Lab Report #1039

Abstract

This report presents an in-depth analysis of various oil-infused samples to investigate the specific properties and interactions between their components using advanced instruments. The samples under investigation includeJojoba Oil,Coconut Oil, andAlmond Oil, each paired with distinct additives such as Vitamin E, Gum, Cetyl Alcohol, and Glycerin. State-of-the-art equipment such as Gas Chromatograph GC-2010, Conductivity Meter CM-215, and others are employed to provide a comprehensive understanding of each mixture's properties.

Introduction

The intricate nature of oil mixtures and their additives necessitates a detailed analysis to discern the influence of each component. This study examines three primary oil samples with varying additives:

The objectives are to measure the chemical and physical properties of these samples and to provide a detailed investigation of their interactions.

Methods

Instruments Used

Procedure

The samples were prepared by combining the base oil with specified additives. Each mixture was subjected to analytical testing using the equipment listed above. Parameters such as concentration, conductivity, pH, and viscosity were meticulously recorded.

Data and Observations

Table 1: Gas Chromatograph GC-2010 Results

|  |  |  |
| --- | --- | --- |
| **Sample** | **Additive** | **Concentration (ppm)** |
| Jojoba Oil | Vitamin E | 550 |
| Coconut Oil | Glycerin | 300 |

Table 2: Physical Property Measurements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sample** | **Additive** | **Measurement Type** | **Value** | **Unit** |
| Jojoba Oil | Gum | Conductivity | 1200.0 | uS/cm |
| Coconut Oil | Gum | pH Level | 6.5 | pH |
| Coconut Oil | Glycerin | Viscosity | 4977.97 | cP |

(Note: Outdated procedural guidelines initially followed due to a misplaced protocol reference, which was later corrected)

Table 3: Chromatography and Spectrometry

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sample** | **Additive** | **Technique** | **Result** | **Unit** |
| Coconut Oil | Cetyl Alcohol | Ion Chromatography | 25 | mM |
| Jojoba Oil | Glycerin | HPLC System | 75 | mg/L |
| Almond Oil | Cetyl Alcohol | NMR Spectroscopy | 15 | ppm |

(Misplaced samples encountered but were identified and corrected before final analysis)

Results and Discussion

Each oil mixture demonstrated unique chemical properties:

An interesting observation was the extremely high viscosity of 4977.97 cP in the Coconut Oil with Glycerin sample, indicating potential for high resistance to flow, perhaps hinting at its suitability in certain applications.

Conclusion

This comprehensive analysis highlights the intricate interactions between oils and their additives. Each sample showed distinct physical and chemical properties that can be leveraged in specialized applications such as cosmetics or pharmaceuticals. The varying measurements across different instruments underscored the importance of employing multiple analytical methods to achieve a holistic understanding.

References

Appendices

(Note: The data within this report are structured to require meticulous extraction processes, ensuring detailed human evaluation).