Effectiveness of UV-C light versus Clorox Wipes as sanitizing agents for refrigerators of college students.

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Introduction

- More cases of bacteria related food borne illness occur in the home kitchen than any other location.
- College adults often do not clean their refrigerator.
- The active ingredients of Clorox Wipes include Alkyl dimethyl benzyl ammonium chloride and Alkyl dimethyl ethylbenzyl ammonium chloride, and kills 99.9% of germs.
- UV-C light kills up to 99% of germs by altering their genetic structure.
- Clorox Wipes are effective but may be wasteful.
- The UV-C light creates less waste than Clorox Wipes and may be a greener disinfectant.
- If you were to use the wand for 2 hours a week, one bulb would last 76 years.

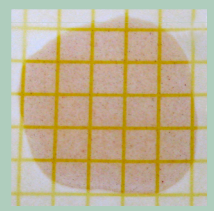
Materials & Methods

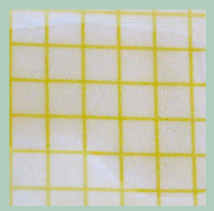
- Collected samples from 10 apartments, 5 from female residence and 5 male residence.
- Subjects were unaware of time of collection or where samples would be taken.
- The middle shelf of each refrigerator was swabbed initially with 3M Quick Swabs ™.
- Half was treated with Clorox Wipes, half was treated with the Germ Guardian UV-C light wand, 2 inches above the surface for 30 seconds (3X the manufacturer directions) and re-swabbed.
- Media from swabs were poured on 3M Petrifilm ™ Aerobic Count Plates and incubated at 37°C for 48 hours.
- Following the incubation period, samples were photographed and assessed for bacterial growth.

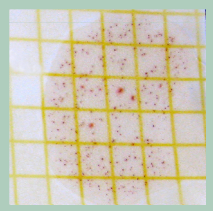
Purpose

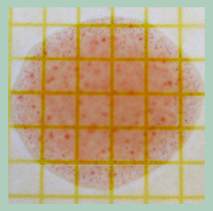
The purpose of this study was to assess the presence of microbes in apartment refrigerators and compare UV-C light and Clorox wipes as disinfecting agents.

Results


A1. Before treatment


A2. After Clorox wipe


A3. After UV-C light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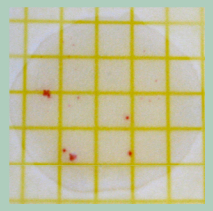
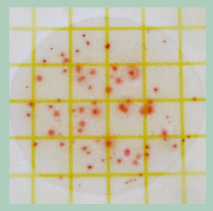
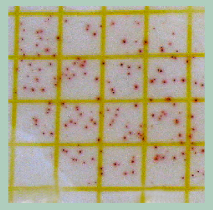
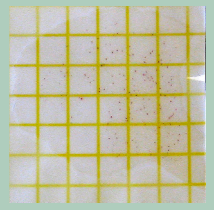
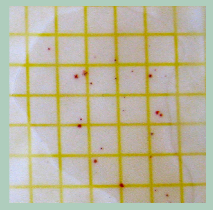
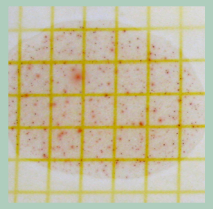

B2. After Clorox wipe

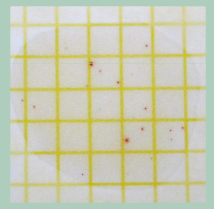

B3. After UV-C light

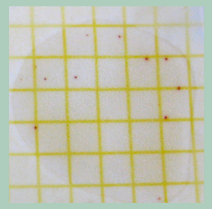

C1. Before treatment


C2. After Clorox wipe


C3. After UV-C light


D1. Before treatment


D2. After Clorox wipe


D3. After UV-C light

Summary & Conclusions

- All Petrifilm™ plates had a high concentration of microbial growth spots that were too numerous to count.
- The Clorox wipes were effective at eliminating all of the bacteria in only 30% of the samples.
- The UV-C light was not as effective as the Clorox wipes, and failed to eliminate all of the bacteria present.
- 80% of refrigerators were above 40°F, and in the "Danger Zone." This may contribute to the bacteria overgrowth observed (Samples A-D were above 40°F).
- Both the UV-C light and Clorox Wipes did not eradicate 99% of the bacteria as claimed.
- Increasing the interval of UV-C light exposure may be necessary to determine to sanitize areas with high concentrations of bacteria.


Germ Guardian UV-C Sanitizer Wand

Acknowledgements

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