

Education of food Additional Materials on The Selection Types of Snacks Students Family Welfare Education University of Syiah Kuala

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Abstract

The background of this research is that there are still students at Family Welfare Education Study Program University of Syiah Kuala who consume snacks that are made from harmful additives. The purpose of this study was to determine the application of knowledge of food additives in the form of dyes, sweeteners, and preservatives in snacks, fruit, and beverages. The research method used is a descriptive method which will describe the actual situation the students Family Welfare Education Study Program. The population of this research is 100 students of Family Welfare Education Study Program who have studied Basic Chemistry and Nutrition. The sample used was determined by simple random sampling of 50 students. The results showed that the average number of students did not apply knowledge of food additives in the selection of daily snacks. Recommendations are given to students to be able to better apply knowledge of food additives in the selection of snacks.

Keywords: food additional, materials, selection types, snacks.

Introduction

Students of the Family Welfare Education Study Program at Syiah Kuala University generally spend time outside the home or on campus, so that to meet their food needs, students are faced with street food, both canteen snacks, food stalls, food stalls or coffee shops around the campus environment. Snack food is a type of food that is sold at street vendors, roadside, at stations, in markets, residential areas and similar locations (Hadiana, 2018). Snack foods can be grouped into side foods, snack foods, drinks and fruit (Candra et al., 2022). Side food is the main food for example chicken noodles, *uduk* rice, meatballs, dumplings and others (Sumunar & Estiasih, 2015). Snacks are foods that are consumed between two meals (Emilia et al., 2021). Snacks or snacks consist of two parts, first snacks or wet snacks. Both snacks or dry snacks (Payu, 2016).

Meanwhile, there are still many street foods that are sold around campus and schools in general, there are still many that are not safe. Colorants, sweeteners and

preservatives are types of food additives. These additional ingredients are often found in every snack food that is sold around the campus or around the school environment. These food additives are widely used by street food vendors in the manufacture of snacks such as traditional cakes, various kinds of ice, fruits, snacks or packaged snacks and many other snacks. Based on the 2018 BPOM survey on a national scale, regarding School Snacks (PJAS). As many as 55% of schools surveyed already have regulations on PJAS and there are 42% of schools that do not have regulations on PJAS. Most of these regulations (95%) were issued by schools, although some were issued by the Health Office and the District/City Education Office. Most of these regulations (68.4%) regulate students, then regulate PJAS vendors (65.7%) and regulate school canteens (57.0%).

The survey results from the Drug and Food Control Agency (BPOM, 2018) show that 80% of school children consume street food in the school environment, both from guards and around the school canteen. Frequency of snacks more than 11 times per week (66%). Based on Extraordinary Events data (KLB, 2012-2013) regarding snacks for school children in Indonesia, it was found that in Indonesia the group of elementary school students (SD) is the group that most often experiences poisoning. The survey was conducted in 30 cities in 2018 from 4,500 elementary schools and Islamic elementary schools from a total of 5,566 results that did not meet the requirements as much as 50%. Based on data from BPOM RI in 2018 the cause of food poisoning is household cooking as much as 49.15% incidence, snack/fast food as much as 15.25% incidence, followed by processed food and catering food, each with 15.25% occurrences. In the same year, 2018 cases of food poisoning were caused by microbial contamination as much as 30.00% incidents and chemical contamination as many as 3.33% incidents. This condition encourages efforts to fulfil nutritional needs and food safety to be increased as much as possible. One of the efforts made by WHO is the Global Strategy for Food Safety, with the main strategy of providing health promotion still running separately so that the results are not optimal, efforts towards a comprehensive approach and integrative (Rahmawati et al., 2018).

The use of these materials if consumed frequently will harm the health of the body. Rhodamine B and Methanyl yellow can cause liver and kidney damage, bladder cancer and liver disorders, while borax and formalin can cause kidney and liver neurological disorders. And excessive use of synthetic sweeteners can cause bladder cancer, asthma, brain cancer, and infertility. Students in choosing snacks are more likely to choose snacks in terms of taste, appearance, shape and aroma, while in terms of the safety of these snacks, students pay less attention to the chemical substances contained in a snack food. Basically, students in choosing snacks are influenced by internal factors and external factors. Internal factors include knowledge, especially knowledge of nutrition, intelligence, perception, emotion and motivation from outside (Notoatmodjo, 2003; Purtiantini, 2010).

Based on the opinion expressed by (Notoatmodjo, 2003), it also happened to the students of the Family Welfare Education Study Program at Syiah Kuala University in choosing snacks every day. The fact is that the internal factor regarding nutritional knowledge, especially in the ability to choose healthy snacks, is knowledge of Food Additives. Food Supplementary Materials are studied by students of Syiah Kuala University Family Welfare Education Study Program in Basic Chemistry and Nutrition Science Courses. The purpose of this research is on the application of knowledge of food additives (BTP) about colorants, sweeteners, preservatives in the selection of snacks for students of the Syiah Kuala University Family Welfare Education Study Program including: Snack Food; Fruit Snacks and Snack Drinks.

Literature Review

Food additives can be divided into several types, one of the food additives that are widely used in food, especially in snacks, are dyes, sweeteners and preservatives (Julaeha et al., 2016). Dyes are one type of food additive that is widely used by street food vendors in the form of drinks or food (Helmawati, 2015). Sweeteners are chemical compounds that are often added and used for the purposes of processed food products, industry as well as beverages and health foods. Sweeteners serve to improve taste and aroma, improve physical properties. The purpose of sweeteners as preservatives is to improve chemical properties as well as a source of calories for the body (Nuraini, 2019). Preservatives in food are added with the intention of inhibiting or stopping the activity of microorganisms such as bacteria, molds, and yeasts so that food products can be stored longer. sticky and enrich vitamins and minerals (Yuliarti, 2007). In the food industry, formalin is widely used to preserve salted fish, tofu, noodles, tempeh, chicken, meatballs and several other types of food because it has antimicrobial activity and can kill food-destroying bacteria. Formalin can cause poisoning in the body, stomach irritation, vomiting, digestive disorders, liver, kidneys, central nervous system, diarrhea mixed with blood, allergies. In the long term, consuming formalin found in food can cause cancer (Habibah, 2013). Borax is a preservative that is quite well known in addition to formalin, borax is usually used in the paper, glass, wood preservative, pest control, toilet cleaner, and cosmetic industries. In Indonesia itself, the prohibition of borax in food has been regulated in the Regulation of the Minister of Health of the Republic of Indonesia Number 722/Menkes/Per/IX/88 (Hartati, 2017).

Various methods have been developed in the world of education in conveying messages aimed at increasing knowledge, attitudes and skills. Lectures and questions and answers are quite effective methods of conveying messages. One of the counselling media that can be used to attract students' attention is pictures. Pictures can lead to diverse student creativity in expressing them. The advantage of this image media is that it can clarify a problem by seeing clear pictures and in accordance with the subject matter. Students will be clearer about a subject or material delivered by the teacher (Hamida & Zulaekah, 2012).

Food safety is something that must be considered because it can have an impact on health, both for children and adults. According to data from the Food and Drug Monitoring Agency (BPOM), throughout 2012, the incidence of poisoning due to consuming food was the highest, namely 66.7%, compared to poisoning due to other causes, such as drugs, cosmetics, and others. One of the causes of food poisoning is the presence of chemical contamination in the food (Paratmanitya & Aprilia, 2016). Cases of chemical contamination that are still frequently encountered are the presence of hazardous materials such as formaldehyde, borax, and textile dyes in food. These ingredients should not be present in food because they can be harmful to health, but for reasons of reducing production costs and extending the shelf life, many manufacturers still use these ingredients. One type of food that often contains hazardous materials is the snack food class, especially those sold at schools (Nurbiyati, 2014).

Chronic consumption of formalin can cause irritation of the mucous membranes and is carcinogenic, while continuous consumption of borax can interfere with intestinal digestion, disorders of the nervous system, depression, and mental disorders. For rhodamine B, its use can cause liver damage, even liver cancer. The results of research on healthy schools conducted by the Ministry of National Education's Center for Physical Quality Development in 2007 in 640 elementary schools in 20 provinces studied, as many as 40% did not have canteens. Meanwhile, of those who already

have a canteen (60%), 84.3% of the canteens do not meet health requirements (Giesen et al., 2010).

Research Method

The qualitative method in this study is intended to describe how the Application of Knowledge of Food Additives in the Selection of Snacks for Students of the Family Welfare Education Study Program at Syiah Kuala University. The population in this study were students who had studied Basic Chemistry and Nutrition Science courses in which were taught about Food Additives with a total of 100 students. The sampling technique in this study is simple random sampling or a simple random technique. This technique was taken because it is a probability sampling, namely a sampling technique that provides equal opportunities for each member of the population. The research instrument used in this study was a questionnaire or questionnaire with a measurement scale, namely the Likert scale.

Data analysis is used to process a research data. The analysis in this study goes through several stages including checking data and tabulating data with variable measurements that refer to the Likert scale where for the purposes of quantitative analysis the answers can be scored or weighted with a score of 1-5, then broken down into data percentages, data interpretation and scoring, with the following categories:

- a. 55 – 98 = Very little applied (SKD)
- b. 99 – 142 = Less applied (KD)
- c. 143 – 186 = Simply applied (CD)
- d. 187 – 230 = Applied (D)
- e. 231 – 275 = Very applied (SD)

Results

The findings (Figure 1) from this study indicate that the application of knowledge of food additives in the selection of snacks for students of the Family Welfare Education Study Program at Syiah Kuala University in the form of snacks seen from dyes, sweeteners and preservatives, the average number of scores obtained is 122, p. This shows that the application of Food Additives (BTP) on snack foods is in the less applied category. The average number of scores for the application of BTP knowledge to fruit snacks related to dyes, sweeteners, and preservatives obtained is 135 and is in the less applied category, while the average score for beverage selection is 140 and is in the less applied category.

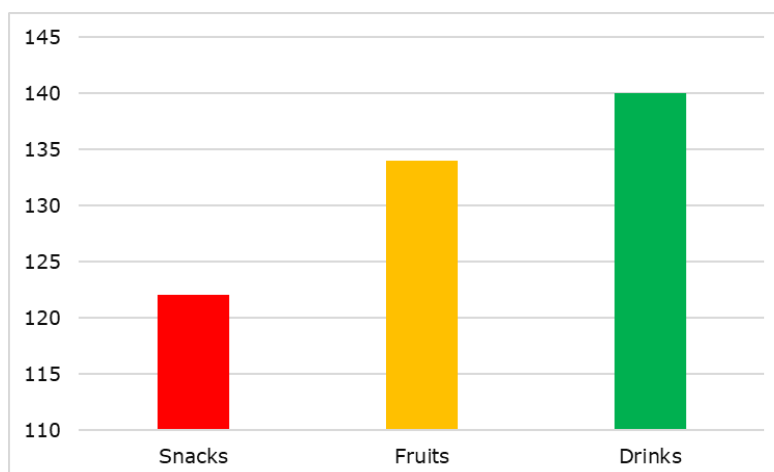


Figure 1. Results of the Analysis of the Application of Additional Knowledge of Food

Discussion

The results of the findings can be seen that the application of BTP knowledge to snacks, fruit and beverages related to the use of dyes, sweeteners and preservatives is in the less applied category with the acquisition of an average total score for each snack food, which is 122 average scores. total for snack foods, 134 for fruit snacks and 140 for snack drinks. It can be seen from these results that students do not apply knowledge of food additives in the selection of snack foods related to dyes, sweeteners and preservatives in the selection of daily snacks.

Food additives in general are widely used by sellers of snack drinks which are commonly used in the form of sweeteners, but there are sellers who use dyes in snack drinks that are sold. The use of preservatives in snack drinks is usually used in packaged drinks. Food additives used are usually food additives that are permitted by the government, students in general have studied food additives that have been permitted by the government, but in fact students lack knowledge of food additives including dyes, sweeteners, preservatives in snack drinks. The use of unsafe food additives will pose a danger. Saccharin and sodium cyclamate are artificial sweeteners that are widely used. Artificial or synthetic sweeteners are additives that can provide a sweet taste in food, but have no nutritional value. Examples are saccharin, cyclamate, aspartame, dulcine, synthetic sorbitol, and nitro-propoxy-aniline. Among the various types of synthetic sweeteners, only a few are permitted to be used in food according to the Regulation of the Minister of Health of the Republic of Indonesia Number 208/Menkes/per/IV/1985, including saccharin, cyclamate, and aspartame in limited quantities or with certain doses. The use of saccharin increases the risk of cancer only a few are allowed to be used in food according to the Regulation of the Minister of Health of the Republic of Indonesia Number 208/Menkes/per/IV/1985, including saccharin, cyclamate, and aspartame in limited quantities or with certain doses. The use of saccharin increases the risk of cancer only a few are allowed to be used in food according to the Regulation of the Minister of Health of the Republic of Indonesia Number 208/Menkes/per/IV/1985, including saccharin, cyclamate, and aspartame in limited quantities or with certain doses. The use of saccharin increases the risk of cancer (Wariyah & Dewi, 2012).

Materials borax, Rhodhamin B, Menthanil yellow, saccharin, can accumulate in the human body which in the long term causes diseases such as cancer and tumors (Febryanto, 2017). In Indonesia, regulations regarding the use of dyes that are permitted and prohibited for food are regulated through the Decree of the Minister of Health of the Republic of Indonesia Number 722/Menkes/Per/XI/88 concerning food additives. However, there is often misuse of the use of dyes for any food, for example, dyes for textiles and leather are used to color food. This is explained as very dangerous for health because of the heavy metal residue in the dye. The emergence of such abuse is partly due to public ignorance about dyes for food, and besides that, the price of dyes for industry is much cheaper than dyes for food.

Borax is a preservative that is quite well known in addition to formalin, borax is usually used in the paper, glass, wood preservative, pest control, toilet cleaner, and cosmetic industries. In Indonesia itself, the prohibition of borax in food has been regulated in the Regulation of the Minister of Health of the Republic of Indonesia Number 722/Menkes/Per/IX/88. The danger of borax when it enters the body can poison the body which is irritant. Borax will accumulate in the brain, liver, and fat tissue. Disturbances caused include nausea, vomiting, diarrhea, stomach cramps, skin irritation, blood circulation disorders. While in the long term, borax can cause damage to the kidneys, testes, stomach, stimulate the central nervous system,

coma and increase the risk of death. Consuming borax above the threshold can cause poisoning (Shofi et al., 2020).

Based on the results of the research that has been obtained, the authors propose implications and recommendations that are expected to provide input for Syiah Kuala University students, especially the Family Welfare Education Study Program regarding the study of choosing snacks with ingredients that are not harmful to the body, namely, it is hoped that students will have more knowledge of food additives. applied again in the selection of snacks.

Conclusions

The application of Knowledge of Food Additives related to the selection of snacks based on dyes, sweeteners and preservatives is in the less applied category. This shows that many students still do not apply BTP knowledge in the form of dyes, sweeteners and preservatives in snack foods such as batagor, dumplings, fried foods, cireng, cilok, lontong, and chips. The application of Knowledge of Food Additives related to the selection of fruit snacks based on dyes, sweeteners and preservatives is in the less applied category. This shows that many students still do not apply BTP knowledge in the form of dyes, sweeteners and preservatives in snacks such as fruit soup snacks, sliced fruit, salad, and fruit salad. The application of Knowledge of Food Additives related to the selection of snacks based on dyes, sweeteners and preservatives is in the category of less applied. This shows that there are still many students who do not apply BTP knowledge in the form of dyes, sweeteners and preservatives in snacks such as juice snacks, mineral water, packaged drinks, and various kinds of ice.

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References

- Candra, I. P., Singapurwa, N. M. A. S., & Suariani, L. (2022). Pengolahan Pangan Jajanan Tradisional pada Kelompok Kusuma Dewi di Kabupaten Jembrana, Bali. *PengabdianMu: Jurnal Ilmiah Pengabdian Kepada Masyarakat*, 7(2), 324–331.
- Emilia, E., Juliarti, J., & Akmal, N. (2021). Analisis Konsumsi Makanan Jajanan Terhadap Pemenuhan Gizi Remaja. *Jurnal Gizi dan Kuliner (Journal of Nutrition and Culinary)*, 1(1), 23–30.
- Febryanto, M. A. B. (2017). Hubungan Antara Pengetahuan dan Sikap dengan Perilaku Konsumsi Jajanan di MI Sulaimaniyah Jombang: The Relationship between Knowledge and Attitude with Behavior of Snack Consumption in MI Sulaimaniyah Jombang. *Jurnal Ilmiah Kebidanan (Scientific Journal of Midwifery)*, 3(1), 51–59.
- Giesen, J. C. A. H., Havermans, R. C., Douven, A., Tekelenburg, M., & Jansen, A. (2010). Will Work for Snack Food: The Association of BMI and Snack Reinforcement. *Obesity*, 18(5), 966–970.
- Habibah, T. P. Z. (2013). Identifikasi Penggunaan Formalin pada Ikan Asin dan Faktor Perilaku Penjual di Pasar Tradisional Kota Semarang. *Unnes Journal of Public Health*, 2(3).

- Hadiana, A. B. (2018). Identifikasi Siklamat pada Pangan Jajanan Anak Sekolah dan Keluhan Kesehatan. *Jurnal Kesehatan Lingkungan*, 10(2), 191–200.
- Hamida, K., & Zulaekah, S. (2012). Penyuluhan Gizi Dengan Media Komik untuk Meningkatkan Pengetahuan Tentang Keamanan Makanan Jajanan. *KEMAS: Jurnal Kesehatan Masyarakat*, 8(1), 67–73.
- Hartati, F. K. (2017). Analisis Boraks Dengan Cepat, Mudah dan Murah. *Jurnal Teknologi Proses dan Inovasi Industri*, 2(1).
- Helmawati, T. (2015). *Lezat Sih tapi Sehat Nggak Ya*. Yogyakarta: Notebook.
- Julaeha, L., Nurhayati, A., & Mahmudatus'adah, A. (2016). Penerapan Pengetahuan Bahan Tambahan Pangan pada Pemilihan Makanan Jajanan Mahasiswa Pendidikan Tata Boga UPI. *Media Pendidikan, Gizi, dan Kuliner*, 5(1).
- Notoatmodjo, S. (2003). *Pendidikan dan Perilaku Kesehatan*. In Jakarta: Rineka Cipta. Rineka Cipta.
- Nuraini, N. (2019). "Hubungan Pola Konsumsi Jajan Dengan Kejadian Diare pada Anak Sekolah Dasar (Studi di SDN Mangunharjo 6 Kota Probolinggo)". *Doctoral Dissertation*. STIKes Insan Cedekia Medika Jombang.
- Nurbiyati, T. (2014). Pentingnya Memilih Jajanan Sehat Demi Kesehatan Anak. *Asian Journal of Innovation and Entrepreneurship (AJIE)*, 3(03), 192–196.
- Paratmanitya, Y., & Aprilia, V. (2016). Kandungan Bahan Tambahan Pangan Berbahaya pada Makanan Jajanan Anak Sekolah Dasar di Kabupaten Bantul. *Jurnal Gizi dan Dietetik Indonesia (Indonesian Journal of Nutrition and Dietetics)*, 4(1), 49–55.
- Payu, C. (2016). Pembuatan Cemilan Sagu Higienis untuk Meningkatkan Penghasilan Kelompok Pengrajin Kue di Desa Bua Kecamatan Batudaa Kabupaten Gorontalo. *Jurnal Pengabdian Kepada Masyarakat*, 22(3), 103–109.
- Purtiantini, P. (2010). "Hubungan Pengetahuan Dan Sikap Mengenai Pemilihan Makanan Jajanan Dengan Perilaku Anak Memilih Makanan Di Sdit Muhammadiyah Al Kautsar Gumpang Kartasura". *Doctoral Dissertation*, Universitas Muhammadiyah Surakarta.
- Rahmawati, S., Farahdiba, A. U., Alfian, O., & Adhly, R. B. (2018). Identifikasi Total Coliform, *E. coli* dan *Salmonella spp.* sebagai Indikator Sanitasi Makanan Kantin di lingkungan Kampus Terpadu Universitas Islam Indonesia. *Jurnal Sains & Teknologi Lingkungan*, 10(2), 101–114.
- Shofi, M., Putri, M. P., Manggara, A. B., & Wuryandari, M. M. R. E. (2020). Peningkatan Pengetahuan Bahaya dan Deteksi Bahan Kimia Berbahaya Pada Bahan Makanan. *Journal of Community Engagement and Empowerment*, 2(2).
- Sumunar, S. R., & Estiasih, T. (2015). Umbi Gadung (*Dioscorea hispida* Dennst) Sebagai Bahan Pangan Mengandung Senyawa Bioaktif: Kajian Pustaka [In Press Januari 2015]. *Jurnal Pangan dan Agroindustri*, 3(1), 108–112.
- Wariyah, C., & Dewi, S. H. C. (2012). Penggunaan Pengawet dan Pemanis Buatan pada Pangan Jajanan Anak Sekolah (PJAS) di Wilayah Kabupaten Kulon Progo-DIY. *Agritech*, 33(2), 146–153.
- Yuliarti, N. (2007). *Bahaya Dibalik Lezatnya Makanan*. Yogyakarta: Andi Offset.