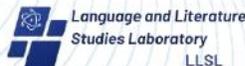




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## Sensory Test of Chia Seed in Yoghurt with Ginger (*Zingiber Officinale R*) as Natural Preservative

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### Abstract

Yoghurt is a milk-processed product that is fermented using *Bacillus bulgaricus* and *Bacterium thermophilus*. The method of preparation is based on centuries of experience in placing naturally contaminated milk at high temperatures of about 40–50 °C. Yoghurt is a healthy drink made from fermented milk. The aim of this study was to identify and test the influence of adding chia seeds to fermented milk on physical or sensory properties such as texture, aroma, taste, and panel preference. This method of research is experimental. Researchers conduct experimental research to explore the consequences of their deliberate actions. The results of the analysis of milk (yoghurt) are the colour of the lk (yogurt), wh which has a percentage of SS=40% and S=40%, while TS=20%. Aroma in milk that has a percent of sebum is SS=30%, S=70%, and TS=0%. Texture in milks that have a percent sebum of S = 80%, S = 20%, and TS = 0%).

**Keyword:** Ginger; Yogurt; Chia seeds

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Received 24 January 2024; Received in revised form 23 February 2024; Accepted 1 April 2024; Available online 04 May 2024

<https://doi.org/10.63924/jsid.v5i2.71>

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## INTRODUCTION

Yoghurt is a milk-processed product that is fermented using *Bacillus bulgaricus* and *Bacterium thermophilus*. The method of preparation is based on centuries of experience in placing naturally contaminated milk at high temperatures of about 40–50 °C. The milk fermentation process is one of the preservation methods that allows milk to last longer. (Maharani & Ayuningtyas, 2018).

Yoghurt has the ability to stimulate the function of the stomach and small intestines effectively. This is due to the presence of Bulgarian bacteria in the digestive process, which can reduce toxic substances in the body (Rudi, 2021; Misbah, 2019; Rahman, 2023; Zikrullah, 2023; Azizi, 2023). Yoghurt is not only highly nutritious but also lowers the levels of lactose by a quarter, making it safe for people with laktose intolerance. Yoghurt can also lower blood cholesterol levels, maintain stomach health, and prevent cancer in the gastrointestinal tract. The raw materials used to make yoghurt include pure milk from cows and goats, skim milk powder, and many yoghurts made from milk like soybeans (Cristina, 2024; Paull, 2024; Munira, 2024; Rahmadani, 2024; Ibrahi, 2024). Besides the main ingredients, the production of yoghurt also requires additives such as sweeteners, food dyes, stabilisers, and fruit as flavourings. (Farikha Maharani, Oktober 2018).

Chia seeds, or chia seeds (*Salvia hispanica* L.), are potentially healthy natural ingredients that can be used as an alternative to functional food development. This plant is native to Central America, Mexico, and Guatemala. Chia seeds contain protein (15–25 percent), fat (30–33 percent), carbohydrates (26–41 percent), fibre (18–30 percent), and minerals (4–5 percent) (Asep Safaria, Agustus 2016). Chia seed plants originate in northern Guatemala and are most commonly grown in Mexico. (Adawiyah, 2021).

Ginger (*Zingiber officinale* Rosc) is a spice plant native to South Asia that has spread all over the world, including Indonesia. They are "*Z officinale varrobrum*," "*Z officinale varr*," and "*Z. officinale var amarum*." (DEWI SARI, 2021). Ethanol extract of ginger squid (*Zingiber officinale* Roscoe) at a concentration of 100 g in 100 ml of 100% ethanol has an antibacterial effect against *Staphylococcus aureus* with a 35 mm barrier zone (Alwani Hamad, 2017).

The research aim of the title "Sensory Testing of Chia Seeds on Yoghurt with Ginger (*Zingiber officinale* R) as a Natural Preservative" is to find out and test the influence of the addition of chia seeds to fermented milk on physical or sensory properties such as texture, aroma, taste, and preference of panelis.

## METHOD

The research methods to be used are quantitative and experimental. An experiment is a set of actions and observations carried out to check or blame a hypothesis or recognise a cause-and-effect relationship between symptoms. This study aims to test whether the cause of a symptom influences its effect. Tools and materials:

- a. Tool
  - Wadah
  - Spoons
  - Knife
  - Heater
  - Pots
  - Stoples

- Refrigerator
- Thermometer
- Measuring glass

#### b. Substance

- Cow's milk
- Starter: *Streptococcus thermophyus* (St), *Lactobacillus bulgaricus* (Lb)
- Sand sugar and red / aren sugar
- Jahe
- Chia seeds (Chia Seed)

Methods of making fermented milk with ginger (*Zingiber officinale* R) as a natural preservative and added chia seeds are as follows: First, make yoghurt. Pour 600 ml of UHT full cream milk into a bowl, then pour 5–6 caps of a bacterial aqua bottle. Mix 3 times slowly, then wrap the bowl with a cloth and keep in a cupboard to stay warm. Leave for 24 hours, and the yoghurt should not be opened. Secon make flavor extract from ginger, prepare 3-4 ginger and then wash clean and cut-in, then blender ginger to smooth, if less smooth can be filtered, then boil ginger until boiling, then pour red sugar and sand sugar approximately until the ginger water does not expose too sharp scent and the water is sweet, if the stove is turned off and wait cold. The third serves yoghurt after the yoghurt has reached its 24-hour shelf life. Open the cloth and pour it into a sufficient container. Pour in some mineral water and stir, then pour in enough ginger extract as needed and stir evenly, serving the yoghurt with chia seeds. Yoghurt is ready to be served. Yoghurt can be stored in the fridge for long storage periods.

### **Populations and Samples**

The population of this research will be tested on 1 teacher and 9 students.

### **Data collection techniques and tools**

This study employs observational techniques and tools for gathering data. Observation is an activity towards a process or object with the intention of sensing and then understanding the knowledge of a phenomenon based on knowledge and ideas already known in order to obtain the information needed to continue research. After that, the researchers will also perform organoleptic tests, and the results will be documented. Following the organoleptic test lift, the panellists will receive 1 cup, or up to 200 ml, of yoghurt for the trial. After that, the panel will fill the lift with the likr scale, which consists of positive statements SS = 3, S = 2, and TS = 1, and negative statements S = 1, S = 2, and TS = 3. Then, the researchers will conduct an open interview by asking the panel's response to the taste, aroma, colour, texture, and taste of fermented milk with chia seed and jahe (*zingiber officinale*) as natural preservatives at the time of consumption.

### **Data Analysis**

To determine the quality, an organoleptic test is performed, with respondents assessing the quality of colour, aroma, texture, and comfort when used. Research methods containing the type of data used, type of research, population, sample, method of data collection, and analysis data are listed in this section. Data analysis in this study uses a percentage formula with the following equation:

$$P = F/N \times 100 \%$$

Description:

P= Presentation Number

F= Frequency Score Raised Chia Seed Yogurt with Ginger

N= Number of Panels

## FINDING AND DISCUSSION

This ginger-fermented milk works to maintain the balance of intestinal microflora and also helps boost the immune system. In this study, there are several elements that will be tested, namely, the colour, aroma, texture, and taste of yoghurt when consumed. The study will involve 10 participants.

Tabel 1. The resulting percentage of color on fermented milk with Chia Seeds and Ginger (zingiber officinale r).

Color			
Answer	Number of replies	Answer Score	Percentase
SS	4	12	40%
S	4	12	40%
TS	2	6	20%

Based on Table 1 above, it can be explained that the colour of the fermented milk of this ginger is quite popular and has a percentage of SS=40%, S=40%, and TS=20%.

Tabel 2. The resulting percentage of aroma in fermented milk with Chia Seeds and Ginger (zingiber officinale r).

Aroma			
Answer	Number of replies	Answer Score	Percentase
SS	3	9	30%
S	7	21	70%
TS	0	0	0

Berdasarkan tabel 2 di atas dapat dijelaskan bahwa aroma pada susu fermentasi, jahe ini banyak disukai dan memiliki persentase sebesar SS = 30%, S = 70%, and TS = 0%.

Tabel 3. Percentage result of texture on fermented milk with Chia Seeds and Ginger (*Zingiber officinale* r).

<b>Texture</b>			
<b>Answer</b>	<b>Number of replies</b>	<b>Answer Score</b>	<b>Percentase</b>
SS	8	24	80%
S	2	6	20%
TS	0	0	0

Based on Table 3 above, it can be explained that the texture of the fermented milk of this ginger is popular and has a percentage of SS = 80%, S = 20%, and TS = 0%.

Tabel 4. The resulting percentage of flavor on the fermented milk with Chia Seeds and Ginger (*Zingiber officinale* r).

<b>Taste</b>			
<b>Answer</b>	<b>Number of replies</b>	<b>Answer Score</b>	<b>Percentase</b>
SS	2	6	20%
S	8	24	80%
TS	0	0	0

Based on table 4 above, it can be explained that the flavour of this ginger fermented milk is popular and has a percentage of SS = 20%, = 80%, and TS = 0%.

From the research that has been done, there are many positive as well as negative comments. In addition to having a less good colour because of the colour produced by ginger, the taste and aroma remain fragrant and good because it contains ginger and red sugar and has a good aroma produced from ginger and chia seeds. The results of the analysis of fermented milk are the colour of the milk (ogurt), w which has a percentage of = 40%, S = 40%, a and moderate = 20%. Aroma in milk that has a percent of the sebum is SS=30%, S=70%, and TS=0%. The texture of milks that have a percent fat content of SS is 80%, S is 20%, and TS is 0%. But the panellists still love the milk because it has a good aroma, taste, and texture.

The addition of ginger and red sugar creates a distinctive aroma and taste when consumed. And also the addition of chia seeds, which make the texture look good. As we know, fermentation in milk with chia seed and ginger (*Zingiber officinale*) has many benefits, including a potential positive impact on health, improved digestion, reduced risk of heart disease, and support for weight control. Ginger drinks can also streamline blood circulation, lower cholesterol, relieve stomach pain, prevent heart attacks, and lower blood pressure.

## CONCLUSION

Fermented milk is enriched with chia seeds and ginger (*Zingiber officinale* R) as a natural preservative. Although the colour is a critical record, the panellists still love this fermented milk because of its good sensory quality. The results of the physical analysis give a more detailed picture, with the highest percentage of milk texture, followed by fragrance and flavor. Nonetheless, the panel showed a positive preference for flavour and aroma, while colour was not a determining factor of satisfaction.

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