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Test of Sodium Aluminate (Borax) Content In *meatballs* (Bakso) in North Sangatta Sub-District (Case Study In *meatballs* Store)

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ABSTRACT

The purpose of this study was to determine the content of borax in meatballs in Sangatta Utara sub-district meatball sellers. The method used in this research is descriptive analysis method. The meatball samples used were 270 samples obtained from 30 meatball sellers in Sangatta Utara and tested at the Animal Health and Veterinary Public Health Laboratory of Agriculture Service. The test was carried out to find out whether or not the meatball sample contained borax using the borax test kid. If a positive meatball sample contains borax, then the borax test paper will be brownish red while if the negative meatball sample is borax test paper is yellow. The test results showed that all meatball samples were negative (containing no borax). Based on the research it was concluded that the meatballs were not identified to contain borax.

Keywords: meatball samples, borax, borax test.

INTRODUCTION

North Sangatta is the capital of East Kutai regency. Total area of this city for about 1,262.59 km^2 (3.53% of East Kutai total area) with population for about 98,325 people and annual population growth rate for 4.2%. (BPS, 2018). The majority of Sangatta people are workers in various fields because it is an industrial area. Relatively dense working hours and relatively high income levels are the reasons for Sangatta to choose to eat fast food. One of the foods favored by the community is meatballs, because it has a good taste and is suitable for the taste of the majority of the people. The relatively high demand for meatballs makes producers always have to supply meatballs in large quantities. In order for this product to have a long shelf life, most producers add preservatives to processed meatballs. Preservatives that are often used by producers are borax, even though it is prohibited from using it in food. Borax use as a food preservative is possible to occur with the increasing number of meatball sellers in North Sangatta, both in the form of restaurants and street vendors. In addition, the number of meatball sellers is increasing while the consumers are relatively constant resulting in competition between them. For the seller of

meatballs who lose the competition and are not responsible, they will find a way so they do not lose in their business. Sometimes the way they do is against the rules, one of which is by using borax in meatballs.

Meatballs that are added to borax have a more durable storage power, which can have a shelf life of five days. Manufacturers of meatballs that use borax preservatives feel they have no loss if the meatballs sold do not run out because they can still be stored and resold the meatballs they produce for a long period of time without feeling guilty to consumers. Borax can improve the texture of meatballs so as to produce a good appearance and has a special elasticity. Based on these capabilities borax is often misused by food producers, namely as a preservative in food sold such as wet noodles, meatballs, rice cake, *cilok*, and brains with characteristics that are very chewy, not sticky, and not easily broken into wet noodles . But on the other hand Borax is a food additive that is very dangerous for human health because it is toxic (Hamdani, 2012).

One of the people's health depends on what food they consume daily. Healthy food must meet the requirements of safe, healthy, whole and halal. Safe and healthy foods include foods that do not use borax preservatives. Lack of information sometimes makes people do not know whether the meatballs they consume contain borax or not. This is the reason for the authors to carry out this research, namely to find out whether meatballs circulating in Sangatta Regency are meatballs that are free of borax or contain borax.

MATERIALS AND METHODS

Research Location

The population of data were all meatball seller in North Sangatta, both in the form of restaurants or stalls. Collected samples were tested at the Animal Health and Veterinary Public Health Laboratory of Agriculture Service, East Kutai regency Government.

Material and Instrument

The materials used in this study were meatball, borax, and aquadest. The instrument used were drop pipette, thermostatic water, bag mixer, test tube, beaker glass, vortex, scales, sterile plastic, autoclave, label sheet dan borax test paper.

Method

A sample of 30sellers determined randomly and data were collected every week with three replications. Samples of collected meatballs were put in plastic and labeled (code), then transported to the laboratory and carried out borax testing.The sample was weighed 10 grams, put in sterile plastic. The sample was heated with a thermostatic water for 5-10 minutes at 80ºC, then added 20 ml of distilled water, then mashed with a mixer bag. After the sample is completely mixed, 5 ml is taken and put into the test tube, then 3 drops of borax reagent are then added to vortex.

Taken as many as 3 drops then placed on the Borax Test paper. For comparative material (control (+) borax) the sample is added to borax while for (control (-) borax) aquadest sample is added, then left to dry, if a positive sample contains borax then the liquid will be brownish red and if negative yellow (UPTD Laboratory Animal Health and Veterinary Public Health Samarinda).Data obtained from laboratory results were analyzed descriptively.

RESULT

The results of testing the content of borax on meatballs in the Sangatta North meatball stall are presented in Table.1.

Table 1. Borax content test results on meatballs at sangatta North meatball sellers

No	The Sellers	Collecting Data			Information
		1st week	2nd week	3th week	
1	Bone Meatballs	-	-	-	Not contain borax
2	Mitra Solo Meatballs	-	-	-	Not contain borax
3	Meatballs& Chicken noodle	-	-	-	Not contain borax
4	Putra Solo 1 meatballs	-	-	-	Not contain borax
5	Putra Solo 2 meatballs	-	-	-	Not contain borax
6	Kepala Sapi meatballs	-	-	-	Not contain borax
7	Gunung meatballs	-	-	-	Not contain borax
8	Srikandi Meatballs	-	-	-	Not contain borax
9	Malang Meatballs	-	-	-	Not contain borax
10	Satria Meatballs	-	-	-	Not contain borax
11	Special noodle chicken meatballs	-	-	-	Not contain borax
12	Arema Meatballs	-	-	-	Not contain borax
13	Granat Meatballs	-	-	-	Not contain borax
14	Complete Chicken Noodle Meatballs	-	-	-	Not contain borax
15	Kediri Meatballs	-	-	-	Not contain borax
16	Ojolali Meatballs	-	-	-	Not contain borax
17	Srikandi Chicken noodle meatballs	-	-	-	Not contain borax
18	Gaja Mungkur meatballs	-	-	-	Not contain borax
19	Lumajang meatballs	-	-	-	Not contain borax
20	Mangkok meatballs	-	-	-	Not contain borax
21	Podomoro meatballs	-	-	-	Not contain borax
22	5785 Meatballs	-	-	-	Not contain borax
23	Goli Meatballs	-	-	-	Not contain borax
24	MM chicken noodle meatballs	-	-	-	Not contain borax
25	Warung Klamic meatballs	-	-	-	Not contain borax
26	Rahmadan meatballs	-	-	-	Not contain borax
27	99 Meatballs	-	-	-	Not contain borax
28	5778 Meatballs	-	-	-	Not contain borax
29	Jakarta Meatballs	-	-	-	Not contain borax
30	Hebring Meatballs	-	-	-	Not contain borax

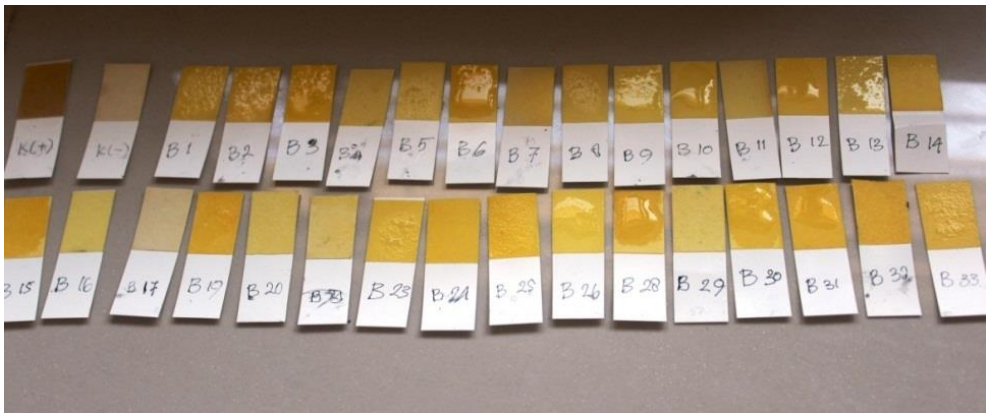

Figure 1. Borax test results on sample meatballs

DISCUSSION

The test for borax content in meatballs in the North Sangatta Meatball sellers showed a negative test (Table. 1). This data showed that there was no additional borax on meatballs in all meatball sellers that the data is taken. Test results that have been carried out on 270 meatball samples taken randomly from a number of meatball sellers in North Sangatta showed that there was no change in color on the borax test paper. Samples that positively contain borax will usually cause discoloration from yellow to brownish red, while samples that contain negative borax are indicated by the absence of discoloration on the test paper which is still yellow.

Borax is one of the preservatives commonly used in food that are now banned. According to Rohman (2007), borax is the trade name of sodium tetraboratedecahydrate ($Na_2B_4O_7.10H_2O$), which is one of the crystalline and white chemical compounds and if dissolved in water into sodium hydroxide and borax acid. If borax is reacted with borax test paper (usually containing curcumin) it will produce a brownish red color. This is because borax is alkaline, so the presence of borax can be detected using an alkaline indicator (curcumin solution in alcohol), which will show a brownish red color.

The results of the color test reaction with curcumin paper on meatball samples taken from meatball sellers in North Sangatta can be seen in Figure 1. All borax test papers (borax test kits) were used to determine the presence of borax in meatball samples no one experienced discoloration (paper remains yellow).

Good meatballs are meatballs that have more beef composition than the amount of the dough so that it gets a good taste. Water content also affects the nature of meatballs, high water content will reduce the texture of meatballs and the storage time of the meatballs. Winarno (2007) states that meatball quality is determined by meat used as raw material and starch content in the meatballs. High quality meatballs are low in content, which is 15% of the total dough. The higher the starch content, the lower the quality of the meatballs produced. The objective quality requirements of meatballs according to SNI are shown in Table 2.

The general public is usually difficult to distinguish foods containing borax. Sensory, in fact, the borax content can be felt by our tongue, namely the presence of a rather bitter or bitter taste left in the mouth after consuming several of these foods. Meatball samples to be tested when consumed also do not show bitter or bitter taste in the mouth, this reinforces the suspicion that the meatballs do not contain borax. According to Putra (2009) that the characteristics that can be seen to distinguish meatballs containing borax and not are as follows:

1. Meatballs that are free of borax are less elastic than meatballs containing borax.

2. Meatballs that are free of borax when bitten are not hard compared to meatballs containing slightly harder borax.
3. Borax-free meatballs only have a day to save while those containing borax have a shelf life of more than 3 days at room temperature storage.
4. Borax-free meatballs are fresh gray evenly distributed on all parts of the meatballs both on the surface and in the middle while those containing borax are whiter and evenly distributed.
5. Borax-free meatballs smell natural, no other odor appears.
6. Meatballs that are free of borax when thrown onto the floor do not bounce while those containing borax bounce like a stickball.

Table 2. Requirements for objective quality of meat meatballs

No.	Test Criteria	Unit	Requirement
1	Water	% b/b	Max. 70.0
2	Ash (Minerals)	% b/b	Max 3.0
3	Protein	% b/b	Min. 9.0
4	Fat	% b/b	Max. 2.0
5	Borax	-	There can't be any
6	Microbiacontaminat:		
	Total plate count	coloni / g	Max. 1.0×10^5
	Escherichia coli	APM / g	< 3
	Staphylococcus aureus	coloni / g	Max. 1.0×10^2

Source: SNI (01-3818,1995)

Meatballs that do not contain borax can be caused by awareness of the manufacturer or seller of meatballs on the dangers of using borax on their meatballs, besides that good economic growth factors also affect the sales of increased meatballs. The routine inspection from related agencies or agencies is able to reduce the desire of meatball sellers to add borax to their meatballs, because if they are proven to add borax to their merchandise meatballs, they will be subject to sanctions according to applicable regulations and laws. People who know the information also do not believe in the products being sold so that it will have an impact on the seller's income.

Supervision of the safety of food products circulating in the community is important to carried out regularly to form good behavior in producing and consuming food. Lawrence (1980) states that human behavior is influenced by two main factors, namely behavioral factors (behavior causes) and non-behavior causes. Furthermore, the behavior itself is determined or formed by 3 factors, namely: (1) predisposing factors which include knowledge, attitudes and so on, (2) enabling factors, which include the physical environment, availability or unavailability of facilities or facilities, and (3) factors reinforcement, including laws, regulations, supervision and so on. This is what influences people's behavior towards consumer rejection of meatball products containing borax, and the behavior of meatball producers to realize the consequences of adding borax to meatballs.

Research shows that meatballs sold in North Sangatta contain no borax have also been carried out by officers from the East Kutai Agriculture Office in charge of Veterinary Public Health affairs (Kesmavet) in 2015, where samples taken from a number of meatball stalls in Sangatta were not found borax in all samples of the meatballs. The Livestock Service Office of East Kalimantan Province also participates in supervising the use of borax in animal food products including meatballs in East Kutai regency, especially North Sangatta sub-district, by conducting routine

sampling every year to check whether the meatballs in Sangatta contain borax. The negative test results showed that meatballs in North Sangatta were free of borax.

Meatball sellers also claim to be informed about the dangers of borax through electronic media, so they understand what risks they get when using borax, in addition to legal sanctions given by authorized officers and also the loss of trust from consumers. This proves that even though they are not health experts, they have sufficient knowledge about borax.

The results of this study were similar to those of Sugiyatmi (2006), which states that there is a significant relationship between the level of knowledge of merchant food makers regarding the dangers of borax and its attitude towards borax knowledge in making meatball foods. Based on the results of the analysis and description above, it can be said that all sellers have good knowledge and attitude. The level of knowledge and attitude is one of the important factors in order to avoid contamination of borax toxin in the community. The use of borax in food can be replaced with natural preservatives which can be an alternative to borax, one of which is carrageenan. Carrageenan is a filler made from seaweed (*Euchena* sp.) and is safe for human consumption. The form of carrageenan is almost the same as seaweed gelatin and has been circulating in the market.

Economic growth factors also influence the sale of meatballs. As one of the largest coal producing cities in Indonesia, North Sangatta has quite good economic growth. Good economic growth usually has a positive effect on the welfare of the community, which is characterized by increasing purchasing power (consumption) of the community. The effect of the meatball sellers is also felt, because the meatballs they sell can be used up every day so they don't need to add borax to the meatballs.

North Sangatta Sub district is one of the sub-districts in the East Kutai Regency which is also located as the capital of the district. The area of North Sangatta is around 1,262.59 Km2 or 3.53% of the total area of East Kutai Regency. In 2015 the population was 95,312 people. The economy of the community consists of various sectors including, mining, agriculture, trade, civil servants, fishermen, craftsmen, labourers, retirees and so on. Based on data taken from BPS East Kutai Regency (2016), that this Regency is one of the districts in East Kalimantan which is rich in natural resources in the form of coal, oil and gas and other mines. Although the rate of economic growth has declined in the past three years, East Kutai Gross Regional Domestic Product (GRDP) is still dominated by the growth of the mining and quarrying sector, which contributes 78.74%to regional income.

CONCLUSION

Meatballs sold by meatball sellers in North Sangatta do not contain borax.

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