ENERGY AND CHEMISTRY OF FOOD

Human beings get the energy they need to move, grow, think, etc. from the food that they eat. There are three categories of food that give us energy (calories) carbohydrates (sugar and starch), protein, and fat. All of them are made of the elements carbon, hydrogen, and oxygen but have different arrangements. All of them can be broken down into sugar which is the fuel our bodies use.

PART 1: STARCH

Today we will look at a type of carbohydrate called starch which is basically sugar stuck together. Our body easily breaks the starch down into sugar.

1. Take a cracker and chew it for a long time. Do not swallow but add another cracker. What do you notice about the flavor?
2. Iodine turns purplish/black in starch. Test the following foods and list which contain starch.

|  |  |  |
| --- | --- | --- |
| Food | Color with a drop of iodine | Starch? |
| Corn starch |  |  |
| cracker |  |  |
| cereal |  |  |
| orange |  |  |
| apple |  |  |
| potato |  |  |
| nut |  |  |
| cheese |  |  |

1. Spit into a test tube and add a pinch of crushed up cracker and a drop of iodine. Your teacher will also have some test tubes with crackers and amylase (the enzyme contained in spit) and iodine. Compare the color of your test tube and the amylase test tube over time.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 0 minutes | 5 minutes | 10 minutes | 15 minutes |
| spit |  |  |  |  |
| amylase |  |  |  |  |

PART TWO: TESTING FOR CALORIES (ENERGY IN FOOD)

Because different foods have different mixtures of carbohydrates, fat, protein, fiber (the part of the food we can’t digest so we don’t get calories from it), and water they give us different amounts of calories (energy). The basic way that we test for calories is by heating food until it burns and while it is burning we see how much it heats up a certain amount of water. Follow the procedure described in the instructions and record how much each food substance heats up the water.

|  |  |  |
| --- | --- | --- |
| Food | Observation | Temperature |
|  |  |  |
|  |  |  |
|  |  |  |

PART THREE: WHAT FOOD GIVES US

In addition to giving us the energy we need to move, think, and heat our bodies food gives us fiber, vitamins, and minerals that we need for different body functions. Describe what each one does for us.

CALORIES:

FIBER:

MINERALS:

VITAMINS: