Lab Report 1968

Introduction

In this study, a variety of oil-based mixtures were analyzed using different analytical techniques. The components in these mixtures include Almond Oil, Jojoba Oil, Coconut Oil, Gum, Beeswax, Vitamin E, and Cetyl Alcohol. Each sample was subjected to diverse methods to determine specific characteristics such as concentration, absorbance, viscosity, and more. This report elaborates the findings of these analyses, where each set of ingredients is treated as a distinct test sample.

Materials and Methods

Equipment

Samples

Samples were prepared as mixtures containing:  
1.Almond Oil, Gum, Vitamin E  
2.Jojoba Oil, Beeswax  
3.Coconut Oil, Gum, Vitamin E  
4.Jojoba Oil(alone)  
5.Coconut Oil(alone)  
6.Almond Oil, Vitamin E  
7.Coconut Oil, Cetyl Alcohol

Results and Observations

Table 1: Measurement Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Instrument** | **Primary Component** | **Additional Components** | **Measurement** | **Unit** |
| Gas Chromatograph GC-2010 | Almond Oil | Gum, Vitamin E | 345.0 | ppm |
| FTIR Spectrometer FTIR-8400 | Jojoba Oil | Beeswax | 1500.0 | 1/cm |
| Liquid Chromatograph LC-400 | Coconut Oil | Gum, Vitamin E | 250.0 | ug/mL |
| UV-Vis Spectrophotometer UV-2600 | Jojoba Oil | nan | 1.8 | Abs |
| Titrator T-905 | Coconut Oil | nan | 5.3 | M |
| Ion Chromatograph IC-2100 | Almond Oil | Vitamin E | 35.0 | mM |
| Spectrometer Alpha-300 | Coconut Oil | Cetyl Alcohol | 550.0 | nm |
| Viscometer VS-300 | Jojoba Oil | nan | 2569.08 | cP |
| Viscometer VS-300 | Almond Oil | Cetyl Alcohol | 7278.39 | cP |

Observations

Table 2: Additional Observations

|  |  |  |
| --- | --- | --- |
| **Test IDs** | **Comments** | **Irrelevant Data** |
| Report\_1968\_01 | Unexpected precipitation in Almond Oil mix | Random comment |
| Report\_1968\_02 | Stable emulsion in Jojoba Oil and Beeswax | Irrelevant observation |
| Report\_1968\_03 | Slight turbidity in Coconut Oil with Gum | Disregarded data point |
| Report\_1968\_04 | Jojoba Oil requires further UV-Vis analysis | Non-pertinent remark |

Discussion

Through these analyses, various characteristics of complex oil mixtures were ascertained. The divergent viscosities indicate a significant difference in flow properties when additional compounds like Cetyl Alcohol are incorporated into oils such as Almond Oil. Furthermore, the chromatographic analyses not only provided quantitative insights into concentrations of constituents like Vitamin E but also demonstrated their potential impact on the emulsification properties and stability of the oils.

The spectrometric and titrimetric evaluations underscore the necessity of understanding individual component interactions, as seen in the coconut oil's response to titration and absorption spectrums. Such findings can guide future formulations for cosmetic and therapeutic uses.

Conclusion

This report reveals the critical intricacies of oil-based mixtures and highlights the application of precise analytical methods in elucidating these complexities. For future work, further exploration into the emulsification behaviors and long-term stability assessments of such mixtures is recommended to refine their applications in industry contexts.