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Differential Analysis of *Se'i* Cow Meat Treatment from Modern and Household Industry in Kupang City

Apris A. Adu*

Faculty of Public Health, Nusa Cendana University, Kupang

Email: aprisadu606@gmail.com

Abstract

Se'i meat is one of the beef processed are made by way of smoked using wood embers of kusambi (*Scheichera oleaca*), se'i has been known in the city of Kupang as one of the meat food products. The processing of se'i meat require nitrite as a preservative to obtain good color and prevent the growth of microbes. According to the regulations of Food and Drug Supervisory Agency of the Republic of Indonesia number 36 of 2013, Nitrite use is permitted with a maximum limit of use of 30 mg/kg, but in reality in everyday life obtained the use of nitrites usage exceeds the threshold that has been set. This study aims to know the difference nitrite content in meat processing company se'i between modern and traditional in the city of Kupang. The study was descriptive research laboratory tests. The Subjects in this study were se'i meat (smoked meat typical Timor) and the object of study is two meat processing company se'i (smoked meat typical Timor) traditional and cottage industry in the city of Kupang. Data analysis result of research done descriptively and are presented in table and narrative. Results revealed that se'i derived from traditional industries and domestic industries have different nitrite content. The highest nitrite levels found in se'i meat derived from domestic industry in the amount of 110.19 mg/kg and the lowest levels found in se'i meat derived from domestic industry that is equal to 22.28 mg/kg. In conclusion, all samples se'i meat derived from traditional industries and home industries containing nitrite in meat processing se'i as a whole is the same. for traditional industry better prepared than the domestic industry in terms of completeness of workers and conditions of business premises.

* Corresponding author.

Suggested to the government to inform the regulations on the use of food additives and the dangers of using these foods on health, especially on nitrite preservatives.

Keywords: Differential Analysis; Se'i cow; Nitrite level.

1. Introduction

Meat se'i have been made long ago by the ancestors in Rote Ndao district and has been known in the city of Kupang as one of the food products both in native form and the form of fast food menu, as the food is typical of urban society Kupang [1]. Seen from the nutritional value, se'i meat has protein content is high at between 30-32% with fat content ranging from 0.8 to 0.92%, the high water content is 63%, this causes the meat se'i easily contaminated by microbes that may lead to se'i very short shelf life ie less than 3 days [1].

The processing of meat se'i require nitrite. Nitrite is a preservative used in meat preservation process for obtaining good color and prevent the growth of microbes. Nitrites as preservatives permitted use in accordance with the regulations of Food and Drug Supervisory Agency of the Republic of Indonesia number 36 of 2013 on the maximum limit use of food additives, preservatives in processed meat products, poultry and game birds are mashed including meat se'i is 30 mg / kg, but in reality in everyday life use of nitrites found to exceed the threshold that has been set usage rules chief food and drug regulatory agency of the Republic of Indonesia number 36 of 2013.

The processing of meat se'i require nitrite (KNO₂). Nitrite (KNO₂) is one of the preservatives used in the curing process of meat to obtain a good color and prevent the growth of microbes. Nitrite (KNO₂) as a preservative permitted use in accordance with the regulations of Food and Drug Supervisory Agency of the Republic of Indonesia number 36 of 2013 on the maximum limit use of nitrites (KNO₂) on products processed meat, poultry and game birds are mashed including meat se'i is 30 mg / kg, but in fact the meat se'i found the use of nitrites (KNO₂) exceeds the threshold that has been set usage rules chief food and drug regulatory agency of the Republic of Indonesia number 36 of 2013 [2].

Based on the results of research by Adu in January 2015 against the nitrite content (KNO₂) in meat processing company se'i in both modern and household industries in Kupang varied. The results of the analysis conducted by the BPOM (Agency for Food and Drug Administration) Kupang to nitrite content (KNO₂) in meat se'i in meat processing company se'i modern as much as 22.28 mg / kg, while for the meat processing company se'i cow traditional ones as much as 34.68 mg / kg and 110.19 mg / kg. The use of nitrite (KNO₂) that exceed this threshold are also supported by research Hasnah [3], regarding the content of nitrite (KNO₂) in the sausage on the distributor sausages in the city of Yogyakarta in 2011, summarized as follows: 1) All samples brand sausages studied containing nitrite (KNO₂). 2) levels of nitrite (KNO₂) is highest in the brand sausage E is equal to 211.294 mg / kg and the lowest levels found in the brand sausage C is equal to 83.354 mg/kg.

Research Adu, Hasnah and Dyah [2,3] on the use of nitrite (KNO₂) in cattle and chicken sausage products at Semarang result nitrite content (KNO₂) assumed in conversion percentage content of nitroso pigments respectively 124.84 and 456.53 ppm. The use of nitrites in chicken sausages at 456.53 ppm are known to be high

exceed safe limits. Based on these descriptions, the research wanted to know directly the difference nitrite content in meat processing company se'i between modern and traditional in the city of Kupang.

2. Materials and Methods

This research is a descriptive study with laboratory tests. Subjects in this study were se'i meat and the object of study is two meat processing company se'i modern and household industries in Kupang. This research was conducted at the Center for Food and Drug Administration (BPOM) East Nusa Tenggara province, on 1 May 2011 Ok -18.

2.1 Sampling process

The tools used in collecting and shipping the samples are plastic bags for packaging of meat se'I meat and paper labels for marking on each brand of se'I meat.

a. Qualitative test

Each sample is weighed amount of meat se'i of 5grams is then placed in a mortar, grind homogeneous with 25 ml of distilled water added. Samples that have been mashed then put into a test tube, each added a solution of potassium aluminum sulfate (rafters 4) 20% and put in a centrifuge for 10 minutes. Rafters 4 serves to separate the protein solution (to settle) and the clear solution (likely to contain nitrites). The clear solution of each sample is taken with a pipette and put into a test tube, then each added 1 ml solution of sulfanilic acid%, 1 ml α diphenyl amine 0.1% and 1 ml of N-1-naftiletilen-diammonium dichloride , observed the color change, color of the solution changes from clear to pink indicates that the solution containing nitrite.

b. Quantitative Test Test solution:

Each sample se'i meat derived from modern enterprise and household industry weighed amount of 5 grams is then placed in a mortar, grind homogeneous with 25 ml of distilled water added. Samples that have been mashed then put into a test tube, each added a solution of potassium aluminum sulfate (rafters 4) 20% and put in a centrifuge for 10 minutes. The clear solution of each sample is taken with a pipette and put into a test tube, then each added 1 ml solution of sulfanilic acid%, 1 ml α diphenyl amine 0.1% and 1 ml of N-1-naftiletilen-diammonium dichloride, shaken.

Standard solution:

A total of 42 mg of sodium nitrite were weighed, put into a measuring cup 500 ml, plus 100 ml of distilled water and shaken. Each standard solution is diluted to 1 ml and 1 ml solution plus 1% sulfanilic acid and 1 ml of α diphenyl amine 0.1%. Then diluted with distilled water to 10 ml.

Blank solution:

Some 1 ml of acid solution sulfaninat 1% and 1 ml of N-1- naftiletilen diammonium dichloride, is inserted into a

measuring cup and plus 100 ml distilled water.

Determination:

Uptake of solution A and B were measured with a spectrophotometer, the maximum wavelength of approximately 520 nm solution blanko.5

Nitrit Content = x 1000

Calculation:

(1)

X: absorbance (absorption) - ab

Dilution factor: 25/1 ml

Sample weight: g

Nitrite levels: mg / kg

Noting the results of laboratory tests

3. Results

This research was conducted in the city of Kupang in 2016, the number of samples studied by 6 the three samples coming from the meat processing industry se'i modern and 3 samples coming from the meat processing industry se'i households. Samples were taken and then examined in the Food and Drug Monitoring Agency (BPOM) NTT Province.

Tests conducted is quantitative, ie to determine the levels of nitrite in meat se'i. The calculation result nitrite levels obtained in the form mg / kg then the results were adjusted for regulatory National Agency of Drug and Food of the Republic of Indonesia number 36 of 2013 on the maximum limit use of Nitrite (KNO₂) on products processed meat, poultry and game birds are mashed included se'i meat is 30 mg / kg and see the use of nitrite preservatives in meat se'i already meet the quality standards to be consumed by the public.

3.1. Analysis of Nitrite levels in meat se'i between modern industry and households in the city of Kupang, 2016

According to the table 1. It is known that the sample studied as many as three of the domestic industry had higher levels of nitrite (KNO₂) obtained in the form mg / kg exceeds the threshold as a preservative which is permitted use in accordance with the regulations of Food and Drug Supervisory Agency of the Republic of Indonesia number 36 year 2013 the maximum limit use of Nitrite (KNO₂) on products processed meat, poultry and game birds are mashed including meat se'i is 30 mg / kg and while for se'i meat products derived from modern industry under the Supervisory Agency for Drug and Food of the Republic of Indonesia number 36 of 2013.

Table 1: Results of the analysis of content of nitrite in meat se'i (salami typical Timor).

Industry	Treatment	Nitrite content
Modern industry	1	36,68
	2	37,42
	3	110,19
	Average	61,43
House hold Industry	1	22,28
	2	34,68
	3	26,09
	Average	27,68

3.2. Analysis of Physical meat se'i between modern industry and households in the city of Kupang, 2016

Table 2: Physical Analysis of Se'i Meat (Salami Timor)

Industry	Taste	Texture	Smell	Colour	Mussel	Source of meat
Modern Industry	Normal	Solid	Normal	Red and orange	and thigh muscles / biceps femoris	Slaughter house and they cut
House hold Industry	Normal	Solid	Normal	Red chocolate	and thigh muscles / biceps femoris	slaughterhouse and has been cut

Based on Table 2. It is known that by the taste, shape and smell of meat se'i derived from modern industry and home industry alike are normal and solid, while for the color of meat se'i derived from modern industries of red meat and red color somewhat chocolate while for domestic industry was red meat and red orange.

Origin of meat in the manufacture of meat se'i, for modern industrial meat comes from a slaughterhouse and cutting themselves, as well as muscle were taken from the thigh muscles / biceps femoris while domestic meat industries that use it all comes from a slaughterhouse and muscle used is the thigh muscles / biceps femoris.

3.3. Analysis of Business Place of meat se'i between modern industry and households

Table 3: Results of Analysis of Business Location of Se'i Meat (Smoked Meat Timor)

Industry	Place	Fuel used	Uniform workers
Modern industry	Closed	<i>Kusambi wood / Seisera oleasa</i>	Complete
Household industry	Opened	Any mixed wood	Not complete

According to the table 3. It is known that under conditions of modern industry both business and household industries are all done in a covered place, for fuel used in the process of curing meat se'i for modern industrial use firewood from the wood industry and for home kusambi wooden ladders used is wood fire of any kind. Completeness of the workers who process meat se'i for modern industrial workers always wearing a uniform from head to footwear and gloves while household industry workers wear clothing that normally in everyday life.

4. Discussion

4.1. Analysis of Nitrite levels in se'i meat between modern and household industries Kupang City

The results of this study indicate that the levels of nitrites in meat samples se'i derived from modern industry all contain nitrite one sample exceeded the use of food additives is 34,68mg / kg whereas meat derived se'i domestic industry all contain nitrites and exceeded the maximum use of nitrites in processed meat products in accordance with the regulations of Food and Drug Supervisory Agency of the Republic of Indonesia number 36 of 2013 which is the highest of 110.19 mg / kg.

Although some meat samples se'i derived from modern industry is under the threshold limit use of food additives in accordance with the regulations of Food and Drug Supervisory Agency of the Republic of Indonesia number 36 of 2013 which is 30 mg / kg in processed meat products, poultry meat and game birds are mashed, but consuming meat containing nitrite se'i need to pay attention because nitrites are cumulative in the body.

Utilization of nitrite exceeding the threshold of use in the manufacture of meat se'i company se'i meat derived from modern industry and home industry has many reasons ie to stabilize the red color of meat, forming a distinctive flavor, inhibit the growth of spoilage bacteria and toxic, and slow the occurrence of rancidity and easy to obtain nitrite at affordable prices, in addition to consumer tastes who want the meat bright red se'i also affect meat processing company se'i using nitrite uncontrolled.

As food additives, synthetic, nitrite content has a safety margin for the user. Nitrites are precursors of carcinogenic potential as in the accumulation of the user. Dose use of nitrites permitted by the regulations, the Chief of Drug and Food Control Republic of Indonesia number 36 of 2013, the maximum limit use of food

additives, preservatives in processed meat products, poultry and game birds are mashed including meat se'i is 30 mg / kg. Excessive consumption of nitrite can cause harm, either directly, including poisoning, as well as the indirect, which are carcinogenic [4].

The consumption of foods containing food additives to note the usage limit daily (daily intake), Accept dily Intake (ADI) states that all chemicals are used as additives in food is toxins, but for toxicity level depends on the amount that is required to effect or can cause health problems [4,5].

4.2. Physical Analysis meat se'i between modern industry and households in Kupang City , 2016

Overall meat used and the results of cattle meat processing se'i between modern corporate and household industries are the same, except the source to get the meat that is to the modern enterprise portion of meat that is used for the processing of meat derived from cutting se'i own. According to the manager se'i meat derived from modern industrial cattle slaughtering extra with the aim to increase the amount of meat that will process into se'i because se'i meat demand is high enough in the city of Kupang. According to BPPS [6], the number of beef production in the province of East Nusa Tenggara (NTT) in 2014 was 73.886 birds and a number of beef consumption in March 2014 was as much as 5,036,897 kg of this amount approximately 10% of total consumption the beef is in the form of meat se'i.

4.3. Analysis of Business Place meat se'i between modern industry and households in Kupang City

Based on the business premises of a meat processing company has a modern se'i the preparedness level better than the domestic industry as a place of business conditions, fuel wood used and the completeness of the current meat processing se'I. Modern industry better reason than because modern industry maintain the quality of preparations consisting of cleanliness and maturity se'i processed meats. In addition to the freshness and quality of the meat, seasoning is the key factor that determines the quality and acceptability of meat se'I [7,-11].

5. Conclusions and Recommendations

5.1. Conclusions

Based on the results of research on the content of nitrite in meat se'i between modern industry and household industry in Kupang city in 2016, it can be concluded as follows:

- 1) All samples se'i meat derived from modern industrial and household industries studied containing nitrite. The highest nitrite levels found in meat se'i derived from domestic industry in the amount of 110.19 mg / kg and the lowest levels found in meat se'i derived from domestic industry that is equal to 22.28 mg / kg.
- 2) Results of meat processing se'i of modern industry and the domestic industry as a whole is the same, while the origin of the meat used for the meat processing industry se'i for modern plus of cutting apart from the slaughterhouses.

- 3) Place the meat processing business se'i, for modern industry better prepared than the domestic industry in terms of completeness of workers and conditions of business premises.

5.2. Suggestions

- 1) BPOM NTT Province.

It is expected to inform the regulations on the use of food additives and the dangers of using these foods on health, especially on nitrite preservatives.

- 2) School of Public health, Nusa Cendana University University, Kupang is expected to:

- a) Provide public education about safe limits the use of nitrites in meat processing se'i.
- b) Further research is needed on the analysis of nitrite content with descriptive analytic methods, such as behavioral relationships and knowledge of meat producers se'i meat against the use of nitrites as preservatives in meat.
- c) Further studies on nitrite content analysis with descriptive analytic methods, such as behavioral relationships and knowledge of meat producers se'i against the use of nitrites as preservatives in meat.

Conflict of Interest

Author declare that no conflict of interest within this research.

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