# CALIFORNIA SCIENCE & ENGINEERING FAIR
# 2018 PROJECT SUMMARY

**Name(s)**

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**Project Number**

38311

**Project Title**

## How Effective Are These Medications against the Common Acne?

**Abstract**

**Objectives/Goals**

The objective of this experiment is to determine the effectiveness of popular over the counter acne medications and one natural product which can be used to treat acne.

**Methods/Materials**

Made an incubator using Styrofoam, a 25watt bulb, and a digital thermometer/humidity gauge. Staphylococcus epidermidis bacteria,petri dishes with Tryptic Soy Agar(TSA), acne medications[Neutrogena{2.5% salicylic acid},Pro-Activ{5% benzoyl peroxide},Tea Tree Oil(TTO)], and sterile disks. Adjusted the temperature in the incubator until it reached a steady temperature around 37 degrees Celcius and a humidity greater than 75%. Divided a petri dish in 4 equal sections and inoculated with Staph. epi. Placed a sterile disk with a control, Neutrogena, Pro-Activ, and TTO separately in each labeled section. All hazardous material was soaked in 10% bleach overnight, sealed, and bagged. I ran a second trial with 4 petri dishes with three previous products and pharmaceutical grade TTO.

**Results**

The pharmaceutical grade TTO had an average zone of inhibition of 15.75mm, the regular TTO had an average of 12.73mm in the first trial and 13.87mm in the second trial, Neutrogena had an average of 9.53mm in the first trial and 12.87mm in the second. Finally, Pro-Activ had 8.53mm in the first and 11.37mm in the second trial.

**Conclusions/Discussion**

Acne is the most common skin condition. In the U.S. there are 60 million people with acne. In all 9 petri dishes, the TTO be it pharmaceutical grade or not was most effective against Staphylococcus epidermidis as compared to Pro-Activ,and Neutrogena. Although the zones of inhibition were slightly larger in the second trial, I think a possible explanation is the fact that I used bacteria that had been reactivated 4 days earlier. The order of effectiveness was not changed in either the first or second set of trials. It appears that TTO is more effective and less expensive than the other two products. Further research of the effectiveness of TTO as compared to prescription acne medication would be a next step.

**Summary Statement**

The natural product Tea Tree Oil is most effective in treating acne.

**Help Received**

I designed, built my incubator, and ran both trials. Consulted my aunt, Dr. Stephanie Fennelly, as to the best choice of agars and troubleshooting achieving a steady temperature and humidity in the incubator.