

SWEET POTATO CREAM SOUP AS AN ALTERNATIVE HEALTHY BREAKFAST MENU

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ABSTRACT

Breakfast is an important thing for everyone. Breakfast requires a complete nutritional composition like protein, carbohydrate, and vitamins, but to days also to added sugar total and saturated fat intakes relatives to daily intakes. The most consumed food at breakfast time is white bread, butter, or margarine and coffee or tea without milk. It was important to develop a balanced breakfast meal that may contribute to a better nutrient daily intake. Cream of sweet potato soup is an alternative to proper healthy food. Sweet potato (*Ipomoea batatas L*) contains carbohydrates, vitamins, minerals, fiber, oligosaccharides, and other phytochemicals that are good for health. Sweet potato production is very abundant, high in nutrition, phytochemicals, and fiber but its utilization is not maximal yet. The purpose of this research was to produce sweet potato cream soup as a healthy meal for breakfast. The study was done by experimental method with development research design and organoleptic test by using Quantitative Descriptive Analysis (QDA) method and evaluation of the final product by using a hedonic method. The steps in this study include prescription cream soup analysis, focus group discussion (FGD), trial and evaluation with QDA method, the final product is tested receiving power by using a hedonic test. The results showed cream of sweet potato soup has nutritional adequacy as a breakfast menu, has the characteristics of savory, shiny, sweet potato, and spice. Cream of sweet potato soup is favored bay panels. Thus cream of sweet potato soup is perfect for a healthy breakfast.

1. INTRODUCTION

Fast-paced lifestyles have become a trend among Indonesians, especially intellectuals. Many of the community members began to get used to a healthy lifestyle through the selection of nutritious foods. Public awareness to live healthily and consume functional foods that are increasingly high so requires nutritious food alternatives. As long as humans live, they need food. Quality daily meals and eating habits contribute to people's health (Micha et al., 2017). Providing practical, healthy, and nutritious food is a must. Breakfast is essential for everyone and the nutritional composition of breakfast has special attention (Gharbi et al., 2019). In fact, 25% to 35% of children and adolescents in developing countries skip breakfast (Deshmukh-Taskar et al., 2010; Corder et al., 2014). Not eating breakfast can cause obesity, dizziness, feelings of discomfort, lack of concentration, low enthusiasm for learning, and irregular menstruation (Sivapatham, 2016). Breakfast must be contributing 25% of calorie needs in one day (Khomsan, 2005). Breakfast must meet the amount and type of nutrients in a balanced manner (Kovalskys et al., 2021). Some people perceive that some food is especially appropriate for breakfast and meals consumed at lunch or dinner are less suitable for breakfast (Bian & Markman, 2020b). According to the results of research by Ruhmayanti & Yasin, (2018) adolescents in SMP X, their breakfast intake was still lacking the calories and macronutrients needed. White bread, rolls, tortillas were the most consumed food group followed by butter, margarine, coffee, and tea without milk. American breakfast is notoriously unhealthy because many sugary, oversized, and unbalanced (Bian & Markman, 2020; Kovalskys et al., 2021). Breakfast was an important contributor to nutrition intakes like protein, carbohydrates, vitamins, and minerals. Eating breakfast may be shown of healthy behavior. To days breakfast contributed to the daily intake of protein, carbohydrate, vitamin B, sugar, and saturated fat intake (Kovalskys et al., 2021). It was important to develop a breakfast menu that have adequate nutrition.

Soup is liquid food made from meat, chicken, fish stock, and added ingredients of flavoring, spices, and stuffing. Soup can stand as a dish associated with the turn of the dish or as an Appetizer and can be a stand-alone dish or as a main course / main dish. The function of soup is the generator of appetite, enhancing nutritional value, neutralizing the taste on the tongue. Sweet potato production is very abundant, but its utilization has not been maximized. Sweet potatoes are planted based on the color of the flesh, there are three types, namely yellow, orange and purple meat. Yellow sweet potatoes contain higher carotene than creamy sweet potatoes. Yellow and orange meat sweet potatoes are rich in beta-carotene which is a pro-vitamin A component that is useful for maintaining eye health.

According to the Central Statistics Agency (2015), the average productivity of sweet potatoes (*Ipomoea batatas L*) in Indonesia is 123.29 me / ha, with a total production of 2,196,033 tons. The average richness of sweet potatoes in West Java is 153.73 me / ha, with a total output of 429,378 tons. The centers that produce sweet potatoes in West Java include Cilembu Sumedang, Bandung, Garut, Kuningan, and Ciamis. The advantages of sweet potatoes compared to other tubers are that they can grow in various types of soil, have a relatively short harvest period of 3-6 months, and can be used as intercrops.

In addition to carbohydrates as the main ingredient, sweet potatoes contain vitamins, minerals, phytochemicals (antioxidants: β -carotene, anthocyanins), and fiber (pectin, cellulose, hemicellulose). Sweet potato is very potential to be used as a substitute for wheat flour, making starch, flour, and functional food (Hidayat & Ahza, 2007; Teow et al., 2007; Tomlins et al., 2012; Waramboi et al., 2011). In 100 grams of sweet potatoes contain various nutrients that are needed by the body such as (1) 123 cal calories, (2) protein 1.8 grams, (3) fat 0.7 grams, (4) carbohydrates 27.9 grams, (5) minerals 1.1 grams, (6) potassium 49 mg, (7) vitamin A 7,700 SI and vitamin C 22 mg. Sweet potatoes contain antioxidants that can prevent the formation of free radicals (cancer) and beta-carotene, substances that are needed for

healthy eyes. Sweet potatoes are yellow, and orange meat is a potential source of pro-vitamin A because of the content of β -carotene as a sweet potato dye. Ejumula varieties grown in Uganda contain β -carotene to $325\mu\text{g} / \text{g}$ dry basis (Bengtsson et al., 2008). Ninety percent of the sweet potato carotenoids of the orange flesh are trans-carotene (Bechoff et al., 2009; Bengtsson et al., 2008). Thermal processing enhanced the retention of total protein, total phenols, epicatechin, protocatechuic acid, 2-caffeoyl-L-tartaric acid, and Zn (Selokela et al., 2022).

High carbohydrates like white bread, cereal, fruit juice with sugar, high fat like butter are the most popular meals for breakfast in the wide world. Balanced nutrition is important to think about in a breakfast meal. Sweet potato cream soup made from meat, fish, or bone extract, mash sweet potato, and another healthy ingredient. Soup is very easily absorbed in the body. Fiber from sweet potatoes can make feel full longer, phytochemical, and the micronutrient can make adequate nutrition that contribute to daily intake. The purpose of this study was to develop cream of sweet potato soup products as an alternative healthy breakfast menu. It was important to develop a cream soup of sweet potato as an adequate breakfast nutritionally.

2. METHODS

The method used in this research was the experimental method with development research design and organoleptic test by using Quantitative Descriptive Analysis (QDA) method and evaluation of the final product by using a hedonic method.

2.1. Material

Sweet potatoes are used: purple sweet potato (PSP), Cilembu sweet potato (CSP), Japanese Sweet Potato (JSP), Yellow Sweet Potato (YSP), White Sweet Potato (WSP). The ingredients used for the formulation of sweet potato cream soup are sweet potato pasta, milk, cooking cream, carrots, onion, salary, time, clove, bay leaves, garlic, pepper, skim milk, water, sugar, and salt obtained from traditional markets and modern markets in the city of Bandung.

2.2. Tool

The tools used in this study include stockpots, pan sauce, ladles, chronicles, strainer, and other glassware. The research stages include prescription analysis, panelist screening, focus group discussions, panelist training, product development, descriptive quantitative analysis.

2.3. Analysis Method

2.3.1. Product Development Organoleptic Test

The organoleptic properties of Cream of Sweet Potato Soup (CSPS) were analyzed using the Quantitative Descriptive Analysis (QDA) method. Panelists assess the specific nature of the sample Cream of sweet potato soup served in a small bowl warm. Assessment of CSPS starts from appearance, color, taste, aroma, consistency, texture, and thickness. Each time the panelists are given an observation sheet containing a straight line not marked as long as 10 cm. QDA is carried out by trained panelists, while the analysis of the nutritional value of the product is carried out by calculating the nutritional adequacy rate based on nutritional content data in the List of Food Ingredients Components.

3. RESULTS AND DISCUSSION

Breakfast with the right and appropriate portions provide health benefits. The prevalence of obesity in adolescents who have never had breakfast is higher than adolescents who eat breakfast (de la Hunty et al., 2013; Fayet-Moore et al., 2016; Szajewska & Ruszczyński, 2010). Teenagers who are accustomed to Cereal Ready To Eat breakfast avoid excessive body weight (de la Hunty et al., 2013; Szajewska & Ruszczyński, 2010). breakfast habits are positively related to diet, micronutrient intake, lifestyle, and weight (Adolphus et al., 2013). Breakfast with cereal contributes well to the fulfillment of children's nutrition (Fayet-Moore et al., 2016).

3.1. Results

The creation of Cream of sweet potato soup (CSPS) is carried out using an experimental method. In the initial formulation stage (1000 gram basis) trial and error are carried out to determine how much sweet potato paste is applied. The formula tested is 20% and 50% sweet potato paste. Details of the nutritional value of the data can be seen in Table 1. Purple Sweet Potato (PSP), Sweet Potato Cilembu (CSP), Japanese Sweet Potato (JSP), Yellow Sweet Potato (YSP), White Sweet Potato (WSP). CSPS sensory characteristics are Bright, Shiny, sweet potato Flavor, Sweet taste, Salty, and Umami (Figure 1).

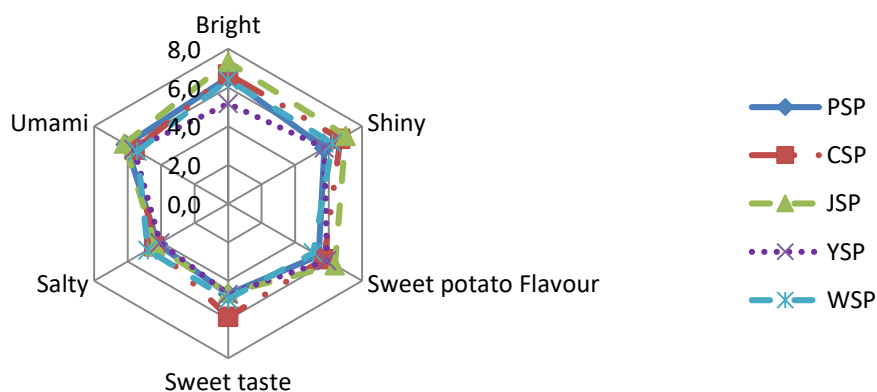


Figure 1. Sensory Characteristics of CSPS.

The results of the trial of product development and organoleptic methods with QDA obtained the cream of sweet potato soup, the most preferred overall impression is that made from Cilembu sweet potato, and brightness is CSPS Japanese Sweet Potato. The nutritional content of CSPS for each type of sweet potato can be seen in Table 1.

Table 1. Nutritional Value of CSPS (500 g)

Nutrition (500g)	Content	PSP	CSP	JSP	YSP	WSP
Energy(cal)		693	613	693	693	693
Carbohydrate (g)		127	57	127	127	127
Protein(g)		18	23	18	18	18
Lipid(g)		14	13	14	14	14
Calcium(mg)		301	301	421	421	421
Phosphor(mg)		134	132	328	328	328
Ferro (mg)		5	3	6	6	6
Vitamine A (RE)		134	133	165	3985	165
Vitamine B (mg)		4	0	0	0	0

Vitamine C (mg)	3	2	90	90	90
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Description: PSP: Purple sweet potato; CSP: Cilembu Sweet Potato; JSP: Japan Sweet Potato; YSP: Yellow Sweet Potato; WSP: White Sweet Potato.

3.2. Discussion

Figure 1. Showed that sensory characteristics of CSPS teste are sweet, salty, and umami. This finding is similar to Mitchell et al., (2011) that salt vegetable soup was correlated with the salt flavor and sweet flavor but no umami. Umami in this research appears from cream soup and milk that were used. Herb and spices contribute to the overall flavor of CSPS. Table 1 showed that CSPS have adequate nutrition. Cream soup is usually eaten as soup at lunch or dinner. Based on Bian & Markman, (2020) that food typically consumed at lunch or dinner are suitable for breakfast. The nutritional composition of breakfast recommendations for a balanced. The higher intake of vitamin A and D, calcium, potassium, and fiber and reduce intake of sugar, saturated fat, and sodium (Kovalskys et al., 2021). Skipping breakfast will also cause the body to lose weight, and decrease memory and the brain has difficulty concentrating (Sandercock et al., 2010). To benefit from breakfast, the breakfast menu must have 300-500 kcal calories and the breakfast menu must be balanced nutrition. The recommended breakfast menu consists of protein, fat, vitamins, and minerals. Because breakfast must meet 15-25% of daily calorie needs, while the remaining 50-60% is obtained from lunch and around 10-20% of dinner. Breakfast needs are around 300-500 kcal for the 2000 kcal daily nutritional adequacy rate. For a woman weighing 50 kg, breakfast needed is around 350-400 calories. A man weighs 70 kg, so breakfast must contain 500 calories. According to nutrition experts from Columbia University, the United States, breakfast with less than 350 calories is less effective at contributing energy and nutrients to the body. Whereas if more than 500 calories, it is feared that the excess calories will be stored by the body in the form of fat.

Sweet potatoes have special nutrition and functional properties like carbohydrates, proteins, carotenoids, flavonoids, anthocyanins, phenolic acid, and minerals (Alam, 2021). The cooking process increased the 2-caffeoyl-L-tartaric acid. Cooking increased the antioxidant power and hot-air convection oven drying increased the total phenolic significantly (Selokela et al., 2021). Combined sensory by enriching energy density and adding visual topping could have a synergetic effect on older people's food experience and consumption (Zhou et al., 2021).

4. CONCLUSION

Characteristics of CSPS sensory properties are soft, shiny fresh colors according to flash sweet potato color and thick CSPS texture flows according to the characteristics of soup. The most preferred CSPS is Japanese sweet potato and the thickest CSPS texture is Cilembu sweet potato. CSPS is developed to meet the nutritional adequate needs of breakfast. CSPS can be used as a breakfast meal because of nutrition, phytochemicals, and fiber.

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