthy for consumption. The number of bacteria broiler meat from the traditional market more slightly compared to broiler meat from the Merchants Roving and Supermarket, while derived from Itinerant Merchants are no different from Supermarkets. The degree of acidity (pH) of broiler meat derived from traditional market and Itinerant Merchants showed no difference but a pH higher than broiler meat derived from Supermarkets. Based on the physical test (odor, color and consistency) broiler meat originating from a third source the quality no different sellers and in accordance with the required standards.

The suggestions in this research are:

1. To reduce the level of microbial contamination of broiler meat chicken sanitation levels need to be increased from the slaughtering process and distribution (transport process), especially that sold by Trader Roving.
2. In this research, samples were taken in the morning. To know further microbial growth which is sold from the sale of the three sources of this research should continue to examine the length of time before being sold in the afternoon and evening. Similarly, the Supermarkets is not known how long the meat is stored before it is taken.

REFERENCES

1. Steele, JH, and GW Beran. "Perspectives in the use of antibiotics and sulfanomides in the handbook series inzoonoses".CRC Press, Inc., Boca Raton, Florida. (1984)
2. Wiryosuhanto, DS "Use of Antibiotics in Indonesia Overview of Current andforthcoming"In the set of the National Seminar Papers in the Field of Use Antibiotila Kedojteran Center, Jakarta. (1990)

3. Syamsul Bahri. "Veterinary Drug Residues In Animal Products and its securityefforts,"presented At the Workshop and the National Congress of Veterinary Drugs III Veterinary Medicine Association of Indonesia (ASHOHI) December 5 to 7, (1994)
4. Dirdjosudjono, FXS, "The drug residues in livestock products" Inver Magazine 003: 30. (1992)
5. Takacs, J. and Kovacks. "Demonstration of antibiotic residues in the meat of animalsSlaught" Veterinary Acta Academiae Scientarium Hungarieae. 19: 11-19 (1969)
6. Wibowo, NS "Preliminary Research Antibiotic Residues in Chicken Liver and Ampela Consumption in Bogorregion" (Faculty of Veterinary Medicine IPB, Bogor 1990)
7. Kielwein, G. Laiffaden Und der MilchukundeMiecygien.Texte Studien 11. Parey Verlag Paul Parey. (Berlin Und Hanburg. 1981)
8. Petz, M. "Trends and Perspectives in Analytical Methodology. In: Residue of Veterinary drugs in food. Haagsma et al. (eds.)" Proceedings of Euroresidues conference, Noorwijkerhout, The Netherlands, May 21-23, 1990: 53-64. (1990)
9. Soeparno. "Meat Science and Technology" (Press Publisher Gadjah Mada University, Yogyakarta. 1992)
10. Lawrie, RA Meat Science. 4th Ed. (Pergamon Press, New York. 1985)
11. Fardiaz, S. "FoodMicrobiology.Ministry of Education and Culture" (Dikrektorat General of Higher Education Center, Bogor. 1989)
12. Buckle, KA, RA Edward, G. H Fleet and M. Wotton."Food Science" Translation Hari Purnomo da Adiono. (Press Publisher University of Indonesia, Jakarta. 1988)
13. Craken, A. and JJ O'Brien. Research in Veterinary Science 21: 240-241. (1976)
14. Nurwantoro and US Djaridjah "Animal-vegetable Microbiology" (Publisher Canisius,Yogyakarta. 1990)
15. Fraizer, WC "FoodMicrobiology2nd Ed. Mc Graw-Hill Book Co"., (New York. 1976)
16. Forrest, JC, ED Aberly, HB Hedrick, MD Judge and RA Markel. "Principles of MeatScience" WH Freeman and Co., (San Francisco. 1975.)
17. Suriawiria, U. "Introduction to GeneralMicrobiology" (Publisher Space, Bandung. 1986)

Residual Antibiotic And Number Of Bacteria Meat Broiler In Makassar

ORIGINALITY REPORT

2%	0%	1%	1%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to University of Queensland Student Paper	1%
2	R.D. Sharma. "Vibration-to-vibration energy transfer in CO[illegible]CO collisions", Chemical Physics Letters, 1975 Publication	1%
3	media.neliti.com Internet Source	<1%

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		