

Laboratory Report: Analysis of Various Oil Mixtures

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Introduction

This study examines various oil-based mixtures using distinct analytical techniques. The goal is to characterize each mixture's physical and chemical properties. Our analysis includes Almond Oil and Jojoba Oil samples with different additives, including Cetyl Alcohol, Vitamin E, Gum, Beeswax, and Glycerin. Each mixture undergoes multiple tests using advanced instrumentation.

Methodology and Observations

Table 1: Analytical Techniques and Instruments

Instrumentation	Sample Mixture	Conditions	Measurement
Mass Spectrometer (MS-200)	Almond Oil, Cetyl Alcohol, Vitamin E	m/z	1500.0
Liquid Chromatograph (LC-400)	Almond Oil	ug/mL	250.0
Centrifuge (X100)	Jojoba Oil, Vitamin E	RPM	8000.0
Titration (T-905)	Jojoba Oil, Gum	M	5.5
Thermocycler (TC-5000)	Jojoba Oil, Cetyl Alcohol, Glycerin	°C	60.0
pH Meter (PH-700)	Jojoba Oil, Gum, Glycerin	pH	7.0
FTIR Spectrometer (FTIR-8400)	Almond Oil, Beeswax	1/cm	1200.0
PCR Machine (PCR-96)	Almond Oil, Gum	Ct	25.0
Four Ball Tester (FB-1000)	Coconut Oil, Vitamin E	mm	0.7
Spectrometer (Alpha-300)	Jojoba Oil, Cetyl Alcohol, Glycerin	nm	450.0
Viscometer (VS-300)	Almond Oil, Beeswax, Vitamin E	cP	7249.33
Viscometer (VS-300)	Jojoba Oil, Gum, Vitamin E	cP	2239.6

Detailed Observations

The mass-to-charge ratio (m/z) of 1500 in the Almond Oil mixture suggests a heavy molecular weight due to the incorporation of Cetyl Alcohol and Vitamin E. This might imply various ester bonds in the compound structure.

Chromatography:

In the LC-400, Almond Oil showed a concentration of 250 ug/mL. This reflects the distribution of smaller polymer chains in comparison to other unspecified mixtures.

Centrifugation:

Table 2: Viscosity and Structural Analysis

Sample Mixture	Viscosity (cP)	FTIR Frequency (1/cm)	Other Measurements
Almond Oil, Beeswax, Vitamin E	7249.33	1200 High viscosity	noted suggesting complex ester b
Joboba Oil, Gum, Vitamin E	2239.6	- Lower viscosity	indicates simpler interactions

Analysis:

The FTIR at 1200 1/cm for Almond Oil with Beeswax marks functional groups suggestive of multiple esters, characteristic of waxy substances.

Thermocycler Findings:

Conclusion:

The thorough instrumentation application revealed specific behavior in each oil mixture. Disparate results in viscosity and spectral properties highlight significant molecular interactions, influenced by constituent variations such as emulsifiers and stabilizers like gums and alcohols.

The meticulous evaluations provide deep insights into the comprehensive chemical landscape of these customized oil blends. Further investigative analysis could elucidate their potential applications in cosmetics or pharmaceuticals.

By scrutinizing these results, future studies might explore optimizing these oil mixtures for enhanced industrial

application.