

Ecology Lab Report



TITLE

An Experiment Demonstrating Cockroaches as a Vector Transmitting Bacterial Diseases.

STATEMENT OF THE PROBLEM

Cockroaches are common insects that are noticeable in many households. Many associate presences of these insects as a sign unhygienic condition. Cockroaches often appears in the kitchen, refrigerator and cupboards where foodstuff are kept. People find it as irritating and nuisance. Apart from being a nuisance, studies have confirmed that cockroaches can carry a myriad of diseases. Basing on these researches, Cockroaches transmits a several pathogen mechanically. The pathogens from cockroaches include *salmonella*, which tends to cause food poisoning, *Escherichia coli*, which causes diarrhea, and this and *Shigella dysenteriae* causes dysentery. Moreover, cockroaches' allergens are also believed to cause asthma in many sensitive individuals.

Cockroaches like to navigate around our foodstuff, and if one carelessly forgets to cover their food, roaches are likely to crawl inside and contaminate it. People have an option to mitigate cockroaches' problems by using methods like barriers exclusion and check on cleanliness too. Now the primary question, Is there an effective elimination process that can bar cockroaches from contaminating foodstuff? The question prompted us to conduct an experiment to answer the question.

OVERALL EXPERIMENT QUESTION

1. Are there any preventive mechanisms that can bar cockroaches from contaminating foodstuff?
2. Will a barrier be effective at preventing or reducing the growth of bacteria?

HYPOTHESIS:

- H1:** When a mosquito net is used as a barrier, it will exclude cockroaches from transmitting bacterial infections into Petri dishes consequently cause an equal amount of bacteria growth as a petri dishes covered by a mosquito net that has not been exposed to a cockroach.
- H2:** when a mosquito net is used to as a barrier to exclude cockroaches from transmitting bacterial infections to a petri dish, it will NOT cause an equal amount of bacterial growth as petri dishes covered by a mosquito net that has not been exposed to a cockroach.

MATERIALS

The experiment will need two Petri dishes, two square pieces of mosquito nets, a pair of gloves, two square tubs and a collection of healthy cockroaches.

PROCEDURE

At the first step, we labeled the experiment square tub as C and the control group square tube as E. The next step is to wrap the petri dishes with mosquito net. Square tub marked C acted as the actual experiment as by exposing the petri dish inside with a cockroach. The cockroach was set to run over the petri dishes a number of times. For the control group square tube, we subjected it under similar conditions as the one in square tube C but not exposed with the cockroaches. After that, we removed the mosquito net covering the petri dishes and closed them properly. To avoid confusion, we labeled the Petri dishes exposed with a cockroach as C, and the other unexposed tube as E. The two petri dishes were kept inside an incubator for 24 hours.

EXPLANATION

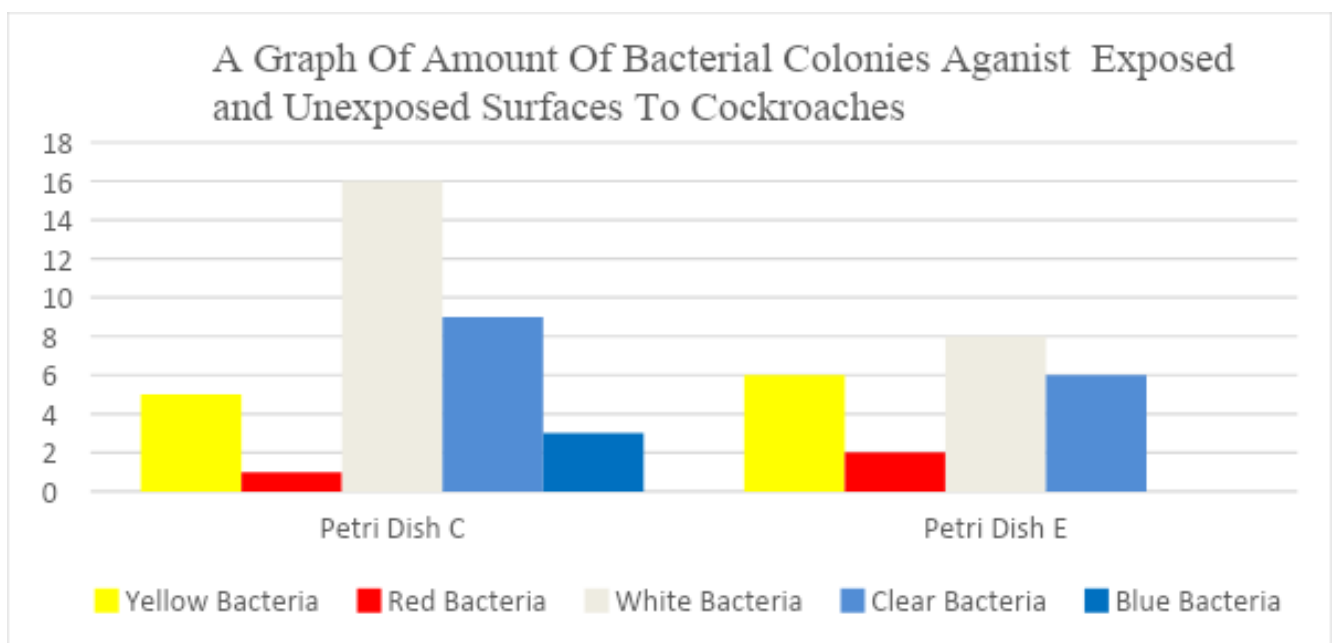
The purpose of the mosquito nets was to act as a barrier covering the petri dishes to exclude the cockroaches from contact. The gloves were useful for preventing the transfer of germs from hands to the netted petri dishes. We used two square tubes to allow an easy run of the independent variable and the dependent variable. One of the tubes was exposed with a cockroach; as an independent variable while the other tube remained unexposed with cockroaches to offer a test for the dependent variable. Finally, the incubator was used to provide a conducive condition for bacteria to grow.

RESULTS

Observation

After a period of 24 hours, we observed some bacterial colonies growth on the Petri dish labeled C, which was in contact with a cockroach. On the other hand, the Petri dish marked E had fewer traces of bacterial growth compared to Petri dish C. Statistically, petri dish C recorded a grand total of 34 bacterial colonies whereas Petri E recorded a lesser of 22 bacterial colonies in total.

GRAPHICAL REPRESENTATION



CONCLUSION

Our findings made us reject H1 hypothesis and accept H2 hypothesis. According to the observation, exposing petri dishes to a cockroach is not the primary factor that can cause bacterial growth colonies on a surface. Both the two petri dishes recorded traces of bacterial growth on them. Petri dish labeled E acted as our control experiment, and it suggest that its contact with the mosquito net could also trigger bacterial growth with necessarily coming into contact with a cockroach.

In order to answer our overall experiment questions, using a mosquito net as a barrier to cover our foodstuff is not effective. The experiment proves that mosquito net itself can trigger bacterial colonies growth on our surfaces. On the contrary, the experiment has critics over the answer because, the mosquito net used might be contaminated before. To improve the test and respond to the questions, it is advisable to use a clean anti-bacterium treated mosquito net to avoid compromising with the result.

In the real life encounter, homes should embrace barring their food section with treated mosquito net to avoid chances of having a contaminated foodstuff. Additionally, they can also steal another non-chemical mechanism like proper cleanliness to keep away the dangerous cockroaches.

POSSIBLE ERROR IN THE EXPERIMENT:

1. The mosquito net might be contaminated during the setting up process of the experiment.
2. A confusion in labeling of the petri dishes and the square tubs.