Artikel Penelitian

KARAKTERISTIK GIZI DAN MIKROBIOLOGI PUDING DADIH SEBAGAI SUPLEMEN MAKANAN ANAK TERINFEKSI SARS-COV-2

JKMA
Jurnal Kesehatan Masyarakat Andalas
diterbitkan oleh:
Program Studi S-1 Kesehatan Masyarakat
Fakultas Kesehatan Masyarakat Universitas Andalas
p-ISSN 1978-3833
e-ISSN 2442-6725
16(1)28-31
http://jurnal.fkm.unand.ac.id/index.php/jkma/

Diterima 1 Oktober 2021
Disetujui 21 Maret 2022
Dipublikasikan 28 Maret 2022

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Abstrak

The Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2) yang menyebabkan pandemi global COVID-19 merupakan penyakit mematikan yang menyebabkan ribuan korban setiap hari. Oleh karena itu, harus ada upaya tertentu untuk mengurangi risiko perkembangan penyakit, termasuk peningkatan sistem kekebalan tubuh individu seperti suplementasi probiotik. Dadih merupakan produk susu yang diperoleh dari fermentasi susu kerbau yang mengandung berbagai gizi bagi tubuh manusia, terutama probiotik yang bermanfaat untuk mengurangi risiko infeksi COVID-19 pada anak. Penelitian ini bertujuan mengetahui kandungan gizi dan mikrobiologi puding dadih sebagai suplemen tambahan pada anak terkonfirmasi positif COVID-19. Rancangan penelitian adalah menggunakan True Experiment dengan Rancangan Acak Lengkap (RAL) yang terdiri dari empat formula, yaitu F0 sebagai formula standar, kemudian F1, F2, dan F3 sebagai formula perlakuan dengan penambahan dadih masing-masing 50, 60, 70, dan 80 gram. Penelitian ini diawali dengan analisis nilai gizi biokimia pada laboratorium di Puslitbang Padang dan Standardisasi Industri. Selain itu juga ditentukan jumlah kuantifikasi total Bakteri Asam Laktat yang dianalisis di laboratorium mikrobiologi Fakultas Teknologi Pertanian Universitas Andalas. Gizi dan bakteri asam laktat pada puding dadih berpotensi sebagai suplemen makanan, terutama untuk anak-anak dengan infeksi COVID-19. Disarankan untuk memberikan dadih probiotik kepada anak-anak untuk melawan stres oksidatif dan peradangan, dan pengaturan COVID-19.

Kata kunci: Anak, Dadih, Suplemen makanan, SARS-CoV-2

CHARACTERISTICS OF NUTRIENTS AND MICROBIOLOGICAL DADIH PUDING AS FOOD SUPPLEMENTATION FOR CHILDREN WITH SARS-COV-2 INFECTION

Abstract

The Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2) that cause COVID-19 global pandemic is a devastating disease causing thousands of victims every day. Therefore, there must be a certain effort to reduce the risk of the disease progress, including improvement of individual immune system like the probiotic supplementation. Meanwhile, dadih is a dairy product obtained from fermented buffalo milk contains various nutrients for human body, especially probiotics that beneficial for reducing the risk of COVID-19 infection in children. The aim of the study was to determine the nutritional and microbiological content of dadih pudding as additional supplementation in children confirmed positive for COVID-19. The study design was True Experiment using Completely Randomized Design (CRD). It consisted of four formulas. They were F0 as the standard formula, then F1, F2, and F3 as the treatment formula by adding dadih 50, 60, 70, and 80 grams, respectively. This study was initiated with the analysis of biochemical nutritional value at a laboratory in Padang Research Center and Industry Standardization. Besides, it also determined the number of total Acid Lactic Bacterial quantification which was analyzed at microbiology laboratory, Agricultured Technology Faculty, Universitas Andalas. Nutrients and lactic acid bacteria in dadih pudding are potential as food supplementation, especially for children with COVID-19 infection. It is strongly recommended to give probiotic dadih to children in order to counter oxidative stress and inflammation, and the setting of COVID-19.

Keywords: Children, Dadih, Food supplementation, SARS-CoV-2

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Introduction

The disease causing the main problem in the world today is the outbreak of the Covid-19 virus. Corona virus are a large family of virus that cause disease ranging from mild to severe symptoms. Meanwhile, the Novel Coronavirus is a new type of virus that has never been previously identified in human life. However, since December 2019, this disease had been first identified in Wuhan, China. Covid-19 disease is an infectious disease that causing an acute respiratory syndrome manifestation [(1)]. The Covid-19 outbreak has been increasing, caused nearly 219 million people in the world exposed and 4.55 million who died. In Indonesia, as many as 4.2 million people were affected and 141,000 people died [(2)]. Until September 21, 2021 where 88,879 people were confirmed positive, including those aged 0-18 years to be exposed as well.

Many strategy of Covid-19 management were done, including imunomodulator supplementation from high quality nutrients, such as probiotic. Dadih is a dairy product obtained from fermented buffalo milk contains various nutrients for human body, especially probiotics that beneficial for reducing the risk of Covid-19 infection in children. Probiotics are live microorganisms which, when given in sufficient quantities, are beneficial for improving the health of the host [(3)]. Dadih is a source of probiotics that can improve a person's health status [(4)]. One of the benefits of dadih is the content of lactic acid which is formed from the fermentation of buffalo milk at the room temperature for 24-48 hours [(5)]. The various lactic acids involved in dadih fermentation which can inhibit the growth of certain pathogens, can be used for further research, product development, and clinical intervention in humans [(6)].

The purpose of this study is to determine the nutritional and microbiological content of dadih pudding as additional supplementation in children confirmed positive for Covid-19. The dadih pudding is expected to be able to increase the child's immunity to fight the Covid-19 pathogen.

Method

The design of this research is True Experiment using Completely Randomized Design (CRD). The product in this study is instant pudding, well known with dadih pudding, with a calorific value of 70 cal with the addition of dadih. Each pudding sample is divided into 4 formulas, F0, F1, F2, and F3. F0 is a standard formula, F1 pudding with the addition of 60 grams of dadih, F2 with the addition of 70 grams of dadih, and F3 with the addition of 80 grams of dadih. In addition to different dadih content, the addition of water to the pudding formula is also different.

In this study, analysis of the nutritional content of pudding was carried out in the Baristand laboratory and microbiological analysis was carried out in the Agricultural Technology Laboratory Universitas Andalas. The nutritional value and content of the best lactic acid bacteria will be selected as the formula in order to give as supplementation for Covid-19 patients.

Results

In this study, pudding supplementation with the addition of dadih is determined as the selected formula after proximate test and LAB (Lactic Acid Bacteria) test. The proximate test conducted to determine the calorie, protein, fat, and carbohydrate content of the dadih pudding formula. Meanwhile, the LAB test is conducted to determine the amount of LAB in dadih pudding.

The proximate test is one of the determining factors in product manufacture because this test will produce the nutritional value of the product as shown in Table 1.

Table 1.Nutritional content of Covid-19 Dadih Pudding

Nutrients	Total Amount (gr)	Total Energy (Kcal)
Protein	3.87	15.48
Carbohydrates	17.59	70.36
Fat	10.91	98.19
Total Energy		184.03

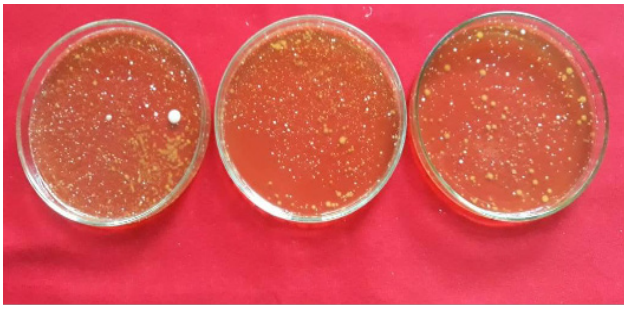
Based on the Table 1 and compared to the data in the Table 2, it is seen that the energy content of chocolate pudding and mango pudding

on average meets energy need of 10-15% of daily energy need. The protein nutritional content in mango pudding and chocolate pudding is very different, where the protein content in chocolate pudding is higher, namely 15.91 grams, while mango pudding is only 5.66 grams. Related to the fat content, mango pudding contains higher fat compared to chocolate pudding, likewise with the carbohydrate content.

Table 2. Proximate Analysis of Dadih Pudding

Pudding	Energy (kcal)	Protein (gr)	Fat (gr)	Carbohydrate (gr)
Mango	287.48	5.66	18.36	24.98
Chocolate	226.95	15.91	12.47	12.77

Figure 1. Lactic Acid Bacteria Test



The figure 1 shows the LAB testing process on pudding to determine the amount of LAB for the pudding. LAB test was carried out on each pudding formula with the results as shown in Table 3.

Table 3. LAB Test Results

Sample	LAB (cfu/gr)
F3 (80gr)	2,8 x 10^9
F2 (70gr)	2,0 x 10^9
F1 (60gr)	1,6 x 10^9
F0 (50gr)	1,3 x 10^9

Based on the Table 3, it can be seen that the pudding sample with the addition of dadih as much as 80 grams contains the most LAB, namely 2.8 x 10^9 cfu/gr. Therefore, F3 1 is the best formula given as supplementation to pediatric patients with Covid-19.

Discussion

Based on the table 1, the nutritional content of dadih pudding showed that the total energy was 184.03 cal. The dadih pudding was given to children 1-17 years of age with Covid-19. The energy need approximately 10-15% are meet from snack foods. A cup of dadih pudding who consumed of children 1-9 years of age and two cups for children 10-17 years of age already meet their energy need from snack [7]

The addition of dadih to pudding provides health benefits, because it contains probiotics. The most common of lactic acid bacteria contained in dadih are Lactobacillus plantarum, Lactobacillus casei, Lactobacillus durans, Lauconostoc Pesudomesenteroides, and Lactobacillus lactis [5]. Furthermore, the bacteria produce β-galactosidase which will convert lactose into glucose and galactose. This glucose will be convert into fructose-6-phosphate through the glycolysis process. The final result of the glycolysis process is lactic acid [8].

The efficacy of probiotics depends on the activity of its mechanism of action, including the ability to adherence and colonize human gut which in turn will increase the immune system of the host [9]. Probiotic bacteria may have beneficial effects and modulate the immune response against potentially harmful antigens via B Lymphocytes and antibody production. Several studies have also indicated that probiotics can include the production of IL-10, which is a cytokine T cells. IL-10 as anti-inflammatory effects and particularly inhibits the Th-1 response [10].

Modifying original dadih into dadih pudding by adding any additional ingredient and through manufacturing process maintain the total viable of LAB. This result indicates the potential of all samples as probiotics due to the minimum concentration was 10^6 cfu/gr (Kechagia et al., 2013; Tannock, 1999). In this study pudding sample with the addition of dadih as much as 80 grams contains the most lactic acid bacteria, namely 2.8 x 10^9 cfu/gr. Therefore, PD1 is the best formula given as supplementation because It's content nutritional value suitable for children and the most LAB contents potential as

a probiotics to increase the immune system for pediatric patients with Covid-19.

Conclusion

Dadih pudding is a good product to be consumed as a supplement because it contains high nutrients and LAB, especially for children with Covid-19 infection.

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