

# Afdal-IAC-2014

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**Submission date:** 09-Oct-2020 09:57AM (UTC+0700)

**Submission ID:** 1409746066

**File name:** Afdal\_Proceeding\_IAC\_2014.pdf (213.06K)

**Word count:** 1453

**Character count:** 6354

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THE MEAT QUALITY MARKETED IN THE PROVINCE OF JAMBI, INDONESIA

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Abstract

Meat is not only one of food having high content of nutrient but it is also a good media for growing of microbes like 5 bacteria. As the result of meat quality is always varied or disturbed in the market starting from slaughter house till the consumer. The aim of this study was to describe the quality of meat at the marketing chain in Jambi Province, Indonesia. Meat samples were collected from a thigh biceps of three different cows. Samples were from slaughter house (SH), central market (CM) and traditional market (TM) in some representative regions in Jambi Province. Parameter measured included total bacteria colony, pH, water holding capacity, and Eber test. Results showed that the total aerobic bacteria count were  $1.35 \times 10^7$ ;  $2.47 \times 10^7$  and  $3.49 \times 10^7$  cfu/g for SH, CM and TM respectively; the pH value of samples were 6.17, 5.85 and 5.72 for SH, CM and TM respectively; Eber Test Value (ETV) were 62.47, 54.00, 44.00 s for SH, CM and TM respectively; the water holding capacity (WHC) of samples were 311.70, 295.64 and 283.30 mg/g for SH, CM and TM respectively. The quality of meat sample was affected with length and distance of marketing chain.

Introduction

Meat as a food should be worthy and safe to consumed in term of safe (*aman*), healthy (*sehat*), intact (undamaged) (*utuh*) and halal (ASUH) (Sudradjat, 2002). It means it should be normal condition and free from risk and dangerous thing biologically, physically and chemically. The ASUH condition is affected with some factors including the environment in SH, CM and TM within the marketing chain in Jambi Province. Furthermore, the processing of meat before, during and after slaughtering and in the market would influence the meat quality. Thereby, the length 1 processing and marketing chain would affect the meat quality such as the total amount of aerobic bacteria, pH, ETV and WHC. The aim of this study was to evaluate the meat quality in the processing and marketing chain in Jambi Province, Indonesia.

Material and methods

Experimental procedure

Meat samples were collected from SH, CM and TM Jambi town, Sungai Penuh town, Muaro Jambi Regency, Batanghari Regency and Tebo Regency. Around 200 g of meat sample was collected from back leg thigh (*biceps femoris*) around 2 h post mortem and at CM and TM at 06.00 - 08.00 AM.. Then samples were transferred into sterilized plastic bag, put into cooler box and transported to laboratory for analysis including total amount of aerobic bacteria, pH, ETV and WHC.

The total colony of aerobic bacteria were counted by using regular procedure. One gram of meat sample was serially diluted in sterilized buffered Pepton water 0.1 % (v/v) and the dilution was grown on Nutrient Agar media for colony counting in the next 24 h. The total colony of aerobic bacteria were counted using colony counter (Protocol 2, Synbiosis, England). Eber Test Value was done following procedure Muchtadi and Sugiyono (1992) Water holding capacity was done using method modified by Hamm (1972).

Data analysis

As this experiment was a descriptive study so data was analyzed base on the average value of each parameter measured and solely compared to the standard.

#### Results and discussion

The total colony of aerobic bacteria (TCB) of meat marketed in Jambi Province, Indonesia, is shown in Table 1.

Table 1. Total colony of aerobic bacteria of meat marketed in Jambi Province, Indonesia

Origin of sample	Total colony of aerobic bacteria (CFU g <sup>-1</sup> )		
	Slaughter house	Central market	Traditional market
Jambi Town	6.83 ± 1.55 x 10 <sup>6</sup>	2.16 ± 1.56 x 10 <sup>7</sup>	2.86 ± 2.13 x 10 <sup>7</sup>
Muaro Jambi Regency	8.23 ± 6.04 x 10 <sup>6</sup>	2.60 ± 1.48 x 10 <sup>7</sup>	3.63 ± 2.82 x 10 <sup>7</sup>
Batanghari Regency	1.79 ± 1.61 x 10 <sup>7</sup>	2.28 ± 1.35 x 10 <sup>7</sup>	3.67 ± 1.94 x 10 <sup>7</sup>
Tebo Regency	1.02 ± 1.15 x 10 <sup>7</sup>	2.54 ± 1.33 x 10 <sup>7</sup>	4.38 ± 3.04 x 10 <sup>7</sup>
Sungai Penuh Town	2.42 ± 1.73 x 10 <sup>7</sup>	2.75 ± 2.32 x 10 <sup>7</sup>	2.89 ± 3.50 x 10 <sup>7</sup>
Average	1.35 ± 7.91 x 10 <sup>6</sup>	2.47 ± 7.88 x 10 <sup>7</sup>	3.49 ± 6.41 x 10 <sup>7</sup>

Result showed that the average of TCB at SH was 1.35 ± 7.91 x 10<sup>6</sup>. It was higher than of Indonesia Standard (SNI 1995) of TCB of 5 x 10<sup>5</sup>. (Anonymous, 2000). TCB would also increase in CM and TM as the effect of time and transportation. Soeparno (1992) mentioned that contamination on meat was started from SH until it was consumed. The contamination could be floor of SH, worker, the content of digestive tract, water, tool and environmental air.

The pH of meat is shown in Table 2. It is 6.17±0.33, 5.82±0.26 and 5.72±0.26 for SH, CM and TM respectively. It looked that the pH of meat is still fresh and good of pH. This pH is still in the

Table 2. pH, Eber test value and water holding capacity of meat marketed in the Province of Jambi, Indonesia

Regency	pH	ETV (second)	WHC (%)
<b>Slaughter house</b>			
Jambi Town	6.20 ± 0.16	66.0 ± 3.00	30.0 ± 4.51
Muaro Jambi Regency	6.05 ± 0.53	65.7 ± 8.62	31.7 ± 3.70
Batanghari Regency	6.21 ± 0.28	62.0 ± 4.00	28.5 ± 1.97
Tebo Regency	6.17 ± 0.41	63.7 ± 8.50	28.7 ± 4.60
Sungai Penuh Town	6.20 ± 0.30	55.0 ± 6.00	35.7 ± 0.58
Average	6.17 ± 0.33	62.5 ± 6.03	30.9 ± 3.07
<b>Central market</b>			
Jambi Town	5.73 ± 0.32	54.3 ± 5.03	29.3 ± 6.07
Muaro Jambi Regency	5.82 ± 0.17	54.0 ± 4.58	29.5 ± 1.76
Batanghari Regency	5.98 ± 0.23	52.7 ± 4.51	28.0 ± 3.79
Tebo Regency	5.59 ± 0.38	56.0 ± 9.64	25.2 ± 1.42
Sungai Penuh Town	5.99 ± 0.20	53.0 ± 4.58	35.7 ± 2.80
Average	5.82 ± 0.26	54.0 ± 5.67	29.6 ± 3.17
<b>Traditional market</b>			
Jambi Town	5.64 ± 0.26	46.3 ± 6.43	29.1 ± 7.64
Muaro Jambi Regency	5.52 ± 0.25	44.3 ± 4.93	23.8 ± 3.35
Batanghari Regency	5.93 ± 0.25	41.0 ± 8.19	26.3 ± 3.34
Tebo Regency	5.47 ± 0.44	34.7 ± 4.62	24.7 ± 2.48
Sungai Penuh Town	6.06 ± 0.08	53.7 ± 6.81	37.4 ± 0.64
Average	5.72 ± 0.26	44.0 ± 6.19	28.3 ± 3.49

range of Indonesian Standard of 5.3 – 5.8. This might be due to less glycolysis in meat during meat collection in the morning as the temperature was still relatively low to reduce the glycolysis.

The average Eber test values of meat are 44.0 ± 6.19, 54.0 ± 5.67 and 62.5 ± 6.03 second for TM, CM and SH respectively (Table 2). This value shows the intensity of the degradation of amino acid in meat that produces ammonia with typical odour. The condition of TM, less hygiene and sanitize, would facilitate the contamination of meat from bacteria in which it reduces ETV (time).

The average value of WHC of meat are  $30.90 \pm 3.07$ ,  $29.60 \pm 3.17$  and  $28.3 \pm 3.49$  % for SH, CM and TM (Table 2). WHC is the ability of meat to hold water in which water could sustain the meat quality. Water could be use for metabolism in meat. This result shows the decrease of WHC was affected with the time of sampling.

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