Laboratory Report

Report ID: 1840

Introduction

This study investigates various properties of combinations involving Coconut Oil, Jojoba Oil, and Almond Oil with additional components. Various analytical instruments were employed to understand the compounds better.

Instruments and Methodology

Observations and Measurements

Table 1: Basic Analysis

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sample ID** | **Instrument** | **Sample** | **Additives** | **Measurement** | **Unit** |
| A1 | NMR-500 | Coconut Oil | - | 12.0 | ppm |
| B2 | TC-5000 | Coconut Oil | Gum | 56.0 | °C |
| C3 | MRX | Jojoba Oil | Cetyl Alcohol, Glycerin | 2.1 | OD |
| D4 | GC-2010 | Almond Oil | Cetyl Alcohol | 354.0 | ppm |
| E5 | CM-215 | Coconut Oil | Gum, Vitamin E | 780.0 | µS/cm |
| F6 | XRD-6000 | Almond Oil | Gum, Glycerin | 88.0 | °C |
| G7 | Alpha-300 | Almond Oil | Beeswax, Vitamin E | 540.0 | nm |
| H8 | X100 | Jojoba Oil | Glycerin | 7500.0 | RPM |
| I9 | VS-300 | Almond Oil | Beeswax, Glycerin | 7224.93 | cP |
| J10 | VS-300 | Coconut Oil | Gum, Vitamin E | 5248.78 | cP |

Table 2: Observational Notes

|  |  |
| --- | --- |
| **Sample ID** | **Observation** |
| A1 | Clear spectral peaks indicating consistent purity |
| B2 | Mild color change upon heating, indicating reaction |
| C3 | Light absorption indicating presence of additives |
| D4 | Strong peak signals, verifying high compound purity |
| E5 | High conductivity suggesting significant ion content |
| F6 | Solids confirmed upon diffraction analysis |
| G7 | Wavelength absorption aligns with known spectra |
| H8 | Effective phase separation after spinning |
| I9 | High viscosity attributed to beeswax presence |
| J10 | Moderately viscous, typical for oil-based mixtures |

Results Description

The mixtures were subjected to varied experimentations to establish characteristics intrinsic to their formation with each compound exhibiting distinct behaviors. The NMR spectral analysis confirmed the molecular consistency within the coconut oil matrix. Thermal responses underscored the reactivity potential in coconut oil blends with gums.

In the case of Jojoba Oil compounded with Cetyl Alcohol and Glycerin, Optical Density (OD) measurements revealed varying degrees of light absorption, a clear signal of interaction among the ingredients.

High-performance Gas Chromatography isolated components within Almond Oil mixes, demonstrating efficacy in quantifying cetyl alcohol presence. Concurrent conductivity meter findings in coconut formulations suggested a pronounced ionic profile.

Diffractometer outcomes unveiled crystalline formations in almond-based samples, complementing the outcomes of spectrometric analyses which further supported elucidations regarding wavelength absorbance properties.

Centrifuge tests highlighted Jojoba Oil's layered arrangements post-centrifugation, while the viscosity reading from the viscometer depicted varying textural consistencies heavily influenced by beeswax inclusion.

Conclusion

The detailed investigation has revealed essential insights into the complex interactions and property shifts occurring in oil-based mixtures with multiple additives. Using advanced instrumentation provided a comprehensive dataset aiding in the affirmation of theoretical models related to chemical structuring within these mixtures.

Random Observations (Irrelevant Information)

The data collected corroborate existing literature on compound interactions while offering new avenues for exploration in oil-additive systems. Continued analysis across wider sample sets is recommended to further validate these preliminary conclusions.