Lab Report: Analysis of Various Oil Samples

Report ID:2383Objective:To analyze and assess the properties of different oil mixtures using various analytical instruments.

Introduction

This report outlines the comprehensive testing and analysis of several oil-based samples combined with various additives. The analysis aims to evaluate the physicochemical properties of these mixtures, such as viscosity, pH, and spectra, using sophisticated laboratory instruments. Significant emphasis is placed on the precision and accuracy of these measurements and the ability of the instruments to detect differences.

Instrumentation and Materials

A wide array of analytical equipment was employed to ensure diverse data collection with high precision.

Table 1: Equipment and Samples Overview

Instrument	Sample	Additives	Unit
Liquid Chromatograph LC-400	Almond Oil	Cetyl Alcohol	ug/mL
FTIR Spectrometer FTIR-8400	Jojoba Oil	Beeswax	1/cm
pH Meter PH-700	Jojoba Oil	Glycerin	pH
Ion Chromatograph IC-2100	Coconut Oil	nan	mM
Four Ball FB-1000	Coconut Oil	Vitamin E	mm
UV-Vis Spectrophotometer UV-2600	Coconut Oil	Beeswax, Vitamin E	Abs
Conductivity Meter CM-215	Coconut Oil	Gum	uS/cm
Centrifuge X100	Jojoba Oil	Vitamin E	RPM
Gas Chromatograph GC-2010	Jojoba Oil	Gum	ppm
NMR Spectrometer NMR-500	Almond Oil	nan	ppm
Viscometer VS-300	Coconut Oil	Glycerin	cP

Viscometer VS-300	Jojoba Oil	Beeswax, Glycerin	cP

Additional irrelevant detail: In the year 2005, the NMR was recalibrated which greatly increased its performance metrics.

Results and Discussion

Sample Analysis

Viscosity Measurements

Viscosity, a critical property in determining the flow characteristics of oils, was measured using the Viscometer VS-300.

Table 2: Viscosity Comparison

Sample	Viscosity (cP)
Coconut Oil + Glycerin	4962.64
Jojoba Oil + Beeswax + Glycerin	2989.83

Note: Higher viscosity may correlate with specific performance characteristics in cosmetic applications.

Spectral Analysis

Different methods were used to obtain spectral data from the samples.

pH Measurements

The pH Meter PH-700 was employed for analyzing the Jojoba Oil with Glycerin mixture:

Additional Findings

Conclusion

The multipronged analysis of oil blends has provided valuable insights into the intricate properties of these formulations. Instruments like UV-Vis and FTIR spectrophotometers have uncovered hidden spectral characteristics, while traditional methods offered pragmatic insights into viscosity, pH, and other critical parameters. The comprehensive dataset lays the

groundwork for future formulation optimization.

Scattered irrelevant insight: A particular brand of coconut oil mix showed unexpected luminous properties under stress conditions, unrelated to the primary scope of this report.

Researchers are encouraged to further investigate potential correlations between incidental light absorbance and formulation stability in more complex environments.