Investigating Your Health:

Fabulous Phytochemicals

Name: _____

Objective: Investigate vegetables by keeping a log of how many you eat in a week and learn about ways you can add vegetables to your diet.

The phytochemical content of vegetable pigments provide many benefits for the body. ***Phytochemicals*** are natural compounds found in vegetables, fruits, and other plants. Plants need them to protect themselves from harsh weather, insects, injuries, and harmful predators. When we eat plants with phytochemicals, their benefits are passed on to us. The color of the vegetable is usually a sign of what phytochemical it contains. Red vegetables, such as tomatoes, contain lycopene. ***Lycopene*** reduces the risk of cancer and protects the heart and lungs against diseases.

Flavonoids are found in red/purple vegetables and reduce the risk of heart disease, cancer, blood clots, and stroke. Some examples of red/purple vegetables are red cabbage and red bell peppers. Orange vegetables, like carrots and sweet potatoes, contain ***beta-carotene***, which can help your immune system, protect your eyes, skin, and bones, and prevent heart disease. ***Lutein*** is found in yellow/green vegetables, such as corn, green beans, spinach, and green bell peppers. Lutein helps keep your eyes and heart healthy. Green vegetables include broccoli, Brussels sprouts, cabbage, kale, and cauliflower. These green vegetables contain ***indoles***, which helps to protect against cancer. Onions and other white vegetables contain ***allicin***, which also helps to prevent cancer.

There are different kinds of phytochemicals, vitamins, and minerals in different vegetables. Therefore, it is important to eat a variety of vegetables every day. You should eat at least 2 ½ cups of vegetables every day! Most Americans are not eating enough fruits and vegetables. There are many things you can do to increase the amount of vegetables in your diet. The first step is to notice how many vegetables you come across every day. Every time you see a vegetable, try it! Once you know your favorite vegetables, bring them to school as a snack. You can bring carrots, peppers, cucumbers, and broccoli in a snack bag. You could also try to eat vegetables at every meal!

PART A: Vegetable Phytochemicals

1. Research the different phytochemicals. Identify at least 3 different phytochemicals, describe the health benefits, and provide 2-3 example vegetables for each. Use the Internet and or the reading above to help with your search. Make sure to use reliable sources of information.

Phytochemical	Health Benefits	Example Vegetables
Lutein	Keeps eyes and heart healthy	1. Corn 2. Green Beans 3. Spinach
Indoles	Help protect against cancer	1. Cabbage 2. Kale 3. Cauliflower
Beta-Carotene & Alpha-Carotene	Helps immune system Protects your eyes, skin, and bones Prevents heart disease	1. Carrots 2. Sweet Potatoes 3. Pumpkins
Lycopene	Reduces risk of cancer Protects the heart and lungs against diseases	1. Tomatoes 2. Tomato Products
Flavonoids	Reduces risk of heart disease, cancer, blood clots, and stroke	1. Red Cabbage 2. Red Bell Peppers 3. Radicchio
Allicin	Helps to prevent tumors from forming	1. Onions 2. Garlic

2. Name three organs/body systems that can be impacted positively by phytochemicals.

   Student answers may vary. Heart, lungs, skin, eyes, bones, and immune system.

3. Based on what you discovered in the table on the previous page, why is it important to eat a variety of vegetables every day?

   Different vegetables have different phytochemicals, vitamins, minerals, and health benefits. Therefore, to gain all of the health benefits, you need to eat a variety of vegetables.

PART B: Everyday Vegetables

1. Over the next week, count how many times you eat a vegetable or recall the vegetables you normally eat in a typical week. Describe the color and phytochemical of each vegetable in the table on the next page. Based on your research in Part A, identify the potential health benefits of each vegetable.

   Student answers may vary.

Date	Meal	Vegetable	Color and Phytochemical	Health Benefits
	Breakfast			
	Lunch			
	Dinner			
	Snack			
	Breakfast			
	Lunch			
	Dinner			
	Snack			
	Breakfast			
	Lunch			
	Dinner			
	Snack			
	Breakfast			
	Lunch			
	Dinner			
	Snack			
	Breakfast			
	Lunch			
	Dinner			
	Snack			
	Breakfast			
	Lunch			
	Dinner			
	Snack			
	Breakfast			
	Lunch			
	Dinner			
	Snack			

1. On average, how many vegetables did you eat each day?

   Student answers may vary.

2. Review the reading provided at the beginning of the investigation. How does your vegetable intake compare to the recommendation?

   Student answers may vary.

3. Research ways you can increase the number of vegetables you eat each week. Describe three ways below.

   Student answers may vary.

TRY THIS AT HOME:

Pita Pocket Bouquet

Makes 2 servings

You will need:

1 pita bread pocket
2 tablespoons grated cheese
¼ cup ricotta cheese
Pinch of dried herbs (i.e. oregano, basil)
Small pieces of fresh raw vegetables, such as:

- **broccoli**
- **carrot sticks**
- **celery sticks**
- **onions**
- **green bell peppers**
- **cauliflower**

INSTRUCTIONS:

1. Preheat oven to 350˚F
2. Slice the whole pita bread circle in half to make two pockets. Set aside.
3. Mix the cheeses and herbs in a mixing bowl.
4. Spoon the cheese mixture into the pita pockets.
5. Arrange your vegetables in the pita pocket so they bulge out of the pocket like a bouquet of flowers.
6. Wrap pita in aluminum foil.
7. Place the pita sandwich in the oven and bake for 10 minutes.
8. Carefully tear open the foil and remove the sandwich. Be careful, it may be hot. Cool for several minutes, and then transfer to a lunch plate.
9. Enjoy!