CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)

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Project Number

34450

Project Title

Brand vs. Generic: Is Neosporin(R) Original Ointment Really More Effective than Generic Antibiotic Ointment?

Abstract

Objectives/Goals

This project compares the efficacy of NEOSPORIN# Original Ointment with generics Good Neighbor Pharmacy and CVS Pharmacy antibiotic ointments on Bacillus cereus (gram positive) and Rhodospirillum rubrum (gram negative) bacteria. My hypothesis was that NEOSPORIN# would be the most effective as indicated by the larger mean inhibition zone.

Methods/Materials

64 nutrient agar petri dishes were prepared. 3 of these dishes were used as controls to see if the bacteria were viable and if the agar was pure (one inoculated with Bacillus cereus, one inoculated with Rhodospirillum rubrum and the last only agar). The remaining 61 petri dishes were divided into two sections, labeled 'B' for brand and 'G' for generic. Each petri dish served as an individual trial (NEOSPORIN# vs. a generic). Petri dish #s1-31 were inoculated with Bacillus cereus and petri dish #s32-61 were inoculated with Rhodospirillum rubrum. A hot water bath was used to melt the antibiotic ointments so that they could be applied via measuring pipet onto the inoculated mediums in measured amounts. Petri dish #s1-16 and 32-46 received Good Neighbor Pharmacy Antibiotic Ointment in the 'G' section, while petri dish #s17-31 and 47-61 received CVS Pharmacy Antibiotic Ointment in the 'G' section. Photographs were taken of each petri dish at 48 and 96 hours post inoculation. Quantitative measurements were taken by measuring the inhibition zone areas of each antibiotic in Adobe Photoshop CC (larger inhibition zone area=greater efficacy).

Results

The mean inhibition zone areas at 48 hours post inoculation were 78.87 mm^2 for NEOSPORIN#, 29.93 mm^2 for Good Neighbor Pharmacy, and 71.58 mm^2 for CVS Pharmacy. At 96 hours post inoculation, the mean inhibition zone areas were 101.92 mm^2, 58.63 mm^2, and 86.89 mm^2, respectively.

Conclusions/Discussion

All three of the antibiotics contain the same amount of the same #active ingredients.# However, their #inactive ingredients# differ. NEOSPORIN# Original Ointment contains Cocoa Butter, Cottonseed Oil, Olive Oil, Sodium Pyruvate, Vitamin E, and White Petrolatum. CVS Pharmacy Antibiotic Ointment contains the identical #inactive ingredients# with the exception of sodium pyruvate. Good Neighbor Pharmacy Triple Antibiotic Ointment contains only one #inactive ingredient,# white petrolatum.

NEOSPORIN# Original Ointment contains the most #inactive ingredients# and was the most effective (greater mean inhibition zone area).

Summary Statement

This experiment compares the efficacy of NEOSPORIN# Original Ointment with two of its generic counterparts when tested on Bacillus cereus and Rhodospirillum rubrum bacteria (larger inhibition zone indicates greater efficacy).

Help Received

Assistance from my neighbor and science teacher obtaining supplies, cutting, gluing and configuring with Photoshop and MS Word (I had minimal exposure to these programs before my experiment).