

## Qualitative Identification of Borax Content in Snacks at Kiyai Mojo Islamic Boarding School Tambakrejo Jombang

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### ABSTRACT

*Borax is a food additive that is harmful to humans. This study aims to identify the borax content in snacks in the Kiyai Mojo Islamic Boarding School Tambakrejo Jombang area. This research was carried out from May 2021 to June 2021 by choosing purposively on snacks in the Kiyai Mojo Islamic Boarding School area of Tambakrejo Jombang. The snack samples were then tested qualitatively using turmeric extract. The color change to brownish red in the sample indicates a positive sample identified as containing borax, if there is no color change then the result is negative. The results showed that there were a total of 9 samples that were positive for borax based on a qualitative test using turmeric extract. The most samples of borax snacks were found in the Kiyai Mojo Putri Islamic Boarding School (KMPI) with a percentage of 42.85%, followed by the Kiyai Mojo Islamic Boarding School Environment (LPKM), 20% and Kiyai Mojo Putra Islamic Boarding School (KMPA) with 16, 66%.*

**Keywords:** Snacks, Borax, Qualitative Test

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### INTRODUCTION

Snacks are a popular food ingredient for the Indonesian people, including the students at the Kiyai Mojo Islamic Boarding School Tambakrejo Jombang. The existence of snacks is an alternative food for students because the prices are cheap and the variety varies according to the current food development trend. However, the consumption of snacks increases the health risk for students. Unhealthy snack habits are one of the determinants of diarrheal disease in students (Aeni et al., 2019).

Snacks in general are more easily damaged or rotten caused by bacteria and fungi so that snack sellers add preservatives in the production of snacks. The use of preservatives is not always safe for consumption because there are preservatives that can have a negative impact on health, such as borax. Borax is the choice of most sellers because it is cheap and easy to get. In addition, borax also has advantages such as extending the shelf life of food, improving food texture, making food more chewy, and inhibiting the fermentation process (Cahyadi, 2008). However, borax can cause bad effects for a long time because the borax in the body will be buried and accumulated, then cause side effects such as vomiting, dizziness, diarrhea, nausea, seizures and coma (Sari, 2020).

The presence of borax can be detected through a qualitative test. Turmeric is a plant that can be used as a test for foods containing borax, because turmeric contains curcumin which is able to decompose borax bonds into boric acid and bind them to boron compounds (Halim et al., 2012). Based on the description above, this study was conducted to determine the presence of borax qualitatively in snacks in the Kiyai Mojo Islamic Boarding School area of Tambakrejo Jombang.

### METHOD

This research was carried out from May 2021 to June 2021. The sample selection was carried out purposively on snacks in the Kiyai Mojo Islamic Boarding School Tambakrejo Jombang area. This type of research is descriptive research with the method used is a qualitative method. Test the borax content in snack samples using turmeric extract with the following mechanism:

- Turmeric washed and peeled until it cleaned and then ground. Turmeric that has been pounded then added with water and then filtered. After filtering it would get turmeric extract.
- The sample was weighed about 5 grams and then the sample was ground using a mortar.

- After some samples were crushed, put into a petri dish, then added with three drops of turmeric extract.
- The change in color to brownish red in the sample indicated a positive sample identified as containing borax, if there was no color change then the result is negative.

## RESULT AND DISCUSSION

### Result

Qualitative examination of borax content in snack samples was carried out using turmeric extract. If there is a change in the color of the sample to brownish red, then the sample is positive for borax. The selected samples came from various areas in the Kiyai Mojo Islamic boarding school, including the Kiyai Mojo Putri Islamic Boarding School (K.M.PI), the Kiyai Mojo Putra Islamic Boarding School (K.M.PA), and the Kiyai Mojo Islamic Boarding School (L.P.K.M). The test results showed that the samples of snacks indicated to contain borax were mostly found in the K.M.PI area with a percentage of 42.85%, followed by the L.P.K.M area as much as 20% and K.M.P.A. as much as 16.66% (Table 1).

**Table 1.** Distribution of Snacks containing Borax Based on Location and Number of Samples in the Kiyai Mojo Islamic Boarding School Jombang in 2021

No.	Location	Number of Samples	Number of samples positive for borax	Percentage
1.	Kiyai Mojo Putri Islamic Boarding School (K.M.PI)	14	6	42,85%
2.	Kiyai Mojo Putra Islamic Boarding School (K.M.PA)	6	1	16,66%
3.	Kiyai Mojo Islamic Boarding School (L.P.K.M)	10	2	20,00%

Based on the type of snacks, samples of snacks indicated to contain borax varied greatly. Of the 14 samples of snacks at the Kiyai Mojo Putri Islamic Boarding School (K.M.PI) which were tested for borax content, there were 6 samples that were positive for borax. Samples that were positive for borax included samples of Pilus, Gut Chips, Lompong Crackers, Egg Rolls, Rempeyek, and Potato Chips (Table 2). The results of testing 6 samples of snacks at the Kiyai Mojo Putra Islamic Boarding School (K.M.PA) showed that there was one sample of snacks that was positive for borax based on a qualitative test, namely instant noodles (Table 3).

**Table 2.** The results of testing samples of snacks at the Kiyai Mojo Putri Islamic Boarding School (K.M.PI)

No	Samples	Parameters	Result
1.	Tango wafers	Boraks	Negative
2.	Sweet bread	Boraks	Negative
3.	Noodle Kremes	Boraks	Negative
4.	Sausage	Boraks	Negative
5.	Noodles Lidi	Boraks	Negative
6.	Pilus	Boraks	<b>Positive</b>
7.	Fried peanut	Boraks	Negative
8.	Intestines Chips	Boraks	<b>Positive</b>
9.	Cashew nut	Boraks	Negative
10.	Lompong crackers	Boraks	<b>Positive</b>
11.	Egg Roll	Boraks	<b>Positive</b>
12.	Peanut brittle	Boraks	<b>Positive</b>
13.	Potato Chips	Boraks	<b>Positive</b>
14.	Macaroni	Boraks	Negative

**Table 3.** The results of testing samples of snacks at the Kiyai Mojo Putra Islamic Boarding School (K.M.PA)

No	Samples	Parameters	Result
1.	Meatball	Boraks	Negative
2.	Siomay Boiled	Boraks	Negative
3.	Cireng	Boraks	Negative

4.	Scallop	Boraks	Negative
5.	Fried dumplings	Boraks	Negative
6.	Instant noodles	Boraks	<b>Positive</b>

In addition to the boarding school area, qualitative borax testing was also carried out in the environment around the Kyai Mojo Islamic Boarding School. Of the 10 samples of snacks in the area, there were 2 samples that were positive for borax. The samples of snacks indicated to contain borax were peas and tofu crackers (Table 4).

**Table 4.** The results of testing samples of snacks at the Kiyai Mojo Islamic Boarding School Environment (L.P.K.M)

No	Samples	Parameters	Result
1.	Leker	Boraks	Negative
2.	batagor	Boraks	Negative
3.	Weci/ Ote-ote	Boraks	Negative
4.	Corn Omelet	Boraks	Negative
5.	Sweets	Boraks	Negative
6.	Jasuke	Boraks	Negative
7.	Martabak	Boraks	Negative
8.	Banana crackers	Boraks	Negative
9.	Pea	Boraks	<b>Positive</b>
10.	Tofu Crackers	Boraks	<b>Positive</b>

### Discussion

Food safety is one of the keys to managing human health, including students at the Kyai Mojo Islamic Boarding School Tambakrejo Jombang. The results showed that there were a total of 9 samples of snacks indicated to contain borax in the Kyai Mojo Islamic Boarding School Tambakrejo Jombang area. The presence of borax in santri snacks is a threat to the health of the students. Borax and formalin are prohibited from being used for food in accordance with the Regulation of the Minister of Health of the Republic of Indonesia Number 033 of 2012 concerning Food Additives.

The use of borax as an additive in food can cause interference / poison to humans. However, the toxicity effect of borax contained in food is not directly felt by consumers. This happens because borax will be absorbed by the body and stored cumulatively in the brain, testes and liver until the dose of borax in the body becomes high (Muhrrami, 2015). Saparinto & Hidayati (2006) state that borax is toxic to all cells in the body and its effect in the organs of the body depends on the concentration that enters the body. Kidneys are organs of the body that are easily affected compared to other organs because the highest levels will be reached when excreted. Toxins contained in borax will be very dangerous for the body's metabolic system, in food borax will be easily absorbed by the blood and stored in the liver. Borax can cause disorders of the reproductive system, cause irritation to the stomach, disorders of the liver, kidneys and testes.

### CONCLUSION

Based on the results of the research that has been done, it can be concluded that the snacks in the Kyai Mojo Islamic Boarding School Tambakrejo Jombang area, there were a total of 9 samples that were positive for borax compounds based on a qualitative test using turmeric extract. The most samples of borax snacks were found in the Kiyai Mojo Putri Islamic Boarding School (KMPI) with a percentage of 42.85%, followed by the Kiyai Mojo Islamic Boarding School Environment (LPKM), 20% and Kiyai Mojo Putra Islamic Boarding School (KMPA) with 16, 66%.

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