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STUDENT WORKSHEET

Human Digestive System

High School Biology Grade XI



SMA/MA/SMK

NUTRITION AND FOOD TEST

TEST OF CARBOHYDRATES, PROTEINS AND FATS



Class :

Group :

- 1.
- 2.
- 3.

LABORATORY OBJECTIVE

1. Performing tests for carbohydrate, protein, and fat content in food ingredients.
2. Identifying the substances contained in food ingredients by observing the color changes they induce.

THEORITICAL BASIS

Food is a substance other than medicine that contains elements/chemical bonds that can be converted into nutrients by the body. According to their function, nutrients can be distinguished into three types: providing energy (such as carbohydrates, fats, and proteins), promoting growth and maintenance of body tissues (such as proteins, minerals, and water), and regulating bodily processes (such as proteins, minerals, water, and vitamins). To determine the nutritional content of food ingredients, food test indicators commonly known as reagents are used. These reagents are used to determine the nutritional content in food such as:

No	Substance	Indicator	Color	
			Initial	Final
1	Carbohydrate	Lugol	Brown	Blueish black
2	Protein	Biuret	Light blue	Purple
3	Fat	Filter paper	Opaque	Transparent

TEST FOR CARBOHYDRATES

MATERIALS

Equipment	Materials
1. Test tube	1. Rice
2. Test tube rack	2. Tofu
3. Aluminum mortar	3. Peanuts
4. Dropper pipette	4. Iodine solution

PROSEDUR

1. Grind each food material finely using an aluminum mortar and pestle.
2. Put the finely ground food ingredients into test tubes.
3. Add 5 drops of iodine solution to each food ingredient.
4. Observe the color change (If the food material contains carbohydrates, the color will change to dark blue).

TEST FOR PROTEIN

MATERIALS

Equipment	Materials
1. Test tube	1. Rice
2. Test tube rack	2. Tofu
3. Aluminum mortar	3. Peanuts
4. Dropper pipette	4. Biuret solution

PROCEDURE

1. Grind each food material using an aluminum mortar and pestle.
2. Put the finely ground food ingredients into test tubes
3. Add 5 drops of biuret solution and mix.
4. Observe the color change (If the food material contains protein, the color will change to purple).

TEST FOR FAT

MATERIALS

Equipment	Materials
1. Filter paper	1. Rice 2. Tofu 3. Peanuts

PROCEDURE

1. Grind the all materials using a mortar and pestle.
2. Place each food item on parchment paper.
3. Observe the color change (If the food material contains fat, the parchment paper becomes transparent).

Table 1. Carbohydrate Test Results Data

NO	FOOD MATERIAL	COLOR		CARBOHYDRATE CONTENT	
		INITIAL	FINAL	YES	NO
1	Rice				
2	Tofu				
3	Peanuts				

Table 2. Protein Test Results Data

NO	FOOD MATERIAL	COLOR		PROTEIN CONTENT	
		INITIAL	FINAL	YES	NO
1	Rice				
2	Thofu				
3	Peanuts				

Table 3. Fat Test Results Data

NO	FOOD MATERIAL	COLOR		FAT CONTENT	
		INITIAL	FINAL	YES	NO
1	Rice				
2	Thofu				
3	Peanuts				

Complete the following sentences!

1. In carbohydrate test, the indicator used is solution
If the food contains carbohydrates then it will change color to
2. In protein test, the indicator used is solution If the food contains protein then it will change color to
3. In fat test, the indicator used is If the food contains fat then it will change color to
4. In the tested practical, foods containing carbohydrates are
5. In the tested practical, foods containing protein are
6. In the tested practical, foods containing fat are

CONCLUSION!

Based on the results of our discussion, let's create a poster about healthy and nutritious plate contents!