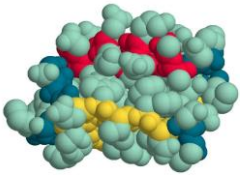
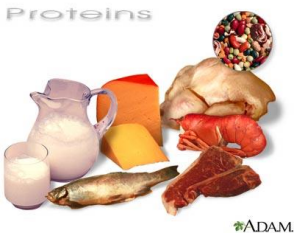


Name _____ Block _____



Protein Identification Lab

Background Information:

The name Protein comes from the Greek word "prota", meaning "of primary importance". Proteins are made from building blocks called amino acids. Most proteins contain 30 to 100's of amino acids connected together in chains with peptide bonds. Protein structure is much more complex than that of Fat or Carbohydrates.

Proteins make up about 15% of an average person's body mass (weight). Protein molecules are important to us in a variety of ways. Much of the structure of our body is constructed from protein molecules. Muscle, cartilage, ligaments, skin, and hair all contain **proteins**. Other protein molecules play a vital role in keeping our body working properly. Hemoglobin, hormones, antibodies, and enzymes are all examples of proteins. Whether you are a vegetarian or a meat eater, you must have protein in your diet. The protein in the food we eat is our main source of the chemical building blocks we need to build our own protein molecules.

Proteins are essential parts of all living organisms and part of every single process in cells. Many proteins are enzymes that speed up biochemical reactions and play an important role in metabolism. Other proteins have structural or mechanical functions, such as the proteins in the cytoskeleton of a cell that maintains a cell's shape. Proteins are also a necessary component of our diet, since humans cannot make all the necessary amino acids our selves, and so we must obtain essential amino acids from food. Through the process of digestion, animals break down ingested protein into free amino acids that our body can put back together to make new proteins in our bodies!

The Biuret Test is used to determine of proteins are present in a solution. Biuret solution is naturally light blue, but when it is mixed with proteins, the solution will become a light purple or deep violet color. The darker the color, the more protein there is.

Procedure

A. **Label your 5 test tubes # 1-5**
B. **Put 20 drops of each "sample" solution into test tubes # 1-5 as shown in table below**
C. **Put 5 drops of Biuret Solution into each test tube and record the results in your data table.**
D. **If the solution turns PURPLE, there is Protein in the "sample".**
E. **If the solution stays LIGHT BLUE, there is not Protein in the "sample"**
F. **When you are done, wash out your test tubes with soap and the test tube brush, then show me your clean lab station, and get a CLEAN STAMP.**
G. **Answer the Questions on the back of this paper.**

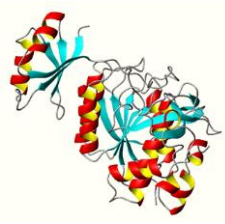
stamp

Complete the following Questions before starting the lab:

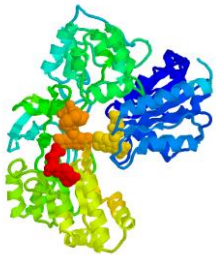
1. What are proteins made from?: _____
   _____
2. What are 4 "structures" in our bodies are made from proteins? _____
   _____
3. Hemoglobin, _____, _____, and _____ are all examples of protein.
4. How do animals make the proteins they need? _____
   _____
5. What will you label each test tube? _____
6. How many drops of food "sample" solution will you put into each test tube? _____
7. What are the 5 foods you will be testing for protein?(see the back) _____
   _____
8. How many drops of Biuret Solution will you put into each test tube? _____
9. How will you know if there is protein in your food "sample" solution?_____
   _____
10. What will you do when you are done with the Lab? _____
    _____

Materials:

- ❑ 5 test tubes
- ❑ Biuret Solution
- ❑ Table Sugar Solution
- ❑ Tuna Solution
- ❑ Milk
- ❑ Egg Solution
- ❑ Apple Juice



Tube	20 drops of	5 drops of
1	Milk	**Biuret Solution**
2	Table Sugar Solution	
3	Tuna Solution	
4	Apple Juice	
5	Egg Solution	



Data:

Sample	Color of Biuret Solution <u>Before</u> Mixing with "Sample"	Color <u>After</u> Mixing with "Sample"	Protein Present? (Yes or No)
Milk			
Table Sugar			
Tuna			
Apple Juice			
Egg			

Conclusions: (Answer in Complete Sentences)

Clean Stamp

1. Of the five foods you tested, which ones contained protein?

2. <u>Name at least three</u> other foods that you think may contain protein.

3. You had just been given a "special smoothie", explain **<u>how</u>** you would determine if the smoothie had protein in it (include at least three steps).

4. Why are proteins important to humans?