A Research on Whether Starch, Sugar, Protein, and Fat Are Present in Chocolate Milk, Cheerios, Goldfish, and Cheez-Its

Research Question: Are starch, sugar, protein, and fat present in chocolate milk, cheerios, goldfish, and cheez-its?

Starch, sugar, protein, and fat presence in various substances

Observations Table

Interpretive Results:

Chocolate milk changed color, becoming just slightly more pink after it was shaken, but the change was so barely noticeable that it was determined that there is no starch in chocolate milk. The chocolate milk turned a caramel after adding the solution from a green, grayish blue color, showing that sugar is present. There was a pretty long protein chain in the chocolate milk, as it turned dark purple, which makes sense because milk has protein. The chocolate milk did not produce any signs of translucence (or at least it was difficult to tell), and so the fat test resulted in none.

The cheerios changed color to purple, showing starch presence. There was also sugar present, as the color changed to yellow. The cheerios stayed a grayish substance in the protein test and thus showed presence of sugar. The cheerios stayed grayish during the protein test, so no protein was determined to be present. There was no spots visible in the fat test, so it was determined to be no fat.

The goldfish turned very dark purple, almost violet, showing that starch was present. There was sugar present, though only the bottom of the tube turned brown orange, probably because the precipitate gathered at the bottom of the tube due to gravity. There was short protein chains present because the substance turned a gray pink color. There were small spots of fat on the paper for the goldfish, so it was determined there was some fat present.

The cheez-its turned purple, showing presence of starch. It stayed orangish gray during the sugar test, showing some presence of sugar. The protein test showed up with purple substance, showing presence of long protein chains. There was a see-through spot through the paper,

showing some presence of fat.

Discussion of uncertainty and limitations:

There was so much uncertainty in this lab. Our group had differing opinions what color the substances turned. This is a huge limitation, because everyone's discretion is different. Also, we did not all use graduated cylinders to measure out the amount of substance we used each time for the tests. The differing amounts used could affect the color change that happens, such as intensity of color. Furthermore, if the equipment was unclean or tainted with other substances before, that could affect the accuracy of the test. The fat test was not a very good way to measure if a substance had fat present, simply because it was so hard to tell from the translucent spot(s) of a paper towel. Also, 5 drops of a solution could be accidentally 6 or 4 drops of the solution, affecting the color change. Also, drop size of the droppers could be different. Overall, this experiment was very flawed.