CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)
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Project Number
J1612

Project Title
A Natural Solution to Contaminated Environments: Effects of Different Nitrogen Sources on the Biodegradation of Crude Oi

Abstract

Objectives/Goals
The objective of this study is to investigate the impact of different nitrogen sources on the degradation of crude oil by a common soil microorganism, Pseudomonas putida.

Methods/Materials
Minimal media recipe (Bushnell Haas) was prepared and agar was added (2% w/v) to create solid growth media. Filter sterilized nitrogen sources (NO3, NH3, Urea) were added to the liquid media prior to sterilization via the autoclave to reflect different nitrogen conditions. P. putida was inoculated onto the plates. Sterilized crude oil was added to the plate above the organism. Plates were inoculated at 30 degrees C for 5 days. Growth will be observed (+/-, growth or no growth respectively).

Results
Results demonstrated that P. putida is capable of enhanced growth in the presence of crude oil under carbon and nitrogen rich conditions. Growth of the organism was not observed on the minimal media plates with variable nitrogen conditions.

Conclusions/Discussion
These data suggest that nutrient rich environments are required for P. putida to successfully grow in and utilize crude oil, and these findings can be used to help improve developing formulas for enriching oil degrading bacteria.

Summary Statement
Using different nitrogen sources to enrich bacteria, I discovered that P. putida needs a wide variety and abundance of nutrients to successfully degrade crude oil.

Help Received
Tara Mahendrarajah was my lab supervisor and taught me the procedures. Dr. G. Flores at CSU Northridge provided microbe cultures and the lab. My science teacher Mrs. D. Shah answered any questions I had.