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Test for Chlorine Content (Cl2) in Rice at Manonda Inpres Market, Palu

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ABSTRACT

This study aims to determine the chlorine content (Cl2) in rice at the Manonda Inpres Market in Palu by conducting laboratory tests. This type of research is a descriptive study with an observational approach. This research describes the examination of chlorine content (Cl2) in rice at the Manonda Inpres Market in Palu through laboratory tests. The object of this research is the total of 15 rice merchandise samples scattered in the Manonda Inpres Market, Palu. The results showed that the 15 rice samples were declared non-reactive, which means that all samples did not contain chlorine (Cl2). This study suggests that health agencies are expected to carry out health and food safety checks of hazardous food additives, in particular routine checks of chlorine (Cl2) content in rice.

INTRODUCTION

Good health is a desire for every human being. Therefore, efforts to improve health must be pursued in various ways. Advances in information system technology also help people to realize the need to consume healthful 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, otherwise food must contain ingredients that support health (1).

Food is the main basic need for every human being, because it contains compounds needed to restore and repair damaged tissue, regulate processes in the body, reproduce and produce energy for the benefit of various activities in life (2). Human needs for food are obtained from various vegetable and animal sources. Basically, food is a mixture of chemical compounds, which can be grouped into carbohydrates, fats, proteins, vitamins, minerals and water (3).

Rice with pure white color is more attractive to the public. With advances in food processing technology, making foodstuff distributors take the initiative to add food additives (BTM) to food (4). One of them is adding chlorine (Cl2) to rice. This is intended to make the color of the rice whiter and shiny. A dye is a colored object that has a chemical affinity for the object being colored. Synthetic dyes are dyes that come from chemical substances, most of which cannot be used as food coloring because they can cause health problems, especially liver function in our bodies. Coloring substances that are not in accordance with the requirements for use in snack drinks are a food safety problem that can harm consumers in terms of their health (5).

Regulation of the Minister of Health of the Republic of Indonesia Number 033 of 2012 concerning Food Additives, chlorine (Cl2) is not included in food additives that are permitted to be added to food for any purpose. The use of Cl2 in food can cause health problems both in the short and long term, especially in the gastrointestinal tract. Health problems that occur can be in the form of poisoning and health complaints such as ulcers, kidney and liver cancer (6).

The results of joint examinations between the Department of Industry, Trade, Cooperatives, and Tourism, the Health Service, the Agriculture Service, and the Food and Drug Administration, found chlorine in rice in several cities in Indonesia (Medan, Tangerang, Banten, Bandung, Bekasi, Bogor. and Manado) after laboratory tests (7). Likewise, research by experts in the field of food technology and nutrition, which confirmed the chlorine content

in rice which is widely circulating in the market. Of the 16 rice samples tested, 10 samples contained chlorine levels ranging from 20 ppm to 90 ppm (Gandapurnama, 2013) and the results of sudden inspections from the Bandung Food and Drug Administration (BBPOM) at Simpang Dago Market by inspection and investigation staff, Alfazri Anwar argued that the Kurmo and Cianjur types of rice contain chlorine (8).

Based on data from the Palu City Industry and Trade Service, there are 13 market locations scattered in Palu City. One of the largest wholesale markets of the 13 markets is the Manonda Inpres Market, Palu. In addition, the Inpres Market Manonda Palu is the most crowded market every day and this market is a meeting place for rice suppliers from various regions in Central Sulawesi. According to the results of interviews with the manager of the Manonda Inpres Market in Palu, there had never been any rice sampling for checking the chlorine content (Cl2) in that market, then continued with field observations that there were 15 rice traders and some of the rice merchandise were suspected of containing chlorine (Cl2) with the characteristics of thick white rice.

METHODOLOGY

This type of research is a descriptive study with an observational approach (9). This study describes the examination of the chlorine content (Cl2) in rice at the Manonda Presidential Market in Palu through laboratory tests. The research location for rice sampling was carried out at the Manonda Inpres Market, Palu, while the sample examination was carried out at the UPT Health Laboratory of Central Sulawesi Province. When this research was conducted in February - March 2020. The object in this study was the entire rice merchandise, totaling 15 rice samples scattered in the Manonda Inpres Market, Palu.

The materials used in this research are; each sample of 10 grams of rice, 50 ml of distilled water, 1% starch and 10% potassium iodide. The tools used are; belnder, analytical balance, 50 ml Erlenmeyer tube, filter paper, dropper pipette, funnel, stirring rod, label paper and stationery.

Research procedures for sampling, namely; take and enter the sample into the container that has been prepared, record the number, time, date and location of the sample.

Laboratory examination procedures (color reaction method test), namely; smooth and weigh each sample as much as 10 grams, put the sample into the Erlenmeyer tube, add 50 ml of distilled water, shake then filter the sample using filter paper, take 50 ml of filtrate, then take 2 ml of filtrate, add 10% potassium iodide and starch as much as 1%, then observes the change in reaction that occurs, if the solution changes color to blue this indicates that the rice sample contains chlorine (Cl2), if there is no change in color it can be ascertained that the rice sample does not contain chlorine (Cl2).

RESULTS AND DISCUSSION

The results of chemical checks on rice carried out at the Central Sulawesi Provincial Health Laboratory Center showed that there was no chlorine content (Cl2) in rice which was scattered in the Manonda Inpres Market, Palu. Based on the data obtained from the results of the examination, that the 15 samples of rice scattered in the Manonda Inpres Market in Palu are of good chemical quality so that they are safe and fit for consumption by the public.

The rice that was tested from 15 samples had almost the same physical characteristics, where the rice was white, clean and shiny which was thought to contain substances that were harmful to health (10). After the laboratory test was carried out using the color reaction method test with added chemicals in the form of 50 ml distilled water, 1% starch and potassium iodide, it showed that the results of the 15 rice samples did not change color, this can be ascertained that the 15 rice samples did not contain ingredients Chlorine (Cl2) chemical (11).

To ensure and prove more accurate results, the 15 rice samples were tested twice and found the same results, namely that the rice did not contain hazardous food additives (-) chlorine (Cl2) (12).

The laboratory results found no chlorine (Cl2) content in rice, indicating that rice traders scattered in the Manonda Palu Inpres Market know and are aware of the quality of rice which must be avoided from chemical mixtures, so it is possible that the rice is not harmful to health, consumers (13).

The quality of rice is safe or not depends on the level of honesty of the rice traders (14). It is not uncommon to find some traders in big cities who cheat and still do not understand the dangers of chemical food additives that can cause health problems (15).

Health problems due to eating foods containing chlorine (Cl2) make the stomach prone to ulcer disease (16). In the long run it will cause kidney disease and cancer.

CONCLUSION

This study shows the results of the Central Sulawesi Province Health Laboratory test results, it can be concluded that the rice scattered in the Mandonda Palu Presidential Market does not contain chlorine (Cl2), so it is safe for health and suitable for consumption by the community.

REFERENCES

1. Tilawati A, Kafid N. Dialog Sebagai Upaya menepis Pandangan Negatif atas keragaman Agama. Al-A'raf J Pemikir Islam dan Filsafat. 2015;12(2):33–40.
2. Speakman JR, Blount JD, Bronikowski AM, Buffenstein R, Isaksson C, Kirkwood TBL, et al. Oxidative stress and life histories: unresolved issues and current needs. Ecol Evol. 2015;5(24):5745–57.
3. Rosita T, Yuniati T. Pengaruh kepuasan kerja terhadap kinerja karyawan dengan komitmen organisasional sebagai variabel intervening. J Ilmu Dan Ris Manaj. 2016;5(1).
4. Tadesse Kassie WY, Haddis A, Tadesse E, Tadesse T, Teshager L. Lifestyle and Personal Health. 2004;
5. Wyrwa J, Barska A. Innovations in the food packaging market: Active packaging. Eur Food Res Technol. 2017;243(10):1681–92.
6. Fitriani E. Faktor Risiko Yang Berhubungan Dengan Kejadian Tuberkulosis Paru (Studi Kasus di Puskesmas Ketanggungan Kabupaten Brebes Tahun 2012). Unnes J Public Heal. 2013;2(1).
7. AMINAH MS. IMPLEMENTASI NILAI-NILAI PANCASILA MELALUI PELAJARAN PPKn TERHADAP PEMBENTUKAN KARAKTER SISWA KELAS VIII DI SMP AL MUHAMMAD CEPU. IKIP PGRI BOJONEGORO; 2019.
8. Setiawan B, Innatesari DK, Sabtiawan WB, Sudarmin S. The development of local wisdom-based natural science module to improve science literation of students. J Pendidik IPA Indones. 2017;6(1).
9. Rezigalla AA. Observational study designs: Synopsis for selecting an appropriate study design. Cureus. 2020;12(1).
10. Sacks E, Moss WJ, Winch PJ, Thuma P, van Dijk JH, Mullany LC. Skin, thermal and umbilical cord care practices for neonates in southern, rural Zambia: a qualitative study. BMC Pregnancy Childbirth. 2015;15(1):1–11.
11. Fiss EM, Rule KL, Vikesland PJ. Formation of chloroform and other chlorinated byproducts by chlorination of triclosan-containing antibacterial products. Environ Sci Technol. 2007;41(7):2387–94.
12. Devendar P, Yang G-F. Sulfur-containing agrochemicals. Sulfur Chem. 2019;35–78.
13. Sharafi K, Yunesian M, Nodehi RN, Mahvi AH, Pirsaheb M. A systematic literature review for some toxic metals in widely consumed rice types (domestic and imported) in Iran: human health risk assessment, uncertainty and sensitivity analysis. Ecotoxicol Environ Saf. 2019;176:64–75.
14. Davidson EA, Suddick EC, Rice CW, Prokopy LS. More food, low pollution (Mo Fo Lo Po): a grand challenge for the 21st century. J Environ Qual. 2015;44(2):305–11.
15. Degreef F. "What's the deal with these strange substances in our food?" The representation of food additives by Belgian consumer organizations, 1960–1995. Food Foodways. 2019;27(1–2):144–63.
16. Mohsen IH, Mohsen AH, Zaidan HK. Health effects of chlorinated water: A review article. Pakistan J Biotechnol. 2019;16(3):163–7.