CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)
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Project Number
34129

Project Title
Gummy Growing

Abstract

Objectives/Goals
The purpose of my science project is to test out different liquids and find out which one will make a gummy worm grow the most when the worm is submersed for several hours. Based on some background research, I personally think that distilled water will make the gummy worm grow the most due to the decreased amount of solutes - impurities in water, such as salt, and the effect of osmosis.

Methods/Materials
Materials - Gummy worms; Liquids: tap water, ocean water, distilled water, orange juice, sugar water(6.25%), concentrated sugar water(50%), salt water(6.25%), concentrated salt water(50%), and juice squeeze soda; Tupper ware containers; Tape measure; Kitchen Scale
Methods - a) Mark each container 1-9; b) Place 2 cups of liquids in each container; c) Sort each gummy worm by color and weight; d) Choose the clear and red 10 gram gummy worms that were 3 # inches long, ¼ inches wide, and 3/8 inches high; e) Place gummy worms at the same time in each container; f) Keep gummy worms in solution for 8-9 hours; g) Take out each gummy worm and record time; h) Measure and weigh each worm; i) Put gummy worms back in liquid for additional 47 hours; j) Measure and weigh each worm again

Results
My results turned out as I predicted. The gummy worm in the distilled water grew the most in weight and volume. The gummy worm grew to 29 grams and 2.1 inches in volume on the first measurement (after 9 hours). On the second measurement (56 hours) it was 81 grams and 8.2 inches in volume. I also got the gummy worm in concentrated salt water to shrink. On the first measurement it weighed 7 grams and was .293 inches in volume. On the second measurement it weighed 6 grams and was .152 inches in volume. My hypothesis was correct and I actually shrunk a gummy worm.

Conclusions/Discussion
According to my results the less solute in the liquid, the more the gummy worm grows. This matches my background research on osmosis and shows that most all of my liquids (minus concentrated salt water) are hypertonic, or have less solutes than the gummy worm. Alternatively, the concentrated salt water is hypotonic, or has more solutes than the gummy worm. The amount that the gummy worm grew has to do with the amount and type of solutes in the water. Based on my data salt is a stronger solute than sugar because the same amount of salt (by volume) made the gummy worm grow less and even shrink compared to the same amount of sugar.

Summary Statement
The purpose of my science project is to submerse gummy worms in different liquids and find out which liquid will make a gummy worm grow the most.

Help Received
Father helped measure and create poster.