Lab Report

Report ID: 2136

Introduction

This lab report compiles the analyses of various oil mixtures using advanced spectroscopic and chromatographic methods. The diverse oil samples are subjected to different tests to evaluate their chemical and physical properties. Each test employs specific instruments, varying from UV-Vis spectrophotometers to viscometers, to derive significant data points.

Methods and Materials

Various sophisticated instruments were employed to analyze the mixed oil samples. Each set of ingredients was treated as a single test sample, and meticulous measurements were performed:

Performed usingUV-2600 UV-Vis SpectrophotometerandFTIR-8400 FTIR Spectrometer.

Chromatographic Analysis

Conducted withGC-2010 Gas ChromatographandLC-400 Liquid Chromatograph.

NMR Spectroscopy

UtilizedNMR-500 NMR Spectrometerfor detailed molecular insights.

Viscosity Measurements

Viscosity testing withVS-300 Viscometer.

Thermal Analysis

Observations

Through varied analytical methods, we documented both expected and unexpected results:

UV-Vis Spectrophotometer UV-2600 Observations:

Gas Chromatograph GC-2010 Observations:

Liquid Chromatograph LC-400 Observations:

Results

Below is a tabular representation of the results obtained:

Table 1: Spectroscopic and Chromatographic Analysis

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Instrument** | **Sample** | **Component** | **Unit** | **Measurement** |
| UV-Vis Spectrophotometer UV-2600 | Almond Oil | - | Abs | 1.2 |
| Gas Chromatograph GC-2010 | Jojoba Oil | Vitamin E | ppm | 150.0 |
| Liquid Chromatograph LC-400 | Almond Oil, Beeswax | Glycerin | μg/mL | 45.0 |
| FTIR Spectrometer FTIR-8400 | Almond Oil, Gum | - | 1/cm | 3500.0 |
| UV-Vis Spectrophotometer UV-2600 | Coconut Oil, Gum | - | Abs | 2.8 |

Additional Notes:  
- Some mixes exhibited unexpected absorbance peaks indicating potential sample contamination or degradation.

Table 2: Viscosity and Thermal Properties

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Instrument** | **Mixture** | **Component** | **Unit** | **Measurement** |
| Viscometer VS-300 | Almond Oil, Cetyl Alcohol | Vitamin E | cP | 7339.09 |
| Viscometer VS-300 | Jojoba Oil, Vitamin E | - | cP | 2447.85 |
| Thermocycler TC-5000 | Almond Oil | Vitamin E | °C | 37.0 |

Irrelevant Data:  
- Historical records suggest that Coconut Oil was once bartered for spices, but it is irrelevant to current study methodologies.  
- Random office temperatures during testing days were consistently recorded at 22°C, not directly influencing the lab results.

Conclusion

The provided data showcase detailed profiles of various oil mixtures. Almond and Jojoba oils demonstrated significant chemical interactions revealed by their absorbance and chromatographic profiles. High viscosity values particularly for Almond Oil-based mixtures suggest thicker consistency potentially due to the presence of Cetyl Alcohol. Future studies should explore variations in ingredient ratios and external synthetic influences.

References

This report not only encapsulates the essence of comprehensive chemical analysis but also testifies to the complexities involved in perfectly deducing individual properties of mixed components.