Lab Report: Analysis of Essential Oil Mixtures

Introduction

This report, designated asReport\_610, comprehensively examines various mixtures of essential oils and other compounds using advanced analytical equipment. Our goal was to quantify the properties and chemical constituents of these mixtures to understand their structural and compositional characteristics.

Mixes Analyzed

The samples tested include mixtures involving combinations of Jojoba Oil, Almond Oil, Cetyl Alcohol, Beeswax, Glycerin, Vitamin E, and others.

Methodology and Equipment

Analytical Techniques

Observed concentration:345.7 ppm.

Centrifuge X100

Operational speed:10,247 RPM.

Titrator T-905

Molarity determined:7.456 M.

Ion Chromatograph IC-2100

Additional Instruments

Detected functional groups inAlmond Oil with Gum and Vitamin Eat3450 1/cm.

Microplate Reader MRX

Optical density ofAlmond Oil,Cetyl Alcohol, andGlycerinrecorded at2.57 OD.

pH Meter PH-700

pH level of theJojoba Oil,Cetyl Alcohol, andVitamin Emixture was6.8.

Spectrometer Alpha-300

Absorbance at wavelength500 nmforJojoba OilandBeeswax.

Four Ball FB-1000

Wear scar measurement for lubricating mixes ofJojoba OilandCetyl Alcohol:0.789 mm.

Viscometer VS-300

Observations

General Trends

Anomalies

Results and Discussion

Analysis of each mixture provided a comprehensive understanding of their chemical properties. The data captured indicates the robust nature of the analytical methods employed, producing reliable and consistent results across varied compositions.

Detailed Data Tables

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| --- | --- | --- | --- |
| **Equipment** | **Mixture Components** | **Measurement** | **Unit** |
| Gas Chromatograph GC-2010 | Jojoba Oil, Cetyl Alcohol | 345.7 | ppm |
| Centrifuge X100 | Jojoba Oil, Beeswax, Glycerin | 10247.0 | RPM |
| Titrator T-905 | Almond Oil, Beeswax, Glycerin | 7.456 | M |
| Ion Chromatograph IC-2100 | Jojoba Oil | 2.98 | mM |
| FTIR Spectrometer FTIR-8400 | Almond Oil, Gum, Vitamin E | 3450.0 | 1/cm |
| Microplate Reader MRX | Almond Oil, Cetyl Alcohol, Glycerin | 2.57 | OD |
| pH Meter PH-700 | Jojoba Oil, Cetyl Alcohol, Vitamin E | 6.8 | pH |
| Spectrometer Alpha-300 | Jojoba Oil, Beeswax | 500.0 | nm |
| Four Ball FB-1000 | Jojoba Oil, Cetyl Alcohol | 0.789 | mm |
| Viscometer VS-300 | Almond Oil, Beeswax, Vitamin E | 7191.4 | cP |

Conclusion

The analytical procedures applied have provided a detailed profile of the mixtures involved. This work successfully illustrates the complexity and versatility of the instruments employed, delivering essential insights into the physical and chemical properties of these natural-product-based mixtures. Further studies will explore potential interactions within these systems contributing to such observations.

Irrelevant Observations

During the analysis, we noted the lab maintained an ambient temperature of 25°C, although this did not significantly impact instrument performance. Additionally, lunch in the lab cafeteria was unexpectedly delightful, featuring an exquisite display of culinary artistry – perhaps a motivating factor unrelated to the core scientific endeavors herein.