

Raving Roaches in Your Residence!

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Abstract:

Cockroaches are some of the hardest insects to get rid of and can be hundreds of dollars to exterminate, which some people might not have access to. Cockroach pesticides can be harmful to your pets if they breathe in the chemicals or come in direct contact with the pesticides. Cockroaches can also cause reactions such as allergies, asthma, skin rashes in humans. We wanted to find a safer way to eliminate cockroaches in people's homes. Our hypothesis was that if cockroaches are put in a controlled area with the options of different essential oil repellents including lavender oil, oregano oil, and cinnamon oil and a section of control, then lavender oil will do the best job of repelling the cockroaches. This is because the strong scent of lavender would do the best job of repelling the cockroaches. This proved to be correct because by the end of our experiment, there were a very small number of cockroaches in the lavender section compared to the other possible sections.

Introduction:

Cockroaches may go into your house for many reasons. One reason a cockroach might come into your house is hygiene! If your house is not clean, cockroaches will want to come into your home. Cockroaches would also want to come into your home if they smell open food that is left out or not fully sealed. They also may see bugs or other smells that interest them and sneak into the crevices of your home. Cockroaches are often found under sinks, in garbage cans, or in your kitchen near your food.

You probably don't want cockroaches in your home because they are not only a bit scary, but can also carry disease, bite, and may cause allergies. In this experiment, we found the best natural way to repel cockroaches. People tend to use insecticides, traps, and other harmful repellents. This not only harms the environment, but also harms the animals that eat cockroaches such as frogs and toads, which may lead to the population of frogs and toads to decrease, which would harm the environment. This can be prevented, because we have found a better way to repel them without having them perish.

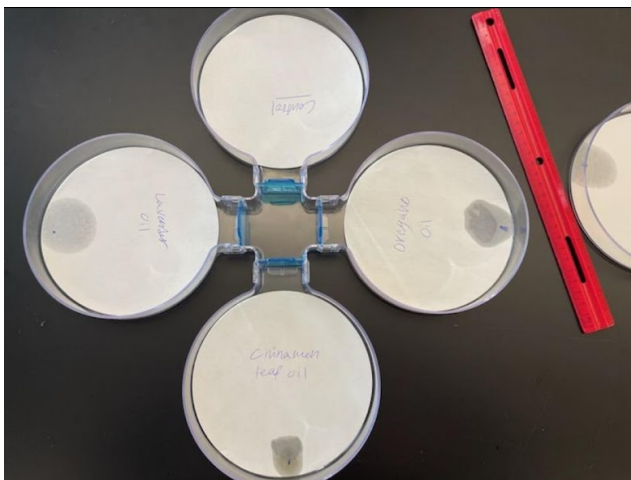
Essential oils are made by extracting the oils from a plant. They are natural and often help the environment because of their natural benefits. Essential oils also can benefit your health, which means that they not only can repel cockroaches, but can also make your life healthier.

Hypothesis:

Our hypothesis was that if cockroaches are put in a controlled area with the options of different essential oil repellents including lavender oil, oregano oil, and cinnamon oil and a section of control, then lavender oil will do the best job of repelling the cockroaches. This is because the strong scent of lavender would do the best job of repelling the cockroaches.

Method:

For our experiment we bought 20 American cockroaches from Ward's Biological, and then we put two observation cages together, each containing four sections, and then we put filter paper in each section of the observation cage. At the back of each section of the observation cage we put one of the natural oils that repel the cockroaches. These natural repellents included lavender oil, oregano oil, and cinnamon leaf oil. We put four cockroaches in each of the observation cages. At the start of our experiment we added natural repellent in the same spot. Once we put the cockroaches in, we recorded how many cockroaches were in each compartment every five minutes. We then repeated our last step fifteen times for a total of seventy-five minutes over the span of three days.



Observation Cage 1

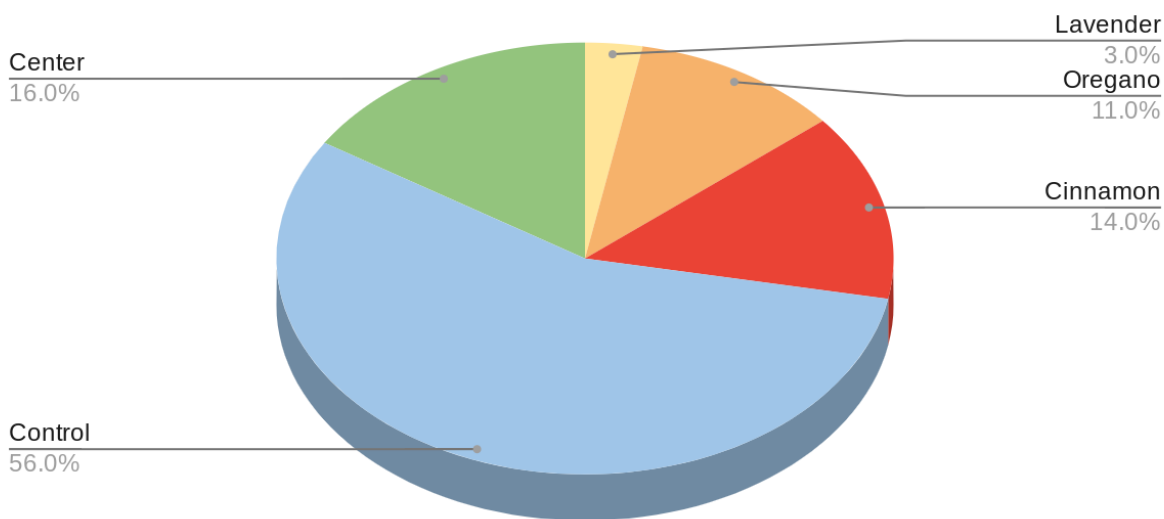


Observation Cage with Cockroaches

Results:

This chart shows the average amount of time the cockroaches spent in each compartment.

The Effect of Essential Oil Repellent on Cockroaches



Over our three days of experimenting, our conclusion was that out of lavender oil, oregano oil, and cinnamon oil, lavender oil did the best job of repelling the cockroaches. On average, the cockroaches tended to stay in the control area and avoided the lavender area. As you can see from the chart, the amount of cockroaches in the center, control, cinnamon oil, and oregano oil is much larger than the amount of cockroaches in the lavender oil section. After averaging the data of our 75 minutes of experimentation, we concluded that the cockroaches dislike the lavender oil in the lavender, and their preferred section is the control section.

Raw Data

	Lavender	Oregano	Cinnamon	Control
5 minutes	0	2	3	2
10 minutes	0	1	2	5
15 minutes	0	1	2	5
20 minutes	0	1	1	2
25 minutes	0	1	1	2
30 minutes	0	0	1	5
35 minutes	0	1	0	5
40 minutes	0	0	0	6
45 minutes	0	0	0	6
50 minutes	0	1	1	5
55 minutes	0	1	2	5
60 minutes	1	2	1	4
65 minutes	1	0	2	5
70 minutes	1	0	1	5
75 minutes	0	2	0	5
Averages	0.2	0.8666666667	1.1333333333	4.4666666667

This data table shows the amount of cockroaches in each container after a certain amount of time. Most cockroaches stayed away from the lavender section and often stayed in the control area, further proving our claim that the best natural repellent for cockroaches is lavender.

Discussion

If cockroaches are put in a controlled area with the options of different essential oil repellents including lavender oil, oregano oil, and cinnamon oil and a section of control, then lavender oil will do the best job of repelling the cockroaches. Our results concluded that lavender oil does the best job of naturally repelling cockroaches out of lavender oil, oregano oil, and cinnamon oil. We got these results because cockroaches have a strong sense of smell that allows them to find food. This may work to their advantage in nature, yet this leaves them at a disadvantage to the scent of lavender.

Limitations

The limitations of our experiment were that the cockroaches had grown over the span of our experiment, leading us to have larger cockroaches, which in turn made our experiment harder to conduct because of the grown cockroaches. Overtime, their growth led them to grow wings, after cockroaches' final molt they have wings and are able to reproduce and fly. This process can take 6 months to a year for them to take their final molt. We also had few setbacks because of the cockroaches that moved around a lot, making the data harder to collect at times. Another limitation we had was our time with the cockroaches. This was because we used some of our time to set up the cockroaches and the observation cage, which in result made us lose time for our experiment. We could have used more time during our after-school periods to work on our experiment, leaving us more time with the smaller cockroaches. We also could work faster on our time of setting up, leaving us with more time to experiment. Allergies to the essential oils may be a concern but the lavender oil is one of the few that will work to repel the cockroaches, lavender is the most reliable out of the few we tested and will work better than others. Essential oils are also easy to access by most Americans and can be found at your local grocery and drug store. Essential oils can be around 5-15 american dollars depending on the amount you get or the brand.

Future Studies

Our future studies may include working with more invasive insects in the home. We may also work with different repellents and their different effects on cockroaches and the natural alternatives to these repellents. We may also perform a similar experiment in which we would test other natural repellents and their ability to repel cockroaches.

Citations

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