

# Empowerment of Santri's Healthy Lifestyle in Salafi and Modern Islamic Boarding School through Knowledge of Probiotic Food and Beverages

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## History of Article:

Submitted: Mar 30, 2023  
Accepted: Dec 22, 2023  
Published: Dec 30, 2023

## Citation Style (APA):

Susdarwono, E.T., Ashwar, A., Huda, S.T. (2023). Relationship of Social Capital and Collective Action in The Development of Tourism Village. *Prosperity: Journal of Society and Empowerment*, 3(2), 155-175. <https://doi.org/10.21580/prosperity.2023.3.2.15244>

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**Abstract:** This empowerment is related explicitly to empowering the healthy lifestyle of students in Salafi and modern Islamic boarding schools through knowledge about probiotic food and drinks. This empowerment was carried out for one month, from January 2023 to February 2023. The location of this empowerment was Islamic boarding schools, both Salafi and modern, in Pemalang Regency and Tegal Regency. Data collection techniques in this study will be carried out using questionnaires and test instruments in the form of questions related to the problem. Data processing was carried out quantitatively through statistical tests and qualitatively. For quantitative data processing, statistical tests were used: The test applied was hypothesis testing through the chi-square distribution and hypothesis testing using the Kolmogorov-Smirnov method. This community empowerment includes several steps or activity procedures carried out as follows: Entrance, Diagnosis, Action Planning, Intervention (Action taking), Evaluation (Assessment), Reflection, and Exit. The results of empowering students in both Salafi and modern Islamic boarding schools can make them adopt a healthy lifestyle through probiotic food and drink accompanied by a holistic understanding of probiotics. Henceforth, these students can pass on this empowerment to other students through the application of peer tutors.

**Keywords:** Empowerment, Islamic Boarding School, Probiotic, Student

**Abstrak:** Pemberdayaan ini dilakukan khususnya terkait dengan pemberdayaan pola hidup sehat santri di kalangan pondok pesantren salafi dan moderen melalui pengetahuan tentang makanan dan minuman probiotik. Pemberdayaan ini dilaksanakan selama 1 bulan dimulai sejak bulan Januari 2023 sampai dengan bulan Februari 2023. Lokasi pemberdayaan ini adalah pondok pesantren baik Salafi maupun modern yang terletak di Kabupaten Pemalang dan Kabupaten Tegal. Teknik pengumpulan data dalam penelitian ini akan dilakukan dengan instrument kuesioner dan instrument tes berupa pertanyaan-pertanyaan yang terkait dengan permasalahan. Pengolahan data dilakukan secara kuantitatif melalui uji statistik dan secara kualitatif. Untuk Pengolahan data secara kuantitatif digunakan uji statistik yaitu: Pengujian yang diterapkan adalah pengujian hipotesis melalui distribusi chi-kuadrat dan pengujian hipotesis menggunakan metode Kolmogorov-Smirnov. Pemberdayaan masyarakat ini meliputi beberapa langkah atau prosedur kegiatan yang dilakukan sebagai

berikut: Entrance, Diagnosis, Action Planning, Intervention (Action taking), Evaluation (Assessment), Reflection, and Exit. Hasil pemberdayaan terhadap santri yang dilakukan baik di pondok pesantren Salafi maupun modern mampu menjadikan mereka menerapkan pola hidup sehat melalui makanan dan minuman probiotik yang disertai dengan pemahaman yang holistic terkait probiotik. Untuk selanjutnya santri tersebut mampu meneruskan pemberdayaan ini kepada santri-santri lain melalui penerapan tutor sebaya.

**Kata Kunci:** Pemberdayaan, Pondok Pesantren, Probiotik, Santri

## Introduction

Islamic boarding schools are a unique system. Not only in its learning approach but also in its unique way of life and values, the way of life adopted, the structure of division of authority, and all other educational and social aspects (Jauhari, 2017). Islamic boarding schools are Islamic educational institutions equipped with dormitory facilities as a place to live for students (students) (Komariah, 2016). Initially, Islamic boarding schools were educational institutions with simple management and only religious material. Later, Islamic boarding schools were included in the national education sub-system, so they had to follow government regulations (Zulhimma, 2013).

Islamic boarding schools must have several capabilities: First, the ability to survive amid ongoing change and competition (Maesaroh & Achdiani, 2017). Second, the ability to improve the quality of life, both physically and spiritually. Third, the ability to develop and adapt to the changing demands of the times (Bashori, 2017). Fourth, the ability to place oneself in an essential position in the national education system. Fifth, the ability to make a moral contribution is the crucial capital in national development (Ni'amillah, 2013). The curriculum in Islamic boarding schools tends to be fine arts, physical education activities, military training, technical knowledge, vocational training, and foreign languages for individuals and those with the willingness, talent, and desire (Ma'arif, 2017).

Islamic boarding schools are religious institutions that conduct social engineering or community development. This role can only be carried out if the pesantren can maintain good traditions while adapting new scientific results that are better to play the role of agents of change (Syafe'I, 2017). Various typologies of pesantren show the diversity of pesantren in responding to the times. Salaf Islamic boarding schools try to maintain their position as religious educational institutions, while khalaf and semi-modern education are starting to open to general scholarship as a provision for students facing increasingly advanced world developments (Nihwan & Paisun, 2019).

In general, Islamic boarding schools are divided into two groups or sections: the first is a Salafi Islamic boarding school, and the second is a Modern Islamic boarding school (Rasyid, 2020). A salafiyah Islamic boarding school is a place to live in the form of a dormitory for a santri who studies Islamic religious sciences with a kiai and several ustadz in an area using the band organ, slogan, memorization, and deliberation teaching methods (Susanto & Muzakki, 2016). At the same time, modern Islamic boarding schools have

educational programs that are self-organized (independently), where these programs contain formal, non-formal, and informal education processes that last all day in one condition in the dormitory (Fachrurazi, 2016). So from this, it can be understood that Islamic boarding schools are institutionally developed to streamline their impact (Krisdiyanto et al., 2019); Islamic boarding schools are not only a place of learning but are a life process itself, character formation and resource development (Kariyanto, 2019). The characteristics of modern pesantren are prioritizing education in the formal school system and emphasizing modern Arabic and English (Tolib, 2015).

Santri are students who study or study at Islamic boarding schools. The number of students usually measures how far a pesantren has developed. Santri can be divided into two, namely students who live in boarding schools or dormitories that have been provided by students and students who do not live in boarding schools; these students are also called santri slow in Central Javanese terms, or some call it the term santri bat (Komariah, 2016). Santri has many of the same psychological characteristics as non-students, even in some ways better than non-students (Nashori, 2011).

The students' economic background at the Selamat Islamic boarding school is diverse. Starting from a good, moderate, and weak economy (Stiawan & Tohirin, 2015). Related to the routine habits of the santri, it shows the tendency of the santri to be more capable and courageous in making and carrying out decisions independently, for example, financial management, spending planning, routine activity planning, and so on. This cannot be separated from the lives of those who do not live with their parents and the demands of the pesantren who want their students to live independently. Santri can share life with other Santri friends who are the majority of the same age (same age) and have the same inclinations. If the independence of behavior is related to the routines of the students, then it is likely that the students will have a high level of autonomy (Yunus, 2015).

From the description above, it is appropriate and necessary to pay serious attention to the health of the santri, especially the santri who live in Islamic boarding schools' dormitories. Fitness can be achieved with the habit of adopting a healthy lifestyle. One of these lifestyles can be realized by consuming food or drinks included in the probiotic product.

The human digestive condition is essential in maintaining health and fitness, even into old age. Research on older people who can live more than 80 years of age showed that these pre-elderly are physically active, have a regular and not fast heart rate, laugh more, and rarely experience digestive disorders. Related to the last point, several other studies have also stated that pathogenic (disease-causing) bacteria more often cause digestive disorders. As we know, there are two types of bacteria in our body: good and evil. Good bacteria help the body metabolize food, while harmful bacteria are disease germs that often cause stomach upset or diarrhea.

The battle between good and bad bacteria in the human small intestine is a fact that we must accept. We can only maintain a healthy gut condition to keep it safe (Caglar et al., 2005). In this context, we must try to maintain the balance of bacteria in the gut. Along

with the development and advancement of technology, food has been developed that uses the role of microorganisms in the manufacturing process and is deliberately included in these foods. We know them as probiotic and prebiotic food or drinks (Gibson, 2005). Probiotics are live bacteria in food, which, when eaten with food, can maintain the balance of bacteria in the digestive tract (Grajek, 2005).

Based on the background above, this empowerment is carried out explicitly to empower students' healthy lifestyles among Salafi and modern Islamic boarding schools through knowledge about probiotic food and drinks. The probiotic foods and drinks in question are yogurt, kefir, sauerkraut, winged bean yogurt, and kombucha tea. While the empowerment in question is how to make students at Islamic boarding schools able to understand basic knowledge, the benefits of consuming, as well as the process and stages of making Yogurt, Kefir, Sauerkraut, Kecipir Yogurt, Kombucha tea. After empowering the students in both Salafi and modern Islamic boarding schools, they can make them adopt a healthy lifestyle through probiotic food and drink accompanied by a holistic understanding of probiotics. Henceforth, these students can pass on this empowerment to other students through the application of peer tutors.

## Methods

This empowerment is carried out for one month, from January 2023 to February 2023. The locations for this empowerment are Islamic boarding schools, both Salafi and modern, located in the Pematang and Tegal Regencies..

Data collection techniques in this study will be carried out using questionnaires and test instruments in the form of questions related to the problem. The researcher's next step after the empowerment is to collect data. Data processing was carried out quantitatively through statistical tests and qualitatively. For qualitative descriptive data processing, namely:

1. Data reduction, namely selecting collected and supported data by categorizing data that researchers need and do not need.
2. Presentation of data, namely researchers trying to compile relevant data so that it becomes information that can be concluded and has a specific meaning.
3. Data verification: the researcher draws conclusions based on the findings and triangulation between the observations.

For quantitative data processing, statistical tests were used: The test applied was hypothesis testing through the chi-square distribution and hypothesis testing using the Kolmogorov-Smirnov method.

The procedure for testing the hypothesis through the Chi-Square distribution. Fundamentally, the hypothesis testing procedure through the Chi-Square distribution is determined for research results in the form of discrete and categorical data that are grouped into at least two sample groups. This test method is a form of independent testing to determine whether or not there is a relationship between two variables. With this method, researchers can make decisions about the causes of a situation, in the sense of

whether the problem occurs due to significant factors (significant factors) or factors that are coincidence (chance factors).

In principle, the hypothesis testing criteria are determined by comparing the frequency obtained from observation ( $n_{ij}$ ) with the expected frequency ( $e_{ij}$ ). The null hypothesis is accepted if the two frequencies are the same or their difference is tiny. Meanwhile, if the two frequencies display a striking difference in value, the null hypothesis is rejected. In a more straightforward sense, the null hypothesis is accepted if the calculated khai-squared value is smaller than the khai-squared value in the table based on the significance level and a certain degree of freedom. As for the magnitude of the khai-squared value, it is known by applying the formula.

$$X^2 = \sum_{I=i}^k \frac{(n_{ij} - e_{ij})^2}{e_{ij}}$$

$X^2$  is the khai-squared value of the calculation results, and  $n_{ij}$  is the frequency obtained from the observations in row I and column j (specific cells). At the same time, it is the expected frequency of row I and column j.

Previously, the value of the proportion of individuals who had "good" characteristics had to be determined, which was denoted as P. The importance of the balance of individuals who had "good" features was sought by applying the formula

$$p = \frac{n_{11} + n_{12} + n_{13} \dots n_{1k}}{n}$$

Where P is the value of the proportion of individuals who have "good" characteristics,  $n_{11}$  is the number of individuals who have "good" attributes from sample group 1,  $n_{12}$  is the number of individuals who have "good" characteristics from sample group 2,  $n_{13}$  is the number of individuals who have features "good" from sample group 3 onwards, and  $n$  is the total number of samples.

The hypothesis testing procedure uses the Kolmogorov-Smirnov method. Fundamentally, the hypothesis testing procedure using the Kolmogorov-Smirnov method for multiple sample groups is focused on testing the null hypothesis's validity, which states that the first and second sample groups come from identical populations. At the same time, the alternative theory states that the first and second sample groups come from people who are not similar or that one of them is higher or lower.

For multiple sample groups, the stages or procedures for testing the hypothesis that must be followed in the Kolmogorov-Smirnov method to determine the conclusion include:

- a) Formulate null hypothesis and alternative hypothesis
- b) Determine a certain level of significance
- c) Formulate test criteria

In testing the two-sided hypothesis, the null hypothesis is accepted if

$$D \leq D_a$$

While the null hypothesis is rejected if

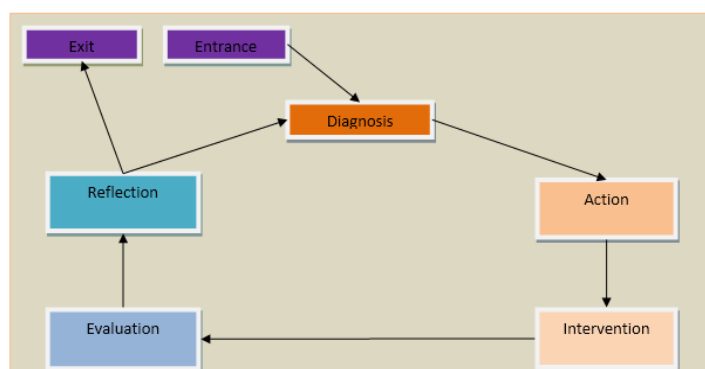
$$D > D_a$$

d) Calculating the value of D

If the hypothesis testing procedure using the Kolmogorov-Smirnov method has reached this stage, the value of D must be calculated through several steps. The series of steps that must be taken to find the value of D are:

1. Record the results of observations in the table. The intended observation result is the value of each member in the sample group.
2. Compile the cumulative frequency distribution of words. If the number of members from each category in each sample group has been recorded and entered into the table, then the cumulative frequency distribution of observations is compiled. For each frequency, the relative percentage values of each category are included. The cumulative frequency distribution of words and their relative percentages are displayed with F1 for the first sample group and F2 for the second sample group.
3. Calculating the difference between the values of F1 and F2 and looking for the value of D. The value of the most significant difference is used as the D value of the calculation results.

#### Empowerment Design



**Figure 1.** Empowerment Design

This community empowerment includes several steps or activity procedures carried out as follows:

1. Entrance
2. Diagnosis
3. Action Planning
4. Intervention (Action taking)
5. Evaluation (Assessment)
6. Reflection



## Results and Discussion

### Entrance

Understanding knowledge and habits in applying the healthy lifestyle of students who are or live in Islamic boarding schools is classified as very lacking, mainly related to learning about food and drink, which includes probiotics. These descriptions empower students who live in Islamic boarding schools regarding the healthy lifestyle of students among Salafi and modern Islamic boarding schools through knowledge about probiotic food and drink.

The students who live in Islamic boarding schools at least know the basic things about the following descriptions:

1. The human digestive tract, especially the large intestine, is inhabited by more than 500 species of bacteria in the trillions. Its existence cannot be avoided because the human habitat is not sterile. Reni bacteria around us can freely enter the body without us knowing it. However, if the composition of the good and bad bacteria populations is balanced, the body will not experience significant health problems. New problems will arise if there are too many harmful bacteria or disease-causing (pathogenic bacteria) in the intestine, which can cause diarrhea. This large population of harmful bacteria can be overcome by consuming probiotic foods, increasing the population of good bacteria in the intestine (Toma, 2006).
2. Probiotics are a type of food containing live bacteria that can survive through physical and chemical barriers in the digestive tract. The bacteria deposited in the food are then active and multiply, forming colonies that line the inside of the intestine (Toole & Cooney, 2007). The types of probiotic functional food that have been developed include milk and its fermented products (such as yogurt and ice cream – both liquid and powder). Most probiotics are bacteria similar to those found in our intestines. The two groups of bacteria most often used as probiotics are *Lactobacillus* and *Bifidobacterium*. Other bacteria that are also used as probiotics are *Escherichia coli*, *Streptococcus salivarius*, and *Streptococcus thermophilus*. Meanwhile, the probiotic from the mushroom group is *Saccharomyces cerevisiae* (Boulardii).
3. The use of microorganisms in food has been carried out for a long time for two reasons. First, for technological reasons. Microorganisms can change raw/basic materials into new products through fermentation, for example, milk into yogurt, cassava into tape, etc. Second, health reasons. Probiotic microorganisms have been proven to reduce losses caused by pathogenic bacteria. This evidence is further strengthened by the finding that the average long-lived Bulgarian people diligently eat yogurt. Probiotics are thought to be able to treat diarrhea (especially those caused by rotavirus), prevent and treat urinary tract infections, irritable bowel syndrome, reduce the likelihood of developing bladder cancer, and also prevent eczema (atopic dermatitis) in children. In addition, probiotics are also thought to help increase the body's immunity by stimulating specific cells in the intestine (Vrese & Marteau, 2007).

**Diagnosis**

This service diagnosis is carried out through questionnaires or tests, which are then carried out to test the following hypotheses:

1. Hypothesis Testing Through the Khai-Square Distribution

Based on the answers given by respondents regarding basic knowledge, the benefits of consuming, as well as the process and stages of making Yogurt, Kefir, Sauerkraut, Winged Bean Yogurt, and Kombucha tea, the results are in the following categories:

**Table 1.** Grouping of Respondents Who Do Not Understand and Who Understand Regarding the Material

Characteristic	Yogurt	Kefir	Sauerkraut	Yogurt Kecipir	Kombucha Tea	Total
Number of Respondents Who Don't Understand	5	6	10	3	8	32
Number of Respondents Who Understand	12	4	3	15	3	37
<b>Total</b>	17	10	13	18	11	69

In this study, the proportion of respondents who understand or do not understand PD denotes each observational material. In essence, the null hypothesis states that the proportion of respondents who do not understand probiotic material is constant, and therefore, the cause is sheer coincidence. The alternative theory says that the proportion of respondents who do not understand probiotic material is inconsistent; therefore, the reason is a significant factor. Thus, the null hypothesis and the alternative hypothesis are symbolically formulated as follows:

$$H_0 : P_{D1} = P_{D2} = P_{D3} = P_{D4} = P_{D5}$$

$$H_1 : P_{D1} \neq P_{D2} \neq P_{D3} \neq P_{D4} \neq P_{D5}$$

This study uses a significance level of 5% or 0.05. Based on the description of the research, the amount of material observed or the number of proportions that exist is 5. So, the degrees of freedom are 4 (5 - 1), for a significance level of 0.05 and degrees of freedom 7, the khai-squared value in the table is 9,4877. Thus, the testing criteria applied in this study is that the null hypothesis is accepted if

$$X^2 \leq 9,4877$$

While the null hypothesis is declared rejected if

$$X^2 > 9,4877$$

The khai-squared value is calculated by determining the proportion of respondents who do not understand probiotic material to the total sample size. The value of the proportion is

$$\frac{5 + 6 + 10 + 3 + 8}{69} = 0,464$$



Next, the expected frequency value is calculated. The calculation of the expected frequency value is applied to the number of respondents who do not understand and understand. Following the context of this study, the expected frequency value is calculated as follows

e11	0.464 x 17	7,884	e21	17-7,884	9,116
e12	0.464 x 10	4,638	e22	10-4,638	5,362
e13	0.464 x 13	6,029	e23	13-6,029	6,971
e14	0.464 x 18	8,348	e24	18-8,348	9,652
e15	0.464 x 11	5,101	e25	11-5,101	5,899

Furthermore, the calculated value is placed to the right of the number of respondents who do not understand or understand.

**Table 2.** Expected Frequency Value and Actual Frequency

Characteristic	Yogurt	Kefir	Sauerkraut	Yogurt Kecipir	Kombucha Tea	Total
Number of Respondents Who Don't Understand	5(7,884)	6(4,638)	10(6,029)	3(8,348)	8(5,101)	32
Number of Respondents Who Understand	12(9,116)	4(5,362)	3(6,971)	15(9,652)	3(5,899)	37
<b>Total</b>	17	10	13	18	11	69

The khai-squared value of the calculation results in this study is searched through the following calculations

$$\frac{(5 - 7,884)^2}{7,884} + \frac{(6 - 4,638)^2}{4,638} + \frac{(10 - 6,029)^2}{6,029} + \frac{(3 - 8,348)^2}{8,348} + \frac{(8 - 5,101)^2}{5,101} + \frac{(12 - 9,116)^2}{9,116} + \frac{(4 - 5,362)^2}{5,362} + \frac{(3 - 6,971)^2}{6,971} + \frac{(15 - 9,652)^2}{9,652} + \frac{(3 - 5,899)^2}{5,899} = 17,052$$

As is known from the calculation above, the calculated khai-squared value is 17.052. Meanwhile, the khai-squared value in the table for a significance level of 5% and 4 degrees of freedom is 9,4877. Because the calculated khai-squared value is 17.052, more significant than the khai-squared value in Table 9,4877., the null hypothesis is rejected, and the alternative view is accepted. So, indeed, the proportion of respondents who do not understand probiotic material is not constant, and therefore, the cause is a significant factor. Consequently, specific, well-planned actions must improve students' knowledge of food or drinks that include probiotics in Islamic boarding schools.

## 2 Hypothesis Testing of the Kolmogorov-Smirnov Method for Multiple Sample Groups

Based on the answers given by respondents regarding basic knowledge, the benefits of consuming, and the process and stages of making Yogurt, Kefir, Sauerkraut, Winged Bean Yogurt, and Kombucha tea, the results are in the following categories:

**Table 3.** Respondent Observation Data

Student Scores	Test Types of Islamic Boarding Schools
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Category	Salafi	Modern
Very High	12	12
High	8	5
Currently	1	1
Low	15	1
Very Low	1	13
<b>Total</b>	<b>37</b>	<b>32</b>

The data in the table shows that the value category of Salafi Islamic boarding school students is the same as that of Modern Islamic boarding school students. Thus, the null hypothesis states that the answers of the respondents of Salafi Islamic boarding school students are the same as those of modern Islamic boarding school students regarding basic knowledge, the benefits of consuming, and the processes and stages of making probiotic food and drinks. Meanwhile, the alternative hypothesis states that the respondents' answers of Salafi Islamic boarding school students are different from those of modern Islamic boarding school students regarding basic knowledge, the benefits of consuming, and the processes and stages of making probiotic food and drinks. So, if formulated symbolically, the two hypotheses are

H<sub>0</sub>:  $\mu_{\text{Answers of Salafi Islamic boarding school students}} = \mu_{\text{Answers of Modern Islamic boarding school students}}$

H<sub>1</sub>:  $\mu_{\text{Answers of Salafi Islamic boarding school students}} \neq \mu_{\text{Answers of Modern Islamic boarding school students}}$

In this study, the significance level used was 5%. Based on the significance level, a value of D in the table must be calculated. Because the applicable significance level is 5%, the value of D in the table is equal to

$$1,36 \times \sqrt{\frac{37 + 32}{37 \times 32}} = 1,36 \times 0,2414 = 0,3283$$

The D value of 0.3283 is the basis for formulating this study's test criteria and conclusions. Thus, the requirements for testing the hypothesis applied to this study are that the null hypothesis is accepted if

$$D \leq 0,3283$$

While the null hypothesis is rejected if

$$D > 0,3283$$

Furthermore, the value of D must be calculated through several steps. The following work table shows the actions taken to determine the value of D.

**Table 4.** Double Sample Kolmogorov-Smirnov Method Working Table

Santri							
Test Scores	Types of Islamic Boarding Schools						Difference
Category	Salafi	Cumulative Frequency	Percentage	Modern	Cumulative Frequency	Percentage	F1-F2
Very	12	12	0.324324324	12	12	0.375	-0.05068

High							
High	8	20	0.540540541	5	17	0.53125	0.009291
Currently	1	21	0.567567568	1	18	0.5625	0.005068
Low	15	36	0.972972973	1	19	0.59375	0.379223
Very Low	1	37	1	13	32	1	0
<b>Total</b>	<b>37</b>			<b>32</b>			

From the calculation steps carried out with the help of the table above, the most significant percentage value difference between the answers of santri respondents for Salafi and Modern Islamic boarding schools is 0.379223. Based on the comparison between the D values in the table and the calculated D values. This value is greater than the D value in the table of 0.3283. Thus, the null hypothesis is rejected, and the alternative view is accepted. In this condition, there is a difference in understanding of probiotic material between students studying at Salafi Islamic boarding schools and those looking at modern Islamic boarding schools.

### Action Planning

Preparation of plans includes:

1. Knowledge of Yogurt, Kefir, Sauerkraut, Winged Bean Yogurt, Kombucha tea in 3 meeting sessions.
2. The benefits of consuming Yogurt, Kefir, Sauerkraut, Winged Bean Yogurt, and Kombucha tea in 2 sessions.
3. The process and stages of making Yogurt, Kefir, Sauerkraut, Kecapir Yogurt, and Kombucha tea, as many as five meeting sessions for manufacturing practice.

### Intervention (Action Taking)

#### Yogurt

##### a. Pengetahuan Dasar

Yogurt adalah susu yang dibuat melalui fermentasi bakteri. Yogurt dapat dibuat dari susu apa saja, termasuk susu kacang kedelai. Tetapi, produksi yogurt modern saat ini didominasi susu sapi. Fermentasi gula susu (laktosa) menghasilkan asam laktat yang berperan untuk mengasamkan protein susu dengan tekstur seperti gel dan bau yang unik pada yogurt. Yogurt sering dijual apa adanya, namun ada pula yogurt yang diberi tambahan rasa buah, vanilla, atau cokelat. Yogurt dibuat dengan memasukkan bakteri spesifik ke dalam susu di bawah temperature dan kondisi lingkungan yang terkontrol, terutama dalam produksi skala industry. Bakteri merombak gula susu alami dan melepaskan asam laktat sebagai produk sisa. Keasaman yang meningkat menyebabkan protein susu memadat. Peningkatan kadar keasaman (pH = 4 – 5) ini juga berfungsi untuk menghindari proliferasi bakteri pathogen yang mungkin terjadi. Di Amerika Serikat, agar sebuah produk bisa dinamai yogurt pada kemasannya, produk tersebut harus berisi bakteri *Streptococcus salivarius* (subspecies *Thermophilus*) dan *Lactobacillus delbrueckii* (subspecies *Bulgaricus*).

b. Manfaat Yogurt bagi Kesehatan

Konsumsi yogurt dapat membuat tubuh Anda lebih sehat. Yogurt memiliki kandungan nutrisi yang sangat baik untuk kesehatan. Beberapa di antara keunggulan yogurt adalah bahan pangan ini kaya akan protein, kalsium, riboflavin, vitamin B6, dan vitamin B12. Berikut beberapa manfaat dari yogurt untuk kesehatan:

- Menyehatkan pencernaan. Berdasarkan hasil penelitian, yogurt dapat mengatasi berbagai masalah pencernaan, seperti diare, radang usus, kanker usus, atau intoleransi laktosa.
- Mengurangi risiko terjadinya infeksi pada vagina. Wanita yang mengonsumsi yogurt dapat mengurangi tingkat keasaman (pH) pada vaginanya sehingga dapat mengurangi perkembangan infeksi jamur.
- Menurunkan risiko darah tinggi. Konsumsi 2-3 porsi yogurt sehari dapat mengurangi risiko tekanan darah tinggi.
- Mencegah osteoporosis. Karena berbahan dasar susu, maka yogurt kaya akan kandungan kalsium dan vitamin D, kedua zat ini dapat membantu mencegah osteoporosis.
- Membantu kita agar merasa lebih kenyang. Kandungan kalori yang terdapat dalam yogurt menjadikan makanan ini terasa lebih menyenangkan sehingga sangat bagus untuk dikonsumsi oleh mereka yang tengah menjalani diet.

c. Proses dan Tahapan Pembuatan Yogurt

Walaupun terlihat sulit, proses pembuatan yogurt sebenarnya sangat sederhana. Alat-alat yang dibutuhkan tidaklah terlalu rumit, seperti panci berukuran kira-kira 40 cm, sendok pengaduk, dan toples kaca dengan tutup. Semua peralatan ini dapat diperoleh dengan mudah di pasar-pasar atau pusat pembelanjaan. Bahan utama yang dibutuhkan untuk pembuatan yogurt hanyalah susu. Susu ini dapat berupa susu cair, tetapi satu yang perlu diperhatikan adalah susu yang digunakan harus susu putih. Berikut langkah-langkah pembuatan yogurt:

- Siapkan susu yang sudah diencerkan dengan air matang sebanyak 1 liter, lalu tambahkan susu krim sebanyak 15%.
- Masak dengan api kecil sambil diaduk-aduk terus selama 30 menit, tetapi jangan sampai mendidih. Hal ini bertujuan untuk menguapkan air, sehingga nantinya akan terbentuk gumpalan atau yogurt padat.
- Jika yogurt padat sudah terbentuk, lalu angkat dan dinginkan kira-kira sampai hangat-hangat kuu, baru kemudian ditambahkan bibit yogurt sebanyak 2-5% dari jumlah yogurt yang sudah mengental tadi. Bibit yogurt memang tidak dijual bebas di pasaran, tetapi dapat anda perolehnya di toko kue atau makanan. Atau secara sederhana, kita dapat menggunakan yogurt yang plain (tanpa rasa tambahan), tanpa gula, dan tanpa aroma sebagai bibit yogurt.
- Diamkan selama 24 jam dalam wadah tertutup untuk menghasilkan rasa asam dan bentuk yang kental.
- Semakin tinggi kadar kepadatannya, maka cairan bening yang tersisa juga semakin sedikit, sehingga yogurt yang dihasilkan juga semakin bagus. Yogurt padat yang belum diberikan tambahan rasa ini dapat juga dijadikan bibit yogurt untuk pembuatan selanjutnya.
- Setelah berbentuk yogurt, anda dapat menambahkan sirup atau gula bagi yang tidak kuat dengan rasa asam. Anda bahkan bisa menambahkan perasa tambahan makanan, seperti rasa jeruk, stroberi, dan leci yang dapat kita peroleh di apotek-apotek. Yogurt dapat disajikan tidak hanya sebagai minuman, tetapi juga dapat disajikan bersama salad buah sebagai sausya ataupun sebagai bahan campuran untuk es buah.
- Yogurt yang sudah jadi dapat ditempatkan di wadah plastic ataupun kaca. Kalaupun anda tidak menggunakan wadah plastic, sebaiknya yang agakt ebal. Akan tetapi, bila ingin menyimpan yogurt untuk waktu yang lebih lama, sebaliknya menggunakan wadah kaca.

## Kefir

a. Pengetahuan Dasar

Kefir adalah minuman dari daerah Kaukasus yang terbuat dari susu dan telah melalui proses fermentasi. Adapun cara membuatnya adalah dengan memasukkan bubuk kefir ke dalam susu sapi kambing atau domba. Nama "kefir" diduga berasal dari bahasa Turki, keif, yang berarti keadaan atau kondisi yang baik. Dari wujudnya, kefir berbeda dari yogurt yang juga merupakan produk hasil fermentasi susu. Kefir berwujud cair, sedang yogurt berwujud kental. Dugaan yang lebih memiliki landasan ilmiah adalah bahwa nama "kefir" berasal dari kata kaafiura, yaitu nama mata air di surge yang airnya berwarna putih, beraroma harum, dan terasa lezat. Kata ini tercantum dalam kitab suci al-Qur'an pada Surat al-Insan ayat 5. Kefir berwujud agak kental dan memiliki rasa sedikit asam, meski tidak sekuat yogurt. Minuman ini, sebagaimana yogurt, merupakan hasil fermentasi dari susu. Yang membedakan antara kefir dan yogurt terletak pada proses pembuatannya. Pada proses fermentasi yogurt, digunakan bakteri Bifidobacterium sp. dan Lactobacillus sp., di samping Lactobacillus bulgaricus dan Streptococcus thermophilus. Sedangkan, kefir dibuat dengan menggunakan biji kefir yang mengandung bakteri Streptococci sp. dan Lactobacilli sp.

**b. Manfaat**

Kefir memiliki beberapa manfaat penting bagi kesehatan, di antaranya:

- a) Mencegah segala macam alergi dan alergi gula susu (laktosa);
- b) Mencegah pertumbuhan kanker, tumor, hepatitis, herpes, kolesterol, dan flu;
- c) Mencegah pertumbuhan organisme pengganggu tubuh;
- d) Mengatasi gatal-gatal pada kulit, dan
- e) Memasmi infeksi jamur (candidiasis).

**c. Proses dan Tahapan dalam Pembuatan Kefir**

Berikut tahapan-tahapan dalam pembuatan kefir:

- a) Susu segar dengan total padatan 11-12% dipasteurisasi, yaitu dipanaskan pada suhu 85-90° C selama 30 menit, kemudian didinginkan sampai mencapai suhu kamar.
- b) Masukkan 3% butir-butir kefir ke dalam susu pasteurisasi, kemudian diaduk hingga merata.
- c) susu dibiarkan/diinkubasi selama 20-24 jam (semalam) pada suhu kamar agar proses fermentasi dapat berlangsung optimal.
- d) Bila susu sudah menggumpal, saring dengan menggunakan saringan plastic untuk mendapatkan butir-butir kefir kembali.
- e) Kefir yang sudah disaring siap untuk diminum dengan atau tanpa tambahan pemanis sesuai selera. Penyimpanan di lemari pendingin akan memperpanjang masa simpan.
- f) Butir-butir kefir yang diperoleh (sisa hasil saringan) kemudian dicuci dengan air matang dingin untuk dipakai lagi pada waktu lain.

## Sauerkraut

**a. Definisi**

Sauerkraut (kol asam) adalah makanan Jerman yang dibuat dari kubis yang diiris halus dan difermentasi oleh berbagai bakteri asam laktat, seperti *Leuconostoc*, *Lactobacillus*, dan *Pediococcus*. Sauerkraut dapat bertahan lama dan memiliki rasa yang cukup asam. Rasa asam ini ditimbulkan oleh bakteri asam laktat yang terbentuk saat gula dalam sayuran berfermentasi.

**b. Manfaat**

Pada tahun 1776, Kapten James Cook diberi penghargaan Medali Copley setelah membuktikan bahwa sauerkraut berkehasiat sebagai makanan pencegah skorbut di kalangan pelaut Inggris, ketika melakukan pelayaran jauh.



c. Proses dan Tahap-Tahap Pembuatan Yogurt biji kecipir

Cara pembuatan sauerkraut secara ringkas dapat dijelaskan sebagai berikut. Kubis dibersihkan dari bagian yang hijau, rusak atau yang kotor, lalu dicuci dan kemudian diiris kecil-kecil selebar 1 mm. Bagian tengah kubis dibuang atau dibiarkan sebelum pemotongan kecil-kecil. Irisan kubis ini kemudian dimasukkan ke dalam tameng atau tangka yang selanjutnya ditambahkan 2,25% garam dan diaduk secara merata. Cairan akan diserap keluar dari irisan-irisan kubis segera sesudah garam ditambahkan, dan larutan garam mulai terbentuk yang dapat menutupi irisan irisan kubis. Tangka kemudian ditutup dengan lembaran plastic yang cukup lebar untuk menutupi bagian tepi dari wadah. Air dimasukkan ke dalam lembaran ii yang berfungsi sebagai pemberat dan penutup yang efektif. Berat dari air pada penutup menyebabkan irisan kubis terendam. Kubis yang tidak tercelup seluruhnya dalam larutan garam selama proses fermentasi, dapat memicu tumbuhnya khamir dan kapang pada permukaan daun kubis. Ragi dan kapang ini menghasilkan rasa yang tidak diinginkan dan dapat masuk ke dalam seluruh sauerkraut, sehingga menghasilkan produk yang lunak berwarna gelap.

Garam menarik air dan zat-zat gizi dari jaringan sayuran. Zat-zat gizi tersebut melengkapi substrat untuk pertumbuhan bakteri asam laktat yang telah ada di permukaan daun-daun kubis. Garam bersama asam yang dihasilkan oleh fermentasi juga menghambat pertumbuhan organisme yang tidak diinginkan dan menunda pelunakan jaringan kubis yang disebabkan oleh kerja enzim. Kadar garam yang cukup juga memungkinkan pertumbuhan serangkaian bakteri asam laktat dalam untaannya yang alamiah dan menghasilkan sauerkraut dengan imbang garam-garam yang tepat. Jumlah garam yang kurang tidak hanya mengakibatkan pelunakan jaringan, tetapi juga kurang menghasilkan rasa. Terlalu banyak garam dapat menunda fermentasi alamiah dan menyebabkan warna menjadi gelap, sehingga memunculkan pertumbuhan khamir.

Irisan-irisan kubis yang telah menjadi sauerkraut lalu diangkat dan dipisahkan dari larutan garamnya. Sauerkraut yang diperoleh dapat dikonsumsi langsung atau diolah lebih lanjut sebagai bahan pencampur asinan buah. Jika ingin disimpan lama, sauerkraut dapat dikalengkan/dibotolkan menggunakan larutan garam perendam dengan konsentrasi 1,5%. Sauerkraut dalam kalena/botol perlu disterilkan pada air mendidih selama 30 menit.

## Yogurt Kecipir

a. Definisi

Pada dasarnya, semua biji-bijian dapat diproses menjadi susu. Selain kedelai, biji kecipir juga mulai di olah untuk menjadi susu. Dengan mengolahnya menjadi susu kecipir, maka akan dapat meningkatkan nilai cernanya. Umumnya, kacang-kacangan mengandung unsur yang menghalangi aktivitas enzim tripsin (asam lambung) untuk menguraikan protein menjadi asam amino di pencernaan. Namun, apabila diproses menjadi susu, maka unsur ini akan berkurang, sehingga tidak menghalangi bekerjanya enzim tripsin. Dengan demikian, apa yang terkandung dalam biji kecipir lebih mudah dimanfaatkan oleh tubuh kita.

b. Manfaat

Susu kecipir sendiri merupakan minuman yang bernutrisi tinggi. Sebagai sumber protein nabati, susu kecipir mempunyai sumber protein yang dapat disejajarkan dengan susu lainnya. Bagi anda yang tidak mengonsumsi protein hewani, susu kecipir dapat menjadi alternative pengganti susu sapi.

- c. **Proses dan Tahap-Tahap Pembuatan Yogurt biji kacipir**  
 Proses pembuatan yogurt biji kacipir yang relative sederhana ini terdiri dari tahapan, yaitu:
1. **Pembuatan susu kacipir**  
 Polong kacipir direbus selama setegah jam atau dimasukkan ke panci tekan (pressure cooker) selama 15 menit. Tujuan perebusna ini untuk mengurangi bau langu dari biji kacipir. Setelah kulit ari terkelupas, polong digiling sembari dicampur air sebanyak lima kali berat polong kacipir basah setelah itu disaring. Untuk 300gram biji kacipir basah bisa menghasilkan 1,5liter susu mentah.
  2. **Pasteurisasi**  
 Siapkan terlebih dahulu susu kacipir sebanyak 1 liter. Kemudian, tuangkan susu kacipir ke dalam panci berlapis email dan rebus. Panci email harus dibiarkan dalam posisi terbuka. Tambahkan gula pasir sebanyak 50gram dan susu skim sebanyak 50 gram, kemudian rebus selama 30 menit sambil terus diaduk-aduk. Adapun tujuan dari perebusan ini adalah untuk menguapkan sebagian kadar air susu. Produk yogurt yang baik dihasilkan dari susu yang mengandung lebih 10% bahan kering tanpa lemak.
  3. **Pendinginan**  
 Lakukan tahap pendinginan dengan cepat untuk menghindari terjadinya kontaminasi. Pendinginan dilakukan sampai suhu mencapai 40-45°C. suhu ini merupakan suhu optimum untuk pertumbuhan bakteri starter *S. thermophilus* dan *L. bulgaricus*.
  4. **Inokulasi**  
 Tambahkan starter sebanyak 2-3% ke dalam susu kacipir yang telah didinginkan, kemudian aduk agar starter tercampur secara merata.
  5. **Inkubasi**  
 Langkah selanjutnya adalah proses inkubasi yogurt selama 24 jam sampai terbentuk yogurt yang asam (pH sekitar 4, 4-4, 5) pada pH asam, maka protein susu akan mengalami koagulasi, sehingga terbentuk gumpalan yang semakin lama semakin banyak. Yogurt yang telah jadi kemudian disimpan pada suhu 4-5 °C untuk menghentikan atau memperlambat proses fermentasi. Pada suhu ini, yogurt dapat disimpan sampai dua minggu.

## Kombucha Tea

- a. **Definisi**  
 Kombucha adalah jamur the yang berasal dari Asia Timur dan tersebar ke Jerman melalui Rusia sekitar perzantian abad ke-20. Sementara, kombucha tea (the kombucha) merupakan produk minuman tradisional hasil fermentasi larutan the dan gula dengan menggunakan starter mikorba kombucha (acetobacter xylinum dan beberapa jenis khamir) dan difermentasi selama 8-12 hari. Minuman yang dibuat dengan campuran jamur ini adalah suatu ramuan minuman kuno yang merupakan hasil dari symbiosis mumi dari bakteri dan ragi kombucha. Minuman ini kini semakin banyak digunakan sebagai herbal penyembuh di berbagai negara di Asia.

- b. **Manfaat**  
 Pada tahun 1914, seorang ahli medis bernama Eacinskaya menyatakan bahwa minuman ini efektif untuk kegiatan perut dan usus, khususnya di bagian pembuangan. Ia menyarankan untuk minum segelas kecil the kombucha sebelum makan, dan kemudian meningkatkan takarannya secara berangsur-angsur untuk mendapatkan khasiat yang nyata dari minuman ini. Dari berbagai laporan yang tersimpan di Lembaga-lembaga maupun dari pengalaman seseorang, banyak kesaksian yang mendukung klaim keehatan dari jamur kombucha ini. Jamur kombucha bekerja dengan car uni. Jamur ini tidak khusus membidik organ tubuh tertentu, namun mempengaruhi tubuh secara keseluruhan dengan menstabilkan metabolisme tubuh, dan menawarkan racun dengan asam glukuronat. Hal ini memicu peningkatan kapasitas pertahanan endogenis tubuh terhadap pengaruh beracun dan tekanan lingkungan, sehingga metabolisme sel yang rusak diperkuat, kemudian diikuti dengan pemulihan kesehatan tubuh.  
 Klaim sifat menyehatkan dari the kombucha ini memang harus didukung oleh penelitian lebih lanjut. Namun, mekanisme aktif lain dari the ini telah dibuktikan melalui pengujian dan percobaan ilmiah, seperti adanya sifat pengaturan populasi bakteri pada alat pencernaan, penguatan sel detoksifikasi, mengurangi kelebihan keringat, harmonisasi metabolisme, efek antibiotic, dan memfasilitas keseimbangan pH tubuh. Kandungan asam glukonat yang ada pada minuman kombucha juga dipercaya mampu memperkuat daya kekebalan tubuh terhadap infeksi dari luar, di samping mampu mengikat racun dan mengeluarkannya dari tubuh lewat urine. Kandungan antimikroba pada minuman kombucha mampu menghambat pertumbuhan *Shigella sonnei*, *E. coli*, dan *Salmonella typhimurium*.



- c. Proses dan Tahap-Tahap Pembuatan Minuman Kombucha  
 Langkah-langkah pembuatan kombucha adalah sebagai berikut:
- a) Ekstraksi teh  
 Sekitar 10-20 gram the hijau/bitam di masukkan ke dalam satu liter air panas/mendidih dalam wadah stainless steel, kemudian biarkan selama 10 menit.
  - b) Penyaringan  
 Proses ini dilakukan dengan tujuan untuk memisahkan the dengan air seduhan.
  - c) Pencampuran  
 Pada tahap ini, ekstrak the ditambahkan gula pasir dengan persentase sekitar 10% dari volume air seduhan.
  - d) Pendinginan  
 Setelah dilakukan penyaringan dan pencampuran, seduhan the dituangkan ke dalam toples gelas dengan permukaan yang luas, kemudian di tutup dengan kain yang rapat. Hal ini bertujuan agar semut, lalat, nyamuk, debu atau zat-zat polutan lainnya tidak bisa masuk, namun udara tetap bisa mengalir dengan bebas. Ikat tutup toples dengan karet, lalu didinginkan sampai suhu 27°C. bila the sudah sama dengan temperature ruangan, masukkan seduhan the ke dalam toples, atau tempat/wadah dari stainless steel. Untuk alasan keamanan, hendaknya suda banya menggunakan bahan-bahan yang iniukan khusus untuk bahan pangan. Dalam hal pembuatan kombucha, wadah dari gelas/kaca merupakan yang terbaik. Logam/besi selain stainless steel tidak baik sebagai wadah bahan pangan, karena asam yang terbentuk akan bereaksi dengan logam. Pemakaian bahan sintesa tingkat tinggi (masuk kelompok polidefine), seperti polyethylene (PE) atau polypropylene juga diperbolehkan. Sedangkan pemakaian tempat/wadah yang terbuat dari polyvinylchloride (PVC) atau polystyrene harus dihindari.
  - e) Inokulasi  
 Inokulasi adalah penambahan starter (berupa lapisan selulosa yang di dalamnya mengandung mikroba kombucha). Sebelum digunakan, starter dibiarkan terlebih dahulu di udara bebas selama kurang lebih 30 menit.
  - f) Fermentasi  
 Setelah diinokulasi, toples ditutup kembali dengan kain/kertas dan disimpan pada suhu kamar selama 8-12 hari. Fermentasi berlangsung selama 8-12 hari, tergantung suhu. Semakin hangat temperature ruangan, semakin cepat proses fermentasinya. Periode 8-12 hari diberikan hanya sebagai pedoman standar. Koloni kombucha memerlukan tempat yang tenang dan hangat, serta tidak boleh digoyang-goyang atau dipindah-pindah. Temperature the tidak boleh berada di bawah 68°F (20°C) dan tidak boleh lebih dari 86°F (30°C). temperature idealnya adalah antara 74-80°F (23-27°C). koloni kombucha juga tidak membutuhkan sinar matahari dalam proses fermentasinya, karena koloni tersebut akan rusak saat terkena sinar matahari. Pada saat proses fermentasi terjadi, gula akan dipecah oleh khamir dalam starter, sehingga akan terbentuk CO<sub>2</sub>. Cairan the tersebut menjadi berbuih dan rasanya lebih masam. Etika tingkat keasaman pH sekitar 2,7-3,2, maka fermentasi sudah dapat dihentikan.
  - g) Pemisahan dan Penyaringan  
 Lapisan selulosa yang terbentuk dipisahkan dari seduhan teh fermentasi dan disimpan dalam toples lainnya. Seduhan the hasil fermentasi disimpan supaya bersih dari residu fermentasi. The kombucha kemudian siap dikonsumsi. Sebaiknya, produk tersebut dipanaskan dahulu sebelum dikonsumsi dan disimpan supaya tidak terjadi fermentasi lanjutan. Setiap kali selesai proses fermentasi, tepatnya pada tahap pemisahan, upayakan untuk selalu menyisakan sepersepuluh (10%) bagian untuk keperluan pembuatan the kombucha berikutnya. Lalu, tutup botol rapat-rapat dengan menggunakan kain.

**Evaluation (Assessment)**

Evaluation of this empowerment is carried out after the intervention stage (Action Taking) is carried out through questionnaires or tests, which are then carried out for some hypothesis testing as follows:

1. Hypothesis Testing Through the Khai-Square Distribution

Based on the answers given by respondents regarding basic knowledge, the benefits of consuming, and the process and stages of making Yogurt, Kefir, Sauerkraut, Kecipir Yogurt, and Kombucha tea after a series of planned intervention actions, the results were obtained in the following categories:

**Table 5.** Grouping of Respondents Who Do Not Understand and Who Understand Regarding the Material

Characteristic	Yogurt			Kombucha		Total
	Yogurt	Kefir	Sauerkraut	Kecipir	Tea	
Number of Respondents Who	2	2	6	3	3	16

Don't Understand						
Number of Respondents Who Understand	12	5	10	10	12	49
<b>Total</b>	14	7	16	13	15	65

In this study, the proportion of respondents who understand or do not understand PD denotes each observational material. In essence, the null hypothesis states that the proportion of respondents who do not understand probiotic material after intervention or planned action is constant, and therefore, the cause is purely coincidental. The alternative hypothesis states that the proportion of respondents who do not understand probiotic material after intervention or planned action is not constant, and therefore, the cause is a significant factor. Thus, the null hypothesis and the alternative hypothesis are symbolically formulated as follows:

$$H_0 : P_{D1} = P_{D2} = P_{D3} = P_{D4} = P_{D5}$$

$$H_1 : P_{D1} \neq P_{D2} \neq P_{D3} \neq P_{D4} \neq P_{D5}$$

This study uses a significance level of 5% or 0.05. Based on the description of the research, the amount of material observed or the number of proportions that exist is 5. So, the degrees of freedom are 4 (5 - 1), for a significance level of 0.05 and degrees of freedom 7, the khai-squared value in the table is 9,4877. Thus, the testing criteria applied in this study is that the null hypothesis is accepted if

$$X^2 \leq 9,4877$$

While the null hypothesis is declared rejected if

$$X^2 > 9,4877$$

The khai-squared value is calculated by determining the proportion of respondents who do not understand probiotic material to the total sample size. The value of the proportion is

$$\frac{2 + 2 + 6 + 3 + 3}{65} = 0,246$$

Next, the expected frequency value is calculated. The calculation of the expected frequency value is applied to the number of respondents who do not understand and understand.

Following the context of this study, the expected frequency value is calculated as follows

e11	0.246 x 14	3,446	e21	14-3,446	10,554
e12	0.246 x 7	1,723	e22	7-1,723	5,277
e13	0.246 x 16	3,938	e23	16-3,938	12,062
e14	0.246 x 13	3,2	e24	13-3,2	9,8
e15	0.246 x 15	3,692	e25	15-3,692	11,308

Furthermore, the calculated value is placed to the right of the number of respondents who do not understand or understand.

**Table 6.** Expected Frequency Value and Actual Frequency

Characteristic	Yogurt	Kefir	Sauerkraut	Yogurt Kecipir	Kombucha Tea	Total
Number of Respondents Who Don't Understand	2 (3,446)	2 (1,723)	6 (3,938)	3 (3,2)	3 (3,692)	16
Number of Respondents Who Understand	12 (10,554)	5 (5,277)	10 (12,062)	10 (9,8)	12 (11,308)	49
<b>Total</b>	14	7	16	13	15	65

The khai-squared value of the calculation results in this study is searched through the following calculations

$$\frac{(2 - 3,446)^2}{3,446} + \frac{(2 - 1,723)^2}{1,723} + \frac{(6 - 3,938)^2}{3,938} + \frac{(3 - 3,2)^2}{3,2} + \frac{(3 - 3,692)^2}{3,692} + \frac{(12 - 10,554)^2}{10,554} + \frac{(5 - 5,277)^2}{5,277} + \frac{(10 - 12,062)^2}{12,062} + \frac{(10 - 9,8)^2}{9,8} + \frac{(12 - 11,308)^2}{11,308} = 2,4843$$

As is known from the calculation above, the calculated khai-squared value is 2.4843. Meanwhile, the khai-squared value in the table for a significance level of 5% and 4 degrees of freedom is 9,4877. The null hypothesis is accepted because the calculated khai-squared value of 2.4843 is smaller than the khai-squared value in the table. Indeed, the proportion of respondents who do not understand probiotic material after the planned intervention is not constant, and therefore, the cause is a significant factor. Consequently, there have been substantial changes following the actions taken regarding the knowledge of students at Islamic boarding schools regarding food or drinks, including probiotics.

2. Hypothesis Testing of the Kolmogorov-Smirnov Method for Multiple Sample Groups

Based on the answers given by respondents regarding basic knowledge, the benefits of consuming, and the process and stages of making Yogurt, Kefir, Sauerkraut, Kecipir Yogurt, and Kombucha tea after a planned intervention, results were obtained in the following categories:

**Table 7.** Respondent Observation Data

Santri Score	Test Types of Islamic Boarding Schools	Salafi	Modern
Very High		10	14
High		15	10
Currently		1	0
Low		4	4
Very Low		5	2

<b>Total</b>	35	30
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The data in the table shows that the value category of Salafi Islamic boarding school students is the same as that of Modern Islamic boarding school students. Thus, the null hypothesis states that the answers of the Salafi Islamic boarding school students are the same as those of the modern Islamic boarding school students in terms of planned intervention. Meanwhile, the alternative hypothesis states that the answers of the Salafi pesantren students are different from those of the modern pesantren students after the planned intervention. So, if formulated symbolically, the two hypotheses are

H<sub>0</sub>:  $\mu_{\text{Answers of Salafi Islamic boarding school students}} = \mu_{\text{Answers of Modern Islamic boarding school students}}$

H<sub>1</sub>:  $\mu_{\text{Answers of Salafi Islamic boarding school students}} \neq \mu_{\text{Answers of Modern Islamic boarding school students}}$

In this study, the significance level used was 5%. Based on the significance level, a value of D in the table must be calculated. Because the applicable significance level is 5%, the value of D in the table is equal to

$$1,36 \times \sqrt{\frac{37 + 32}{37 \times 32}} = 1,36 \times 0,2414 = 0,3283$$

The D value of 0.3283 is the basis for formulating this study's test criteria and conclusions. Thus, the requirements for testing the hypothesis applied to this study are that the null hypothesis is accepted if

$$D \leq 0,3283$$

While the null hypothesis is rejected if

$$D > 0,3283$$

Furthermore, the value of D must be calculated through several steps. The following work table shows the actions taken to determine the value of D.

**Table 8.** Double Sample Kolmogorov-Smirnov Method Working Table

<b>Santri</b>							
<b>Test Score</b>	<b>Types of Islamic Boarding Schools</b>						<b>Difference</b>
<b>Category</b>	<b>Salafi</b>	<b>Cumulative Frequency</b>	<b>Percentage</b>	<b>Modern</b>	<b>Cumulative Frequency</b>	<b>Percentage</b>	<b>F1-F2</b>
Very Highy	10	10	0.285714286	14	14	0.466666667	-0.18095
High	15	25	0.714285714	10	24	0.8	-0.08571
Currently	1	26	0.742857143	0	24	0.8	-0.05714
Low	4	30	0.857142857	4	28	0.933333333	-0.07619
Very Low	5	35	1	2	30	1	0
<b>Total</b>	35			30			

The largest among the answers of the santri respondents for the Salafi and Modern Islamic boarding schools after the planned intervention was -0.05714. Based on the comparison between the D values in the table and the calculated D values. This value is smaller than the D value in the table of 0.3283. Thus, the null hypothesis is accepted, and the alternative

hypothesis is rejected. In this condition, after the planned intervention, there was no difference in understanding of probiotic material between students studying at Salafi Islamic boarding schools and students looking at Modern Islamic boarding schools.

## Conclusion

The conclusions obtained from the empowerment of students in Salafi and modern Islamic boarding schools can make them adopt a healthy lifestyle through probiotic food and drink accompanied by a holistic understanding of probiotics. The consumption pattern of a healthy life must be carried out by students through probiotic food or drink products in Islamic boarding schools; there are at least four primary functions of probiotic food. First, maintain the balance of intestinal bacteria. Second, it lowers blood cholesterol levels. Third, prevent the formation of cancer cells. Fourth, it helps the digestive process of lactose (sugar in milk). Henceforth, these students can pass on this empowerment to other students through the application of peer tutors.

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