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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!