Journal of Global Research in Public Health ISSN: 2528-066X (Print), 2599-2880 (Online)
Vol. 6, No. 1, June, 2021, pp. 21-24

Identification Of Chlorine Content In Mantao Bread Sold In The City Of Parepare

Fitriana Bunyanis*, Dewi Lidiawati, Hawasiah

ITKES Muhammadiyah Sidrap, Indonesia
Corresponden Author: fitriana646@yahoo.com

Article history:
Received: March 8, 2021
Revised: April 24, 2021
Accepted: May 12, 2021

Keywords:
Chlorine,
Mantao Bread,
Parepare.

Background: *Mantao bread is a typical Parepare culinary that is in great demand and sought after by the public when visiting Parepare. However, in making the mantao bread, sometimes producers add a dangerous additive, namely chlorine. Chlorine is a chemical which when used by consumers can have a harmful impact on consumers. This study aimed to determine the chlorine content and to analyze qualitatively the chlorine content in mantao bread sold in Parepare.* ***Methods****: The research using two methods, namely color test and precipitation test.* ***Result****: there was no color change when tested for color and the results of the precipitation test showed no precipitate.* ***Conclusion****: Mantao bread sold in the city of Parepare does not contain chlorine.*

I. Introduction

Good health is the desire of every human being. Therefore, efforts to improve health must continue to be pursued in various ways. Advances in information system technology also help people to realize the need to consume healthy foods. Healthy food or food must not contain ingredients or contaminants that can endanger health, including dangerous food additives (BTP) that can cause disease or be toxic, preferably food must contain ingredients that support health (Laksami, 2001).

Food safety is a problem that must receive special attention in the implementation of overall health. The problem of food safety is the low responsibility of food producers and distributors regarding food quality and safety. This causes producers and distributors to often add chemicals to food products, one of the food additives that are prohibited from being added to rice is chlorine. Because chlorine is harmful and harmful to consumers. The use of chemicals in food makes the safety not guaranteed (WHO, 2006).(Rahmi & Nusantara, 2016). Basically food is a mixture of several chemical compounds and has been grouped such as carbohydrates, fats, proteins, vitamins, minerals, and water (Dewi et al, 2016).

Chlorine is a chemical used as a germ killer. Chlorine will react with water and form hypochlorous acid which is known to damage cells in the body. Chlorine is a gas in the form of a greenish yellow color with a quite pungent aroma. Chlorine is not a foreign thing in the use of food, chlorine is used as a bleaching agent for rice so that rice has quality standards (Darniadi in Wongkar, 2014). Minister of Health RI No. 033/Menkes/Per/IX/2012 states that chlorine is not listed as a Food Additive (BTP) in the allowed bleaching and starching group. One type of chlorine that is often used in the world in industry is sodium hypochlorite(Rohmah & Sulistyorini, 2017). The impact that will occur on chlorine depends on the level and level of toxicity (Norlatifah, 2012). Food safety is one of the main issues that need more attention especially in Indonesia. The existence of low knowledge, skills and responsibilities of food producers and distributors as well as the lack of ways to determine the need for healthy food for a food quality and safety can lead to the misuse of chemicals in food.(Sammulia et al., 2020) (Retno & Murdijati, 2014).

Chlorine can cause gastritis because it is corrosive and can damage the protective barrier on the gastric mucosa which makes the stomach susceptible to gastritis (Guyton & Hall, 2008).

Mantao is a traditional product originating from China which is made by fermentation and has been consumed by the Chinese people since 1500 years ago. Becoming one of the mast widely consumed fermented products which is 40 % of the total consumption of wheat flour (Kim et al, 2009).

Chlorine research in mantao bread was carried out considering the dangers of chlorine to health. Based on this background, it is necessary to conduct further research on the identification of chlorine compounds in mantao bread sold in the city of Parepare.

The formulation of the problem in this study is whether the mantao bread sold in the city of Parepare contains chlorine?. The purpose of this study was to determine the chlorine content in mantao bread sold in the city of Parepare and also to analyze qualitatively the chlorine content in mantao bread.

II. METHODS

This type of research is experimental. This study used a qualitative analysis method to determine the presence or absence of chlorine in mantao bread sold in Parepare. This research was carried out in June – August 2019 at the ITKES Muhammadiyah Sidrap integrated laboratory (Laboratory of Pharmaceutical Chemistry). The sample in this study was the original mantao bread in three bakeries in Parepare. The sampling technique is all samples taken and coded X, Y and Z.

The tools and materials used in this study were erlenmeyer, aluminum foil, filter paper, test tubes, analytical balance, parchment paper, mantao bread, aquadest, 10% potassium iodide, 5% AgNO3, acetic acid, 3N HNO3, and amylum maydis solution 1%.

The variable of this research is the independent variable is mantao bread and the dependent variable is the chlorine content.

III. RESULT

a. An overview of the chlorine content in mantao bread

The research conducted is an experimental study where this research is aimed at providing information about the chlorine content in mantao bread sold in the city of Parepare. The study was conducted using three different samples.

Based on the results of research conducted using the color test and precipitation test, it was found that the three samples used did not change color and did not form a precipitate, so it can be concluded that the three samples tested were negative and did not contain chlorine.

b. Qualitative analysis of chlorine content in mantao bread

The results of the qualitative analysis of the chlorine content in mantao bread using the color test method can be seen in table 1.

Table 1 Color Test

No.	Sample	Observation result			Color	Information
		Potassium Iodide	Amylum	Acetic acid		
1	X	Negative	Negative	Negative	Clear	Does not contain chlorine
2	Y	Negative	Negative	Negative	Clear	
3	Z	Negative	Negative	Negative	Clear	

Qualitative analysis carried out using the color test method is a basic step that is often carried out to determine whether the sample contains chlorine.

Table 1 shows that in sample X, after being tested using a color test using three different reagents, namely the addition of potassium iodide, amylum maydis and acetic acid, it produces a clear color or does not change color to blue so it can be concluded that sample X does not contain chlorine. The same results were also obtained for samples Y and Z where after the color test using 3 different

reagents, namely potassium iodide, amylum maydis and acetic acid did not change color to blue so it can be said that the three samples tested were free or negative from chlorine.

This is in accordance with the statement of Rosita et al., 2016 which said that qualitatively it is said to be positive for chlorine if after being added with potassium iodide and starch it will react and a clear color changes to blue.

The change in color from clear to blue in samples containing chlorine is caused because the chlorine in the sample will oxidize potassium iodide to produce I2 which will then react with starch solution to produce a blue complex (Sammulia et al., 2020). In simple terms the reaction is described as follows:

$Cl_2 + 2I \rightarrow 2Cl^- + I_2$

The second qualitative test was carried out by the precipitation test method. To strengthen the results obtained, the precipitation test was carried out using 3N HNO3 and AgNO3. The results of the research conducted can be seen in table 2.

Table 2 Precipitation Test

No.	Sample	Observation result	Information
1	X	Negative	No sediment
2	Y	Negative	No sediment
3	Z	Negative	No sediment
	Conclusion		**Negative**

Precipitation test is a test that involves salts which will later form a precipitate and are not easily soluble (Sammulia et al., 2020). Another study stated that a sample of white rice that had been given chlorine in the form of bayclin and added with 3N HNO3 and heated to boiling then added 5 more drops of AgNO3, could produce a white precipitate.(Tilawati et al., 2015).

The results of research conducted on sample X, using the precipitation test method, obtained results without sediment so that it can be concluded that sample X does not contain chlorine. The same results were obtained from the Y and Z samples after adding 3N HNO3 and AgNO3 did not form a white precipitate. So that it can be stated that the three samples tested were completely free of chlorine. The results of another study stated that from 9 samples taken from three markets located in Manado City, there was no rice containing chlorine after testing using the color reaction method and the iodometry method (Wongker et al., 2014).

Based on the research that has been done using 2 different qualitative methods, namely the color test and the precipitation test, the results showed that the three samples, namely samples X, Y, and Z, were tested free of chlorine compounds.

IV. CONCLUSION

Based on the results of research that has been carried out at the ITKES muhammadiyah sidrap integrated laboratory, it can be concluded that:

Research using the color test method showed that the mantao bread from the three samples did not contain chlorine because it did not produce a color change.

Research using the precipitation test method showed that the mantao bread from the three samples did not contain chlorine.

It is hoped that this research can be used as a reference for further research, especially related to the identification of chlorine content in food

V. ACKNOWLEDGEMENT

Thanks are due to all parties who participated in this research

VI. REFERENCES

Darniadi, S. (2010) 'Identifikasi Bahan Tambahan Pangan (BTP), Pemutih Chlorine pada Beras', Bogor : Balai Besar Pasca Panen. Jurnal Agrisistem,No: 1311-1317

Depkes RI. (2012) 'Permenkes Nomor 033/Menkes/Per/IX/2012 Tentang Bahan Tambahan Pangan'

Dewi, R., Zaenab, S. and Budiyanto, M. A. K. (2016) 'Analisis Kandungan Klorin pada Beras yang Beredar Di Pasar Besar Kota Malang Sebagai Sumber Belajar Biologi', Program studi pendidikan Biologi. FKIP Universitas Muhammadiyah Malang. Jurnal Ilmiah Biologi, 2(1): 2527-6204.

Guyton, A. C., and Hall, J. E. (2008) '*Buku Ajar Fisiologi Kedokteran (Terjemahan)'*, EGC.

Kim Y, Huang W., Zhu H. And Rayas-Duarte P. (2009) 'Spontaneous sourdough processing of Chinese Northern-style steamed breads and their volatile compounds', Food Chem 114:685–92.

Laksmi SB (2001) 'Potensi dan prospek bioteknologi dalam rangka penyediaan pangan menyehatkan', Fakultas teknologi pertanian teknologi pangan dan gizi. Institut pertanian bogor.

Norlatifah. (2012*)* 'Identifikasi Klorin secara Kualitatif Pada Beras Yang Dijual Di Pasar Besar Kecamatan Pahandut Palangka Raya*', Prosiding*. Vol 2. No.1.

Rahmi, S. and Nusantara, U. M. (2016) '*Identifikasi Kualitatifklorin Pada Beras Yang Diperjualbelikan Di Pasar'*, *2*(1), 72–77.

Retno and Murdijati (2014) '*Pendidikan Konsumsi Pangan Aspek Pengolahan Dan Keamanan',* Kencana. Jakarta.

Rosita, D., Zaenab, S. and Budiyanto, M.A.K. (2016) 'Analisis Kandungan Klorin Pada Beras Yang Beredar Di Pasar Besar Kota Malang Sebagai Sumber Belajar Biologi', Jurnal Pendidikan Biologi Indonesia. Vol.2 No. 1. e-ISSN: 2527-6204

Rohmah, S. and Sulistyorini, L. (2017) 'Gambaran Konsumsi Udang Berklorin Terhadap Keluhan Kesehatan Gastrointestinal Pekerja Sub Kontrak Perusahaan X', *Jurnal Kesehatan Lingkungan*, *9*(1), 57–65.

Sammulia, S. F., Marliza, H. and Siahaan, A. E. (2020) 'Identifikasi Zat Klorin (Cl) Dalam Beras Putih (Oryza Sativa) Yang Beredar Di Kota Batam', *J. Sains Dan Teknologi Pangan*, *5*(3), 2878–2885.

Tilawati, W., Agustina, A., and Sutaryono. (20150 'Identifikasi Penetapan Kadar Klorin (Cl2) Dalam Beras Putih di Pasar Klepu Dengan Metode Argentometri', CERATA Journal of Pharmacy Science. 6 (1) : 34-44

WHO. (2006) 'Bahaya Bahan Kimia pada pada Kesehatan Manusia dan Lingkungan (terjemahan)', Jakarta : EGC ; 2006

Wongker, Y .I., Jemmy, A. and Frenly, W. (2014) '*Analisis Klorin Pada Beras Yang Beredar Di Pasar Kota Manado*', PHARMACON. Jurnal Ilmiah Farmasi-UNSRAT Vol 3. No 3 (http://download. portalgaruda.org /article. Php ? article=1723, (diakses 27 November 2014).