Pace University: Society of Fellows

41st Annual Meeting
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New York City
STUDENT COMMONS

DNA Barcoding of Shark Species from NYC Waters

Introduction

There are 16 species of sharks that live in the NYC area, each facing different threats. Understanding the distribution and abundance of these species is crucial for effective conservation efforts. This study aims to detect the presence of shark species using DNA barcoding techniques.

Methods

Sample collection:

Shark tissue samples were collected from various locations in NYC waters. Samples were preserved in ethanol and stored at -20°C until DNA extraction.

DNA sequencing:

DNA barcoding was performed using the mitochondrial COI gene. PCR amplification was carried out using species-specific primers. Sequencing was done using the Sanger method.

Results

Eight species of sharks were detected in the NYC waters:

- Carcharhinus pylus
- Carcharhinus limbatus
- Carcharodon carcharias
- Sphyrna zygaena
- Sphyrna tiburo
- Squatina-platensis
- Rhizoprionodon terraenovae
- Etmopterus spinax

Discussion

Sharks play a crucial role in maintaining the balance of marine ecosystems. Understanding their population dynamics and habitat preferences is essential for effective conservation strategies. Further studies are needed to assess the impact of human activities on shark populations in NYC waters.
Antioxidant Capacity of Herbal Teas from the Philippines

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INTRODUCTION

Tea is the most consumed beverage in the world second only to water. Its popularity is due to its various benefits such as health and medicinal properties. The health benefits of tea are attributed to its chemical compounds present in leaves, which include polyphenols, flavonoids, and catechins. These bioactive compounds are essential contributors to the health benefits associated with tea consumption.

METHODOLGY

40 mL of hot water was added to 1 g of tea leaves. The mixture was allowed to steep for 5 min. Then, the solution was filtered through Whatman No. 1 filter paper. The absorbance of the filtered tea solution was measured using an ultraviolet-visible spectrophotometer (UV-VIS) at 320 nm. This absorbance reading is used to calculate the total polyphenol content of the tea samples in terms of gallic acid equivalents.

RESULTS

The total polyphenol content of the tea samples was found to vary significantly depending on the type of tea used, as indicated by the absorbance readings. A comparison of different tea types showed that tea leaves from the Philippines contained higher levels of polyphenols compared to similar samples from other regions.

CONCLUSION

The study highlights the potential health benefits associated with drinking tea from the Philippines, particularly due to its higher polyphenol content. This suggests that these teas could be a valuable addition to the portfolio of natural health supplements available.

The data presented in this study contributes to the growing body of research on the health benefits of tea, specifically from the Philippines. Future research could focus on further characterizing the bioactive compounds present in these teas and exploring their potential therapeutic applications.
Qualitative Analysis of Various Chemicals by Using Gas Chromatography-Mass Spectrometry (GC-MS)

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Abstract:
A novel commercial method is used to analyze diverse samples for various compounds. The method is validated through a series of experiments and is based on the principle of gas chromatography coupled with mass spectrometry (GC-MS). The method is sensitive and specific for the detection of target compounds.

Experiment 1: Sensitivity Test
- Samples: Various compounds at different concentrations
- Method: Gas chromatography coupled with mass spectrometry
- Results: The method shows excellent sensitivity towards various compounds, with detection limits ranging from 0.1 to 1 ppm.

Experiment 2: Neopentane Acid
- Samples: Neopentane acid at varying concentrations
- Method: Gas chromatography coupled with mass spectrometry
- Results: The method shows good linearity and accuracy for the detection of neopentane acid, with recoveries ranging from 98% to 102%.

Experiment 3: Dilution Test (Limonene)
- Samples: Limonene at different dilutions
- Method: Gas chromatography coupled with mass spectrometry
- Results: The method shows excellent detection limits and linearity for the detection of limonene, with detection limits ranging from 0.01 to 0.1 ppm.

Experiment 4: Analysis of a Mixture of Methylated Fatty Acids (37 FAME)
- Samples: A mixture of methylated fatty acids
- Method: Gas chromatography coupled with mass spectrometry
- Results: The method shows excellent detection limits and linearity for the detection of methylated fatty acids, with detection limits ranging from 0.01 to 0.1 ppm.

Conclusion and Future Application
Gas Chromatography-Mass Spectrometry (GC-MS) is a very powerful instrument for both qualitative and quantitative analysis of various samples. Our method allows for the accurate and precise detection of a wide range of compounds, and future studies will involve the use of this method for the rapid and accurate identification of various compounds in complex matrices.
The Atlanta Campaign
- The Union offensive campaign to capture the city of Atlanta
- Captured on September 3, 1864
- "...[the destruction] of all depots, car-houses, shops, factories, foundries...etc."

The March
- Began in early November 1864
- Separated into 2 flanks to ensure that they created as much damage as possible while still capturing the state capital
- Sherman used psychological warfare against Southern civilians

Savannah
Purpose of Research

Public health is often seen as a personal or reckless act, but the economic effects are significant.

Specifically, on how a country's wealth affects mortality rates. The public health initiatives set play a critical role in the response of its current issues.

My research is forth by the citizens, and wonderfully.
LA PASSION DE JEANNE D’ARC, 1928
Introduction

- Over 106,000 people are on the waitlist to receive an organ transplant (OPTN, 2021)
- United States currently operates on an altruistic, opt-in policy (Clayler and Moe, 2019)
- Common misconceptions prevent college students from signing-up

Research question: Can nudge theory increase the enrollment rates of college students becoming organ donors?

Behavioral Economics: theory of economic decision-making
- Nudge theory: indirect suggestions that promote positive decision-making
Nudge design

- Created a three-minute video for treatment group
- Addressed organ shortage, general statistics, common misconceptions, and ways to register
- Targeted information on the transplant process and ways to register as a donor
- Gainframe, positive messaging (Rothchild et al., 2011)
- Avoided using the word “you”
- Included a Pare student’s quote who received a tissue transplant
Wondering why this isn't a focus?

- Budget and funding resources
- High-inflation rates
- Millennials, for the most part, haven't had kids yet and student debt is a bigger issue for them.
- Also, those who have had kids, once that chapter is over, it's over and most people don't look back.