



Preservatives Material Content of Sodium Nitrite (NaNO_2) on Meat Processed (Burger) in Supermarkets and Street Vendors, Makassar City

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Abstract

Burger is a favored fast food by the public and contain preservatives. Sodium nitrite is a food preservative which is used as a preservative in foods has the function of preventing spoilage and the growth of microbes as well as to maintain the color on meat. The aim of this study was to determine and compare how much the content of the preservative sodium nitrite in meat burgers sold in supermarkets and cadger Makassar. Methods used in the examination is spectrophotometer. The results showed that the content of sodium nitrite preservatives in the seventh burger meat samples were inspected qualified in accordance with the standards based on the Regulation of the Minister of Health of Indonesia No. 033 Year 2012 on Food Additives in the amount of 250 mg / kg. When referring to the standard of Acceptable Daily Intake (ADI), then there were six samples that do not meet the standards of FAO / WHO Expert Committee on Food Additives (JECFA) of the daily intake limits (0 - 0:06 mg / kg body weight). Conclusion of the study that the nitrites found on each product processed meat burger because it is a preservative that serves to maintain the processed meat, though it is advisable for people to be more careful in the selection and consumes products burger meat containing preservative nitrite, as if eating nitrite in number excess can be harmful to health.

Keywords: Sodium Nitrite; Meat Burger.

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1. Introduction

Food is one thing that is very important in human life. The food we eat not only have to meet the nutritional and has an interesting shape but also to be safe in the sense that it does not contain microorganisms and chemicals that can cause disease. Food borne illness was due to unfavorable environmental conditions [1]. One of the foods that are categorized as perishable foodstuffs (perishable food) is meat. Meat is a good medium for the growth of microorganisms. Pickling meat has the objective, among others, to secure the meat from damage or spoilage by microorganisms and extend the shelf life (self life) meat. Preservation means inhibiting or restricting enzymatic reactions, chemical and physical damage meat. The use of food additives (BTP) in the process of food production needs to be watched together, either by the manufacturer or by the consumer [2]. Its use can impact positive or negative for society. Storage and its use will harm us together, especially the younger generation as the successor to the nation's development. In the field of food we need something better for the future that is food safe for consumption, higher quality, nutritious, and better able to compete in the global market. Food safety policy (food safety) and the development of national nutrition (food nutrients) is an integral part of a national food policy, including the use of food additional materials. Misleading a preservative used in meat preservation process to obtain a good color and to prevent microbial growth is sodium nitrite [3]. Nitrite can be used as a preservative and gives the red color to the meat [4].

Nitrite poisoning can occur because of past use of the maximum allowed. Nitrite poisoning can be symptomatic blood pressure drops suddenly, nausea, vomiting, chills, convulsions lips and fingertips turn blue, collapse to cause death. If nitrite is present in food and beverages in the amount of excessive eating will cause food poisoning. Based on the case in Pingliang City, Gansu Province 3 people were killed and 34 fell ill, as a result of food poisoning are believed to be related to milk contaminated with the chemical. Results of a preliminary investigation showed that the victims in Pingliang City, Gansu Province suffered nitrite poisoning after drinking milk. [5]. Burger a fast food loved by the community in the form of a round slightly flattened bread and halved. Inserted in the middle slab of spiced minced meat, served with salad leaves, sliced tomatoes, cucumbers and a variety of sauces, cheese and so on according to taste [6,7].

Burger meat sold in supermarkets consists of various types of brands. There is a label on the packaging containing the composition of the material, such as nitrite. Burger sold in supermarkets can survive in the long term and does not damage and discoloration of meat burger so suspected of using nitrite preservatives. In addition, not only the self-service meat burger alone there but we can also find on the street vendors who sell non-branded fast-food burger [8, 9]. This burger is a food that is much in demand by people of all ages. If nitrite in copious amounts enter the body through food preservative reacts with amino acids in a very slow reaction to form various types of carcinogenic nitrosamines are most powerful. It is the underlying writer to do research on the content of the preservative sodium nitrite to meat burgers are sold in supermarkets and street vendors. This study aimed to find out the preservative sodium nitrite in processed meats (burgers) are sold in supermarkets and street vendors as well as to distinguish the amount of sodium nitrite preservative substances contained in packaging burger meat sold on street traders and supermarkets in the city of Makassar.

2. Materials and Methods

Location sampling is done at two places, namely at Supermarket (Lottmart, Hypermart and Carrefour) and the street vendors in the city of Makassar with a sample of each location of seven samples. Sodium nitrite content analysis conducted at the Center for Health Laboratory Makassar. Processing and presenting data was descriptively in tables and narrated that nitrite levels compared with the analysis results Permenkes No. 722 / Menkes / Per / IX / 88 on Food Additives or No.1168 / Menkes / Per / X / 1999. Based on these results it will be known whether the burger meat being sold meet the requirements or do not meet the requirements for consumption by the Society.

3. Results

Results of laboratory analysis that has been carried out, ie substances sodium nitrite in processed meat burgers sold in Supermarkets and street vendors in the city of Makassar, can be seen in following table:

Table 1: Examination Results preservatives Sodium content Nitrit in Processed Meat Burger Sold in Supermarkets and Street Vendors 2015

No	Sample Name	Location	Nitrite content
1	Packaged sample I	Carefour	1,74
2	Packaged sample II	hypermart	2,28
3	Packaged sample III	Lottmart	3,04
4	Packaged sample IV	Hero	11,72
5	Street vendor sample I	Kemerdekaan	0,54
6	Street vendor sample II	Jl. Penghibur	4,10
7	Street vendor sampleIII	Rumah burgerku	0

In the table shows that the seven samples examined burger meat has varying levels of nitrite. The highest nitrite content contained on the packaging IV samples obtained from Ratu Indah Mall Hero Supermarkets in the amount of 11.72 mg / kg and sample II Street traders were found in the street entertainers precisely in Losari Beach is equal to 4.10 mg / kg whereas Lowest nitrite content in packaging samples I obtained from Carrefour Supermarket Makassar Mall Panakukkang reached 1.74 mg / kg and sample III Street trader who got on the production of processed homes that house on the street BTN *Burgerku Hartaco Bukit Indah*, Power amounting 0,00 mg / kg. The results showed that the levels of nitrite from meat burger Seven samples were analyzed does not exceed the maximum limit use of nitrites in processed meat products in the amount of 250 mg / kg based on the regulation of the Minister of Health No. 033 of 2012 on food Supplementary Material.

Table 2: Preservatives Sodium content Natrium nitrit in Processed Meat Burger Sold in Supermarkets and Street Vendors, 2015

No.	Sampel Nama	Location	Natrium / Nitrit (mg/kg)	Natrium Nitrit Standard Base on the Acceptable Dally Intake (ADI)
1.	Package Sampel I	Carrefour	1.16	0 – 0,6 mg/kg bw
2.	Package Sampel II	Hypermart	2,52	
3.	Package Sampel III	Lottmart	2.03	
4.	Package Sampel IV	Hero	7,81	
5.	Sample of street vendor I	Perintis kemerdekaan	0,36	
6.	Sample of street vendor II	Penghibur	2,73	
7.	Sample of street vendor III	Rumah burgerku	0	

Table 2 showed that the content of Sodium Nitrite on processed meat burgers were found in some samples taken which contained the highest content of Sodium Nitrite on the packaging samples IV is equal to 7.81 mg / kg and sample II Street trader is equal to 2.73 mg / kg whereas the lowest content of Sodium Nitrite Packaging sample is 1.16 mg / kg and sample III Street trader is equal to 0 mg / kg. The results showed that all seven samples above is only a sample that meets the standards and six other samples exceeded standards limit the use of sodium nitrite is based on daily intake (ADI) according to the FAO / WHO Expert Committee on Food Additives (JECFA)

4. Discussion

The results showed that the content of preservatives nitrite of the seven samples did not exceed the maximum limit use of preservatives nitrite by Minister of Health Regulation No. 033 of 2012 [10] on Food Additives in the amount of 250 mg / kg, but based on the rules limit the use of daily sodium nitrite of the seven samples analyzed contained 6 samples exceeded the limit daily intake (ADI) according to the FAO / WHO Expert Committee on Food Additives (JECFA) is 0 - 0:06 mg / kg body weight. Nitrite content of the seven samples that have been analyzed are still below the maximum limit of use, we also need to pay attention to limit the number of daily intake of the impact of the health of consumers. Impact eating burger meat containing nitrites circulating in Supermarkets and fast food burger meat still needs to be considered because it is the accumulation of nitrite in the human body. The use of nitrite preservatives in meat burgers cannot be seen special features directly with the naked eye. On analyzed samples of the most high nitrite content was found in samples IV and sample packaging II on the sidewalk which is a burger meat is ready to eat. Then the community should be more cautious in buying and consuming meat burger. This preservative is accumulative so that the levels will be more and more in the body and form nitrosamines which could potentially cause cancer in the long term.

The amount of nitrite levels in processed meat products is a factor inhibiting the growth of *Clostridium botulinum* bacterium, but the amount of nitrite levels are also associated with the formation of nitrosamines which are toxic and carcinogenic. Nitrosamine compounds can be formed easily on the interaction between nitrite and secondary or tertiary amine, especially on the acid conditions. Based on laboratory analysis results indicate that the sample is a sample of the high IV levels nitrit. Restrictions on the levels of nitrite preservatives in processed food is based on the possibility of harmful effects [11, 12]. The symptoms can be caused by nitrite poisoning include headaches accompanied by throbbing pain, dizziness, visual disturbances, decreased blood pressure (hypotension), red skin and sweating, nausea and vomiting. For those reasons, be careful in buying and consuming meat burger containing nitrite preservatives.

5. Conclusion

Based on the results of research and discussion on the content of nitrite preservatives and sodium nitrite in bacon burger circulating in Supermarkets and traders Street Makassar, it can be concluded that the content of nitrite preservatives were examined, namely sample packaging I is equal to 1.74 mg / kg, sample packs of 2.28 II, III packaging sample of 3.04 mg / kg, IV packaging sample of 11.72 mg / kg, while for the first five foot sample is equal to 0.54 mg / kg, five foot sample II for 4.10 mg / kg and five foot sample III was 0 mg / kg.

Based on the Minister of Health Regulation No. 033 of 2012 on Food Additives, the amount of nitrite content of the sample seventh, still meet the requirements for consumption, where the maximum limit use of nitrites in the amount of 250 mg / kg. But based on the rules of the usage limit daily sodium nitrite of the seven samples examined contained 6 samples exceeded the limit daily intake (ADI) according to the FAO / WHO Expert Committee on Food Additives (JECFA) is 0 - 0:06 mg / kg Weight that is contained in packaging samples I, II, III and IV while on a sample of street vendors ie I and II.

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