Laboratory Report: Analysis of Various Oil-Based Samples

Report ID: 2432

Equipment Used:

Objective:

The purpose of this study was to analyze different mixtures of oil-based samples using various analytical techniques to determine their chemical properties and stability. Each unique set of components within a test sample was examined, and observations were documented accordingly.

Methodology:

The following mixtures were prepared and tested:  
-Coconut Oil and Cetyl Alcohol-Jojoba Oil with Beeswax and Glycerin-Jojoba Oil with Gum and Glycerin-Coconut Oil and Vitamin E-Almond Oil with Gum and Vitamin E-Coconut Oil and Beeswax-Almond Oil with Glycerin-Jojoba Oil and Glycerin-Coconut Oil and Vitamin E-Almond Oil with Gum-Almond Oil-Almond Oil with Beeswax and Vitamin E

Instruments and Analysis:

Spectrometer Alpha-300utilized for observing the interaction ofCoconut Oil and Cetyl Alcoholat a wavelength of 650 nm.

HPLC System HPLC-9000recorded the concentration ofJojoba Oil mixtures:

WithGum, Glycerinat 75 mg/L.

Thermocycler TC-5000was set at 37°C to assess the stability of theCoconut Oil and Vitamin Emixture.

Four Ball FB-1000determined the wear diameter forAlmond Oil with Gum and Vitamin Eat 0.750 mm.

ThePCR Machine PCR-96calculated the cycle threshold (Ct) forCoconut Oil and Beeswax, resulting in a measurement of 28 Ct.

Titrator T-905measured the molarity of the mixture ofAlmond Oil and Glycerin, which was found to be 3.5 M.

Using theUV-Vis Spectrophotometer UV-2600, the absorbance ofJojoba Oil and Glycerinwas measured at 1.2 Abs.

FTIR Spectrometer FTIR-8400provided the spectral data forCoconut Oil and Vitamin Eat 1800 1/cm.

TheMass Spectrometer MS-20analysis ofAlmond Oil and Gumgave a mass-to-charge ratio of 1000 m/z.

Viscometer VS-300recorded the viscosity of:

Observations:

The presence and combinations of different oils and compounds significantly impacted the physical and chemical properties observed. The results illustrated varied interactions under different analytical techniques and conditions.

Results Summary

Table 1: Spectrometric Data

|  |  |  |  |
| --- | --- | --- | --- |
| **Sample** | **Instrument** | **Measurement** | **Units** |
| Coconut Oil, Cetyl Alcohol | Spectrometer Alpha-300 | 650 | nm |
| Coconut Oil, Vitamin E | FTIR Spectrometer FTIR-8400 | 1800 | 1/cm |

Table 2: HPLC Concentration Data

|  |  |  |  |
| --- | --- | --- | --- |
| **Sample** | **Instrument** | **Concentration** | **Units** |
| Jojoba Oil, Beeswax, Glycerin | HPLC System HPLC-9000 | 250 | mg/L |
| Jojoba Oil, Gum, Glycerin | HPLC System HPLC-9000 | 75 | mg/L |

Table 3: Miscellaneous Data

|  |  |  |  |
| --- | --- | --- | --- |
| **Sample** | **Instrument** | **Result** | **Units** |
| Almond Oil, Gum, Vitamin E | Four Ball FB-1000 | 0.75 | mm |
| Coconut Oil, Beeswax | PCR Machine PCR-96 | 28.0 | Ct |
| Almond Oil, Glycerin | Titrator T-905 | 3.5 | M |
| Jojoba Oil, Glycerin | UV-Vis Spectrophotometer UV-2600 | 1.2 | Abs |
| Almond Oil, Gum | Mass Spectrometer MS-20 | 1000.0 | m/z |

Table 4: Viscosity Measurements

|  |  |  |  |
| --- | --- | --- | --- |
| **Sample** | **Instrument** | **Viscosity** | **Units** |
| Almond Oil | Viscometer VS-300 | 7547.38 | cP |
| Almond Oil, Beeswax, Vitamin E | Viscometer VS-300 | 7234.15 | cP |

Conclusion:

The exploratory testing across various analytical instruments provided critical insights into the differing behaviors and properties of oil-based combinations. The detailed observations give rise to an understanding of how diverse compositions influence physical characteristics such as viscosity and chemical interactions observed through spectrometric and chromatographic analyses.

Further studies could extend these findings by exploring more complex mixtures or alternative analytical methods to enhance the comprehensiveness of results.