Purple Power

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This experiment is intended to devise a safe way to sanitize a refrigerator and its contents. Food borne illnesses are extremely common and have become an increasing issue in the United States. This experiment uses a germicidal ultraviolet light, set at 254 nm, in a refrigerator for four hours at a time. Ideally, the ultraviolet light will sanitize the food and the refrigerator surface, effectively eliminating one's risk of developing a food borne illness. The foods that were tested in this experiment were raw beef, cooked beef, raw chicken breast, raw salmon, and cheddar cheese. Foodborne illness causing bacteria are found in all types of foods. Different kinds of bacteria are present on different food which is why a wide array of food was tested. To test the functionality of the experiment, an ultraviolet light was placed in a refrigerator set at 4 Celsius. The food items were evenly spaced on one shelf of the refrigerator. The foods were swabbed when placed in the refrigerator and again after four hours under the ultraviolet light. The swabs were used to inoculate blood agar plates. The plates were then placed in an incubator set at 37 Celsius. After the incubation period of 24 hours, the colonies of bacteria were visually counted. The results for the experiment revealed that the ultraviolet light reduced the bacteria present by 93.9%.

Awards Won: