

Effects of Microwaved Water on Cat Grass Growth

Jane Doe and Joe Shmoe

Biology Students

Lakewood High School

Abstract

To conduct this project three cat grass plants will be exposed to water that is microwaved for three different amounts of time. The plants will be watered with water microwaved for two, five, and ten minutes respectively. Our prediction is that if plants are given microwaved water, then they will not grow as well as plants that are watered with pure water. Some research has shown that high levels of microwave radiation can cause severe burns, and could potentially be cancer causing (carcinogenic), to humans and animals. It is because of these potential health concerns to humans and animals that we hypothesize that microwaved water will also adversely affect plants. Therefore, giving plants water that has been microwaved will most likely result in the decreased growth rate of cat grass. Our null hypothesis is that microwaved water has no impact on the growth rate of plants.

Introduction

A microwave is a high frequency electromagnetic wave. Microwaves are used for many different reasons such as: detecting speeding cars, sending telephone and television communications, and heating food. The most common consumer use of microwave energy is microwave oven, which are found in many kitchens around the world. When we heat food in a microwave oven the water molecules in the food vibrate at high speeds, creating molecular friction which then heats our food. When these water molecules vibrate violently their molecular structure is torn apart and deformed which impairs their quality and makes our food less nutritious and potentially dangerous¹.

Microwaves, and other electromagnetic waves, give off varying levels of electromagnetic radiation. The Food and Drug Administration (FDA) is responsible for the safety and regulation of microwave radiation due to the use of Microwave Ovens⁴. Currently, research is being done to better understand how microwaves may affect the human body. It has been proven that microwave radiation can heat body tissue the same way it heats the water molecules in our food. Exposing skin to high levels of microwave radiation can cause painful burns⁴. When we consume food that is microwaved we are consuming all the radiation put into it by microwaves¹.

Materials and Methods

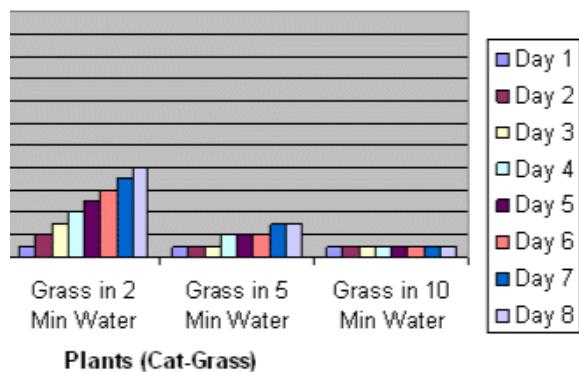
Each of the three cat grass plants were put in separate containers and were watered with microwaved water which was heated in a microwave oven for different lengths of time. The first plant was watered daily with water that was microwaved for two minutes, the second plant was watered daily with water that was microwaved for five minutes, and the third plant was watered

with water that was microwaved for ten minutes. The growth of the plants was measured daily over an eight day period and the growth (in centimeters) was recorded at the end of each day.

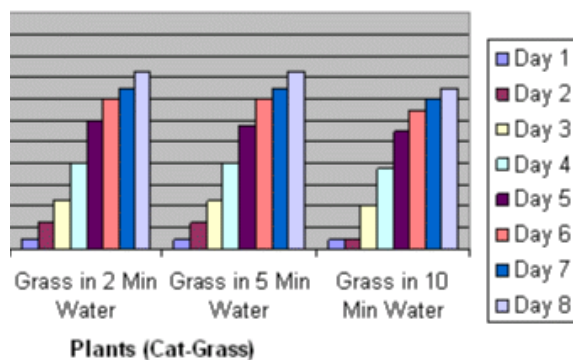
Results

Evidence from several studies have shown that high levels of microwave radiation can be carcinogenic, as well as cause severe burns to humans and animals. It is because of these studies that we hypothesized that high levels of microwave radiation could cause adverse effects to plants as well. Based on this hypothesis, we predicted that grass watered with water which was microwaved would harm the grass and cause it to grow less quickly than grass that was watered with non-microwaved water.

Predicted Plant Growth



Actual Plant Growth



After conducting the experiment we found that the longer the water was microwaved the less the cat grass grew. The plant watered with water microwaved for ten minutes grew the least, the plant watered with water microwaved for five minutes grew slightly more, and the plant watered with water microwaved for two minutes grew the most. Because we know that microwaves can cause harm to living organisms, and because we know that microwaves take out all the nutritional values in foods¹, we believe that pure water would still cause a higher growth rate than the microwaved water. Because of our results we accept our hypothesis that microwaved water does adversely impact the growth of cat grass.

Works Cited

1. Barrett, Mike. "Microwave Dangers - Why You Should Not Use a Microwave." *Natural Society*. N.p., 16 Nov. 2011. Web. 19 Aug. 2015.
2. Brun, Ryan, and Justin Leopold. "Nuked in Your Own Kitchen." *My Science Fair*. N.p., n.d. Web. 19 Aug. 2015
3. "Electromagnetic Spectrum." *Gondar Design Physics*. N.p., n.d. Web. 19 Aug. 2015.
4. OSHA. "Safety and Health Topics | Radiofrequency and Microwave Radiation - Health Effects." *Safety and Health Topics | Radiofrequency and Microwave Radiation - Health Effects*. N.p., n.d. Web. 19 Aug. 2015.