



# Innovation by research and learning management

## The study of methods for testing carbohydrates in cultivated bananas

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### Background and significance

Cultivated banana was developed from a hybrid between wild bananas and banana trees. They were favorite fruits, good taste easy to grow. It was divided into 3 types. According to the color of the meat namely, red, white, and yellow. Thai people eat fresh bananas by boiling and cooking them. In addition, there is a black banana which the shell has a black color but the flesh is white and very delicious like white banana. Some kinds of banana, suitable for eating fresh because when we grilled or boiled they would have an astringent taste. Cultivated banana has many other native names such as Yellow Banana, Southern Banana or Banana Ong.

When we compare cultivated banana with banana egg about their energy, the cultivated banana is. The unripe bananas contain highly of iron. They can help to build red blood cells for prevent anemia. They contain calcium, phosphorus and vitamin c to helps nourish bones, strong teeth and gums and healthy skin. They contain a lot of beta-carotene niacin and dietary fiber which helps the digestive system to become more fluid. Eating ripe banana will help drain the stomach and can treat scurvy in young children. They reduce sore throat chest pain with dry cough by eating 4-6 times for children. Eating bananas every day before brushing your teeth is good for your oral. And good skin, see results in 1 week raw banana and impulsive bananas contain tannins. Pectin has astringent effect. Treat minor diarrhea By eating half a result or 1 result Diarrhea will abate In addition The study also found that Has the effect of treating gastritis as well and also provide the following nutritional values

1. 75.7 grams of water 2. 85 calories of energy 3. 1.1 g protein 4. Fat 0.2 grams 5. Carbohydrates 22.2 grams 6. 0.8 grams ash 7. Calcium (Ca) 8.0 grams 8. Iron (Fe) 0.7 milligram 9. Potassium (K) 370 milligram 10. Magnesium (Mg) 33 milligrams 11. Vitamin A 190 IU 12. Vitamin C 10 milligram 13. Thiamine 0.05 milligram 14. Riboflavin 0.06 milligram 15. Niacin 0.7 milligram

### Objectives

1. To study how to test carbohydrates in cultivated bananas.
2. To study the volume of carbohydrates in bananas between ripe bananas and raw bananas.

### Variables

- 1.Independent Variables is Cultivated banana
- 2.Dependent Variables is carbohydrates and sugars in ripe banana and raw bananas
- 3.Controlled Variables is Net weight of ripe bananas and raw bananas Time and experimental methods Carbohydrate differentiation test And sugar in bananas between ripe bananas and raw bananas Banana varieties used in the experiment to find carbohydrates in bananas between ripe bananas and raw bananas and the volume of the Benedict solution and iodine solution

### Expected benefits

1. Learned how to find carbohydrates in ripe banana and raw bananas
2. Knowing the difference of carbohydrates in bananas between ripe banana and raw bananas
3. Learned the amount of carbohydrates in bananas between ripe bananas and raw bananas

### Scope

1. Differences of carbohydrates in bananas between ripe bananas and raw bananas.
2. The amount of carbohydrates in bananas between ripe banana and raw bananas.
3. Types of bananas used to study carbohydrates.

### Experimental method

#### Materials and chemicals

1. Beaker 250 ml. 4 leaves.
2. Beaker 100 ml. 2 leaves.
3. Iodine solution.
4. Benedict solution.
5. 2 sets of alcohol lamp.
6. 8 medium-sized test tubes.
7. Compound cup set 2 sets.
8. Weight Scale.
9. Distilled water.
10. Dropper.
11. Glass rod.
12. Ripe banana, Raw banana.

#### Operating procedures

1. Put iodine solution and benedict solution into the test tube by dropper iodine solution.
2. Drop benedict into each solution 3 drops per tube.
3. Shake each tube for a long time in which the banana is cooked shake for a time Tube 1 5 minutes, tube 2 10 minutes, tube 3, 15 minutes, tube 4, do not shake and raw banana shake for the 1st time tube, 5 minutes, tube 2, 10 minutes, tube 3, 15 minutes, tube 4, do not shake.
4. Bring both test tubes in boiling water at a temperature of 37 degrees.
5. Finally hake all the tubes softly and then recorded the results.

### Results and Discussion

From studying the amount of carbohydrates of each type of banana which is carried out by dripping the benedict solution into the banana the results of the study are as follows.

Table The results of finding carbohydrates indicator in each type of bananas.

Type of substance	The tube	Iodine solution	Benedict solution	Boiling time	Results
Raw banana	1	3 drops	Do not drop the solution	5 minutes	The original color of bananas
	2	3 drops	Do not drop the solution	Not boiled	Blue-purple
	3	Do not drop the solution	3 drops	5 minutes	Green
	4	Do not drop the solution	3 drops	Not boiled	Clear with yellow
Ripe banana	1	3 drops	Do not drop the solution	5 minutes	The original color of bananas
	2	3 drops	Do not drop the solution	Not boiled	Purple black
	3	Do not drop the solution	3 drops	5 minutes	Brown sugar
	4	Do not drop the solution	3 drops	Not boiled	Light yellow

#### Note

The original color of cultivated banana is creamy white.  
Compare tube 1 (tube 1 is after boiling) compared to tube 2 (tube 2 is before boiling)  
Compare tube 3 (tube 3 is after boiling) compared to tube 4 (tube 4 is before boiling)

### Conclusion

Based on the results of the experiment, the method of finding carbohydrates in banana juice found that when dropping 3 drops of iodine solution into a test tube containing raw banana and a tube containing ripe banana, tube 1 and tube 2, and drop of 3 drops of benedict solution in a test tube containing raw banana juice and a tube containing ripe banana the 3rd tube and the 4th tube and the 1st test tube with raw banana and ripe banana with iodine solution in boiling water for 5 minutes and the 3rd test tube with raw banana and ripe banana are put on a benedict solution to boil in boiling water for 5 minutes when dropping the iodine-like substance into the test tube containing 3 drops of raw banana.

When dripping the benedict solution in a test tube containing 3 drops of raw banana.

When dropping iodine solution in a test tube containing 3 drops of ripe banana, the banana has changed to a dark purple color when dropping the Benedict solution in a test tube containing 3 drops of banana, the color of the banana becomes light yellow.

When using the tube 1 with raw banana juice boiled in boiling water for 5 minutes. Bananas have changed color from clear color to the original color of cultivated banana.

When bringing the 3rd tube of test tube with raw banana juice boiled in boiling water for 5 minutes. The bananas have changed color from yellow to green. When we use tube 1 with boiled banana, boiled in boiling water for 5 minutes. The bananas have changed from black to purple to the original color of the cultivated banana (clear color).

When bringing the 3rd tube of test tube with boiled banana, boiling in boiling water for 5 minutes. Concluded that raw bananas contain more carbohydrates than ripe bananas.

### Discuss the results

Raw banana juice reacts with iodine. When dropping iodine solution into a raw banana Bananas will turn blue and purple when boiled in boiling water. Will change the color to the original color of cultivated banana. Ripe banana leaves react with Benedict solution. When dropping the Benedict solution into the cooked banana will change the color to reddish brown and when boiled in boiling water, it will turn into a clear, green, yellowish color.

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