

## CHAPTER III

### METHODS

#### 3.1 Time and Place

Culinary innovation and Product development was done from March to July 2023 at culinary kitchen and baking pastry kitchen, Ottimmo International.

#### 3.2 Ingredients and Utensils

##### 3.2.1 Ingredients

The ingredients and functions of the ingredient used in this study presented in the table 3.1.

**Table 3.1** Ingredients for Nata De Pinari

No	Ingredients	Quantity	Function
1	White rice	500 g	Main ingredient to make nata de pinari
2	Pineapple skin	450 g	Main ingredient to make nata de pinari
3	Pineapple flesh	50 g	Main ingredient to make nata de pinari
4	Mineral water	1000 ml	Ingredient to wash the white rice
5	Table sugar	90 g	Carbon source for the fermentation
6	White vinegar	10 ml	Balancing the acidity
7	Starter ( <i>Acetobacter xylinum</i> )	100 ml	Inoculum starter for the fermentation
8	Food grade ZA ( <i>Zwavelzure Ammoniak</i> )	8 g	Inoculum substrate
9	70% rubbing alcohol	10 ml	Sterilizing the utensils
10	Tap water	3000 ml	Ingredient to soak nata de pinari

11	Pandan leaf	6 pcs	Aromatic to soak nata de pinari
12	Pandan flavor essence	10 ml	Flavoring to make nata de pinari syrup
13	Pandan leaf	4 pcs	Aromatic to make nata de pinari syrup
14	Table sugar	120 g	Sweetener to make nata de pinari syrup
15	Mineral water	600 ml	Ingredient to make nata de pinari syrup

### 3.2.2 Utensils

The utensils and functions used in this study presented in the table 3.2

**Table 3.2** Utensils for making Nata De Pinari

No	Utensils	Function
1	<b>Digital scale</b>	Weighing ingredients
2	<b>Cutting board</b>	A surface for cutting all ingredients
3	<b>Knife</b>	Cutting the ingredients
4	<b>Large bowl</b>	Washing the rice
5	<b>Blender</b>	Blending pineapple skin and pineapple flesh
6	<b>Cloth filter</b>	Straining the pulp from the pineapple juice
7	<b>Sauce pan</b>	Tool for boiling the media and making nata de pinari syrup
8	<b>Silicon spatula</b>	Stirring the media on sauce pan
9	<b>Square food container</b>	Place to accommodate the nata de pinari media
10	<b>Measuring cup</b>	Measuring mineral water and white vinegar
11	<b>Digital pH meter</b>	Measuring the media's pH level
12	<b>Baking paper</b>	Cover up the container
13	<b>Rubber band</b>	Tie the kitchen cloth around the lip of the container

<b>14</b>	<b>Stove</b>	An open flame to boil the media and making nata de pinari syrup
<b>15</b>	<b>Refrigerator</b>	Appliance for storing the finished product

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### 3.3 Processing Methods

The processing method of this study are presented below:

1. Wash 500 g white rice with 1000 ml mineral water in a large bowl
2. Filter the rice washing water using cloth filter to remove impurities that participate in the rice washing process
3. Cut 450 g pineapple skin and 50 g pineapple flesh into small pieces
4. Then, wash the pineapple skin and the pineapple flesh with running tap water until clean
5. Next, add the pineapple skin and the pineapple flesh that has been cut into small pieces into the blender and blend it with 1000 ml rice washing water until become a very smooth juice
6. Strain the pineapple skin and the pineapple flesh juice that has been blended with rice washing water using cloth filter to remove the pulp of pineapple skin and pineapple flesh
7. Add the pineapple juice mixture into the sauce pan, stir and bring to boil
8. After the mixture boils, add food grade ZA, table sugar and white vinegar, then stir until well combined and remove from the stove
9. Check the pH level of the media using digital pH meter so that the pH level of the media is 4.0, to make the bacteria growth perfectly
10. Rest the media until room temperature (28° C – 30° C) around 6 – 12 hours
11. Then, transferred the media into a food container that has been sterilized with 70% rubbing alcohol
12. The next process is inoculation, add 100 ml *Acetobacter xylinum* starter to the media

13. Furthermore, in this fermentation process, the food containers used are arranged and placed in a place that is free from vibration and store at the room temperature (28° C – 30°C). Cover the food container with baking paper and tie it with rubber band around the lip of the container.
14. The fermentation process lasts for 14 days to produce thick nata with the best quality
15. After 14 days, wash the nata de pinari with running tap water
16. Then, put the nata de pinari in a food container, and add 1000 ml of tap water and 2 pcs tied pandan leaves. Soak the nata de pinari for 3 days. Furthermore, the nata must be washed, the soaking water and pandan leaves must be replaced with new ones every single day to remove the sour smell of the nata de pinari
17. After soaking for 3 days, wash and rub the nata de pinari sheet to remove the thin layer or *pellicle* that is on the surface of the nata de pinari
18. Next, cut the nata de pinari into cubes, roughly about 1.5 cm width
19. To make nata de pinari syrup, put the nata de pinari that has been cut into cubes into the sauce pan, add 600 ml mineral water, 120 g table sugar, 4 pcs tied pandan leaves, and 10 ml pandan flavor essence, stir until well combined and boil around 10 minutes until the nata de pinari expands and the color turns to milky white. Turn off the stove, let it cool and the nata de pinari is ready to be consumed.

### 3.4 Flow Chart

The flowchart of processing method is presented in Figure 3.1.

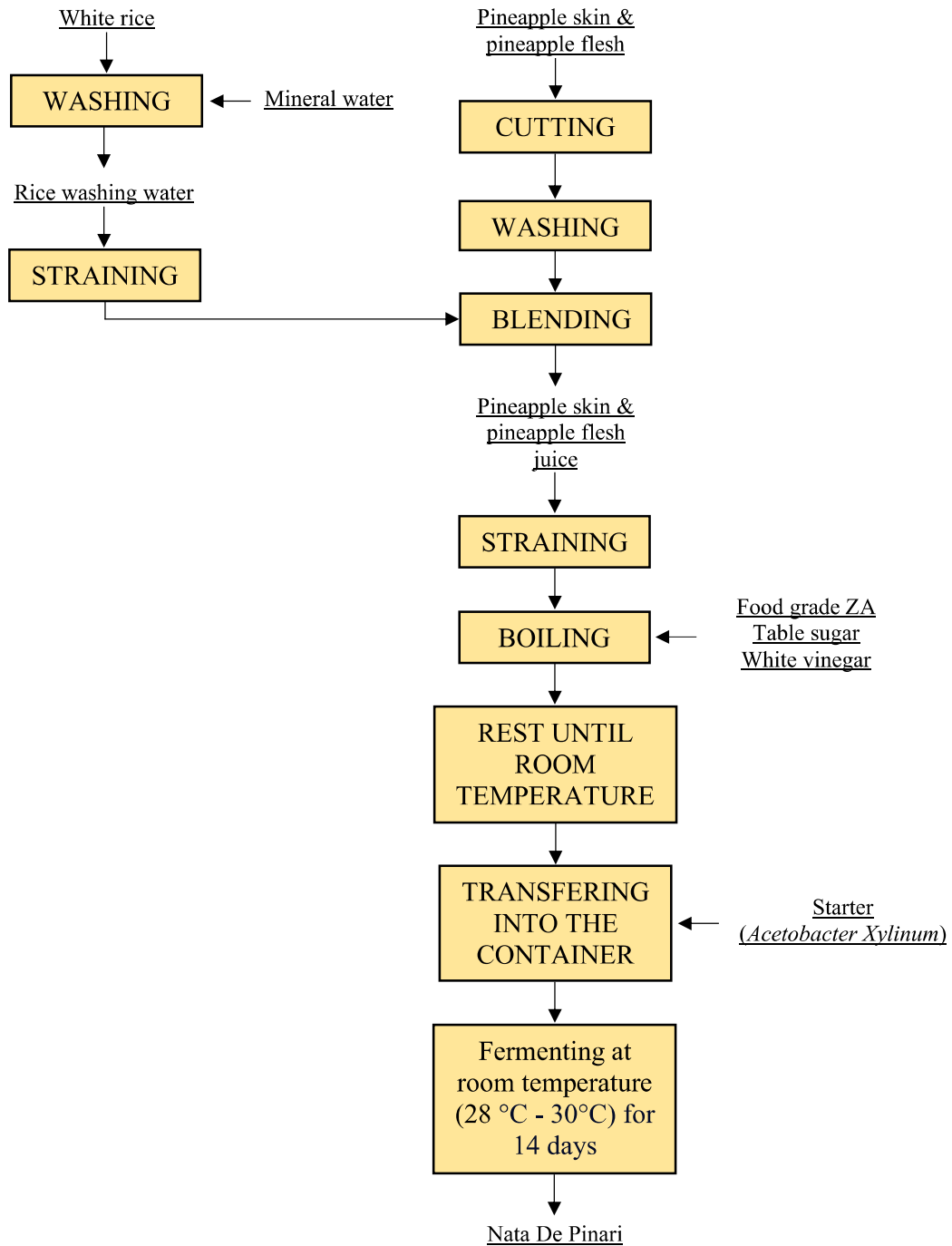


Figure 3.1 Flow Chart Nata De Pinari