

THE RELATIONSHIP OF SANITATION HYGIENE WITH THE PRESENCE OF *Echericia coli* ON JAMU BERAS KENCUR IN THE OFFICIAL VILLAGE OF BANJARBARU CITY

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ABSTRACT

The Relationship of Sanitation Hygiene with The Presence of *Echericia Coli* on Jamu Beras Kencur in The Official Village of Banjarbaru City. Jamu is a traditional medicine originating in Indonesia. We process herbal medicine from natural plants without using chemical additives as additional ingredients. Herbal medicine must meet health standards by BPOM Regulation, namely *Escherichia coli* negative. *Escherichia coli* found on jamu beras kencur can cause health problems for those who consume it. The Banjarbaru City Official Village is a collection of herbal medicine makers and traders. This study aimed to determine the correlation between hygiene and sanitation in the manufacture of jamu beras kencur and the presence of *Escherichia coli* in jamu beras kencur in Kampung Pesantren Banjarbaru City. The research type was an analytical and cross-sectional design approach. There were 13 makers and samples of jamu beras kencur. We gathered the data through observation and utilized laboratory testing techniques for MPN. Data analysis used the Spearman rank correlation test. Observations of herbal medicine makers' hygiene and sanitation conditions revealed that 7 (53.8%) fell into the excellent category. The results of laboratory examinations obtained by as many as seven (53.8%) met the requirements. The results of the Spearman test showed a correlation between hygiene and sanitation with *Escherichia coli* on jamu beras kencur in Kampung Pesantren Banjarbaru City. Herbalists use gloves, head coverings, masks, and aprons during herbal medicine processing to improve the bacteriological quality of the medicine. They also ensure that their nails are short, maintained, and cleaned. Herbalists process herbal medicine using boiling water as the raw material and adhering to strict hygiene and sanitation protocols.

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INTRODUCTION

Jamu is a traditional medicine originating in Indonesia. Jamu is a natural plant-based concoction, processed without the use of chemical additives as additional ingredients. According to our ancestors, herbal medicine was believed to be beneficial for the body's health, eliminating disease and increasing immunity. Especially during the COVID-19 pandemic, our bodies really need high immunity. The herbal Native plants' roots, leaves, fruit,

flowers, and bark provide the herbal ingredients. s of Makin While the process of making traditional herbal medicine remains simple, the knowledge of herbal medicine makers regarding hygiene and sanitation is often lacking, leading to a lack of attention to these aspects during the processing of herbal medicine. affect processed products, such as bacterial or microorganism contamination [1]. Bad behaviors when process Bad behaviors during food processing, such as scratching body parts, keeping long nails, not using work equipment, and chewing food while working, can increase the risk of bacterial contamination in food. One such bacterium is *Escherichia coli* [2], which can lead to emergencies. Poor hygiene and sanitation conditions can lead to the proliferation of pathogens [3]. *Escherichia coli* bacteria can cause human food poisoning, such as bloody diarrhea, due to their exotoxin [4].

Escherichia coli microbial contamination is negative, according to Food and Drug Supervisory Agency Regulation Number 12 of 2014 concerning Quality Requirements for Traditional Medicines [5]. Previous research from Sandika and Mulasari (2019) stated that as many as 32 milkshake traders (94.1%) had positive samples of *Escherichia coli* contamination. The test results revealed a correlation between the behavior of drink handlers, the cleanliness of water and equipment, and the presence of *Escherichia coli* bacteria [6]. Putri (2021) conducted research in the Banjarbaru City Official Village, examining samples of kencur rice herbal medicine. Out of 35 samples, 34 (97.14%) contained *Escherichia coli* bacteria [7], suggesting the possibility of contamination during the herbal medicine processing.

Since its establishment in 2018, the official village has grown to become a popular tourist destination in Banjarbaru City, drawing frequent visits from local tourists. The official village is home to herbal medicine sellers and manufacturers. One type of herbal medicine that is often purchased by local people and tourists is rice kencur herbal medicine. Turmeric acid and kencur rice are types of herbal medicine that have high popularity in Indonesian society [8]. This research will see whether there is a relationship between hygiene sanitation and the existence of *Escherichia coli* kencur rice herbal medicine in the Banjarbaru City Official Village.

MATERIALS AND RESEARCH METHODS

This type of research is an analytical survey with a research design using a cross-sectional study, namely, the researcher observes the sanitation hygiene of making kencur rice herbal medicine while also examining *Escherichia coli* in kencur rice herbal medicine. The sampling technique uses the total sampling method. The independent variables in this study are hygiene and sanitation, while the dependent variable is the presence of *Escherichia coli* in the herbal medicine Beras Kencur.

The research population was all herbal medicine processors in the Official Village, totaling 22 processors and kencur rice herbal medicine; the research sample was 13 processors and kencur rice herbal medicine. We collected data through observation, interviews, and laboratory examination for the presence of *Escherichia coli*. This research utilized an observation sheet as its instrument, referencing the 2011 Regulation of the Head of the Food and Drug Supervisory Agency concerning Technical Requirements for Good Traditional Medicine Manufacturing Methods [9]. Herbal medicine processors receive a category if they meet the following criteria: good if their score is less than 70%, and poor if their score is less than 70%.

Data analysis used the Spearman rank test with a significance limit of <0.05 . This analysis is a hypothesis test to see whether or not there is a relationship between sanitation hygiene and the presence of *Escherichia coli* in the kencur rice herbal medicine.

RESEARCH RESULTS AND DISCUSSION

Characteristics of Food Handlers

Respondent characteristics include gender, age, education level, years of trading and water sources used.

Table1 Frequency Distribution of Characteristics of Herbal Medicine Processors

Variable	n	(%)
Gender		
Woman	13	100
Man	0	0
Age (Years)		
35 – 45	4	31
46 – 56	4	31
57 – 67	3	23
68 – 78	2	15
Level of education		
elementary school	6	46.1
JUNIOR HIGH SCHOOL	2	15.4
SENIOR HIGH SCHOOL	2	15.4
Not attending school	3	23.1
Trading Time		
7 – 17 years	4	30.8
18 - 28 years old	3	23.1
29 – 39 years old	4	30.8
40 – 50 years	2	15.3
Water sources		
Well water	13	100

Based on Table 1, it can be seen that the gender of herbal medicine processors is 100% female, the most common ages are 35 - 45 years old and 46 - 56 years old with 4 each, the highest level of education is elementary school education, the most years of trading namely 7 – 17 years and 29 – 39 years with 4 each, while the water source used is 100% well water.

The presence of Escherichia coli

Table2 Frequency Distribution of the Presence of Escherichia coli in the
Jamu Beras Kencur Drink

Condition	n	(%)
Meet the requirements	7	53.8
Does not meet the requirements	6	46.2
Amount	13	100

Based on Table 2, it can be seen that the presence of Escherichia coli meets the requirements as much as 7 (53%), the remainder does not meet the requirements.

Hygiene Sanitation Making Herbal Medicine

Table 3 Distribution of Hygiene Sanitation for Making Kencur Rice Herbal Medicine

	Good	(%)	Not enough	(%)
Hygiene Sanitation	7	53.8	6	46.2
a. Personal Hygiene	6	46.2	7	53.8
b. Processing	11	84.6	2	15.4
c. Equipment Condition	12	92.2	1	7.6
d. Processing Site Conditions	3	23.1	10	76.9

The results of sanitary hygiene observations in Table 3 show that 7 (53.8%) processors are in the good category and 6 (46.2%) processing facilities are in the poor category. The variables that have not been implemented by herbal medicine processors are personal hygiene, such as the fact that processors still do not implement personal protective

equipment such as gloves, head coverings, and masks when processing, and the conditions of the processing site, such as not being protected from pollution of the surrounding environment, the construction not being maintained to prevent the nesting of insects, rodents, fleas, or other animals, and the building not being in a clean and tidy condition.

The Relationship between Sanitary Hygiene and the Presence of *Escherichia coli* in the Herbal Medicine Rice Kencur

Table 4 Distribution of Hygiene Sanitation Categories and *Escherichia coli* in Jamu Beras Kencur

Hygiene Sanitation Category	<i>Escherichia coli</i>		<i>P</i>
	Qualify	Not eligible	
Good	6	1	0.001 ($\alpha < 0.05$)
Not enough	1	5	
Amount	7	6	

Table 4 displays the distribution of good sanitation hygiene, which meets the requirements for *Escherichia coli* bacteria in as many as 6 processors; poor hygiene and sanitation, which does not meet the requirements for *Escherichia coli* bacteria in as many as 5 processors; poor sanitation hygiene, which meets the requirements for *Escherichia coli* bacteria in as many as 1 processor; and good sanitation hygiene, which does not meet the requirements for *Escherichia coli* bacteria in as many as 1 processor. If the bacterial content in the herbal medicine is negative [5], *Escherichia coli* meets the requirements.

The results of statistical data analysis using the Spearman correlation test obtained results with a value of $p = 0.001$ ($\alpha < 0.05$). We can conclude that the *Escherichia coli* variable significantly correlates with the hygiene and sanitation variables. The correlation coefficient value stands at -0.805, indicating an inverse relationship between the two variables. This implies that the stronger the sanitation and hygiene practices in herbal medicine production, the lower the likelihood of *Escherichia coli* bacteria's presence.

Hygiene and sanitation are very important things and influence the quality of the food produced. *Escherichia coli* bacteria are an indicator of food contamination, which can cause health problems or result in congenital diseases, so the quality of the food must meet health requirements such as location, equipment, good food processing, and adequate sanitation facilities. [10]

The requirement that herbal medicine processors have not yet fulfilled is to wear personal protective clothing such as gloves, head coverings, and masks when processing herbal medicine; this is a factor for cross-contamination originating from the processor's body. The processing process can affect the presence of *Escherichia coli*, just as a processor can. While some processors use raw cooking water from wells to process herbal medicine, others combine it with herbal spices for simultaneous cooking.

Equipment condition There are still processors that, after being cleaned, are stored and placed in a dirty place, on a dirty floor, or simply placed there. This can result in contamination of the equipment when making herbal medicine. Unmaintained processing areas continue to serve as breeding grounds for insects, rodents, fleas, and other animals. Improper food handling can cause disease, disability, and even death [6].

CONCLUSIONS AND RECOMMENDATIONS

Concluded that there is a relationship between sanitation hygiene and *Escherichia coli* in the kencur rice herbal medicine in the Banjarbaru City Official Village. We expect herbal medicine vendors to enhance their hygiene and sanitation practices when processing herbal medicine,

utilizing personal protective equipment like gloves, head coverings, and masks. They must also cut their nails short, maintain cleanliness, and boil raw water. The label should include the product's name, the herbal medicine's logo, the distribution permit number, the expiration date, the ingredients' composition, usage instructions, the company's name or address, and measures to prevent insects, rodents, fleas, or other animals from nesting. We expect the Health Service to support food safety efforts by enhancing supervision of home industries that process herbal medicine, including education on good hygiene and sanitation practices and regular monitoring.

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