

COCONUT WATER PROBIOTIC

BIOCOFERA

Laura C.
Jonathan S.



BACKGROUND

Coconut water is one of the most abundant natural resource. Over 900 litre of coconut water is produced by Indonesia each year. However, we haven't maximized it properly. Many of those are wasted away and could lead to the acetic acid pollution.

PROBLEM STATEMENT

Indonesian's dietary habit is unhygienic and containing a high amount for free radicals. To keep the digestive system healthy, most people consume probiotic, such as yoghurt. However, yoghurt is not the answer because it doesn't have enough antioxidant and also it is quite expensive, not such an affordable things for most people.

WHAT IF WE SUBSTITUTE MILK WITH COCONUT WATER THAT'S CHEAPER AND HAS A HIGHER AMOUNT OF ANTIOXIDANT ACTIVITY?

RESEARCH METHODS

THE MAKING PROCESS

1. BACTERIAL STARTER MAKING

culturing *Lactobacillus bulgaricus* with deMann Rogosa Sharpe Agar

2. STERILIZATION

sterilize every tools and media using autoclave, to prevent contamination

3. SAMPLE MAKING

disolving lactose to make 3 different sample based on lactose concentration (5%, 10%, 15%) and putting the starter to fermentate the samples

SAMPLE TESTING

ANTIMICROBIAL ACTIVITY TEST

to test inhibition zone of *S. aureus*, *E. coli*, and *Candida albicans*, using disc diffusion method

ANTIOXIDANT ACTIVITY TEST

using UV-Vic Spectrophotometer with DPPH method to measure the effectiveness of antioxidant activity

PH LEVEL TEST

measuring pH level using the pH meter that has been calibrated

ORGANOLEPTIC TEST

we give our samples to 20 people to ask for their reviews about the appearance, taste, aroma, texture

milk-based yoghurt

No.	Materials	Quantity	Price
1.	Sterile Milk	1 litre	32,000 IDR
2.	DeMann Rogosa Sharpe Agar	10 grams	8,000 IDR
3.	<i>Lactobacillus bulgaricus</i> isolate	1 test tube	55,000 IDR
Total Production Cost (for 1 litre)			95,000 IDR

Price Comparison

coconut water probiotic

No.	Materials	Quantity	Price
1.	Coconut water	1 litre	10,000 IDR
2.	Lactose	10 grams	10,000 IDR
3.	<i>Lactobacillus bulgaricus</i> isolate	1 test tube	55,000 IDR
4.	DeMann Rogosa Sharpe Agar	10 grams	8,000 IDR
Total Production Cost (for 1 litre)			83,000 IDR

Production Cost

Coconut water probiotic is 12,000 IDR cheaper than milk based yoghurt.

RESULTS & CONCLUSIONS

Our probiotic product is more effective against negative gram bacteria such as *Escherichia coli*, but it's still have an inhibition zone against *Staphylococcus aureus* and *Candida albicans*.

Fermentation could increase the effectiveness of antioxidant activity, the more higher lactose level the more effective the antioxidant activity will be.

Fermentation could lower the pH level, the more higher the lactose level, the more acidic the probiotic will be.

From the organoleptic test, the participants tend to prefer sample 1 the most because it is the least acidic among the three samples.

The best sample of our product is sample 2 because pH is suitable to the Indonesian National Standard (6.5 - 9.5), has an antimicrobial activity against *Escherichia coli*, *Staphylococcus aureus*, and *Candida albicans*, has a high antioxidant activity, and has a suitable taste to be drink.

To produce 1 litre of probiotic, coconut water based one is 12,000 worth of Rupiah cheaper compared to the milk based yogurt.

WHY SHOULD I CHOOSE BIOCOFERA?

BENEFITS

- Has an antimicrobial activity against negative gram bacteria such as *Escherichia coli*,
- positive gram bacteria such as *Staphylococcus aureus* and fungi such as *Candida albicans*.
- High antioxidant activity to contract free radical
- Cheaper than milk-based yoghurt