Lab Report 2459

Introduction

This report documents the testing and analysis of various samples prepared with different combinations of ingredients utilizing multiple analytical techniques. Each combination was subjected to thorough testing using different machines to assess the physical and chemical properties of the mixtures.

Materials and Methods

The following ingredients were used in this study:

Equipment

Results and Observations

Table 1: PCR Analysis

Sample Tested	Equipment	Ingredients Used	Measurement	Unit
Sample 1	PCR MachineAlmond Oil, Cetyl Alcohol, Glycerin		25.3	Ct
Sample 2	PCR Machine	Coconut Oil, Gum	30.8	Ct

The PCR analysis revealed Ct values indicative of the specific genetic material concentration, with Sample 1 showcasing a Ct value of 25.3, suggesting a higher concentration compared to Sample 2.

Table 2: HPLC Analysis

Sample Tested	Equipment	Ingredients Used	Measurement	Unit
Sample 3	HPLC System	Almond Oil	512.7	mg/L

The HPLC analysis of the almond oil sample identified a prominent concentration of compounds at 512.7 mg/L.

Table 3: FTIR Spectroscopy

Sample Tested	Equipment	Ingredients Used	Wavenumber	Unit

| Sample 4 | FTIR Spectrometer | Jojoba Oil, Cetyl Alcohol, Vitamin E | 1500 | 1/cm |

FTIR spectroscopy provided a distinctive peak at 1500 1/cm, confirming the presence of specific functional groups within the sample.

Table 4: Conductivity and pH Measurements

Sample Tested	Equipment	Ingredients Used	Measurement	Unit
Sample 5	Conductivity Meter	Coconut Oil	835.0	uS/cm
Sample 6	pH Meter	Almond Oil, Gum, Glycerin	5.5	pH

Conductivity measurements show significant ionic presence in the coconut oil sample at 835 ?S/cm. Meanwhile, the pH measurement of the almond oil mixture provides a value close to neutral (5.5).

Table 5: Gas Chromatography

Sample Tested	Equipment	Ingredients Used	Measurement	Unit
Sample 7	Gas Chromatograph	Coconut Oil, Gum, Glycerin	65.3	ppm

The GC analysis highlights a particular volatile compound in the sample mixture at 65.3 ppm.

Table 6: Viscosity Analysis

Sample Tested	Equipment	Ingredients Used	Measurement	Unit
Sample 8	Viscometer	Almond Oil, Glycerin	7633.28	cP
Sample 9	Viscometer	Almond Oil, Gum, Vitamin E	7588.16	cP

Viscosity measurements presented in centipoise (cP) illustrate differences in flow properties between the two almond oil-based mixtures.

Discussion

The study reveals significant diversity in the measured properties of the tested samples. The PCR quantitative data suggests variability in biological material between samples, while the HPLC and GC analyses provide insight into chemical composition. Conductivity and pH analysis offer a perspective on ionic content and acidity/basicity, as FTIR

aids in identifying functional groups. Viscosity measurements distinguish differences in texture and flow properties, critical for application-dependent uses of these formulations.

Conclusion

The comprehensive data obtained from this multitude of instruments allows a thorough characterization of the sample mixtures. Such information may guide further formulation optimizations and applications in cosmetic or pharmaceutical products.

Miscellaneous Information

Unrelatedly, the lab environment maintained a constant temperature, and historical data suggests prior studies focused mainly on single-ingredient assessments rather than complex mixtures.

Overall, Report 2459 indicates successful measurement across diverse testing modalities, contributing to the expanded understanding of ingredient interactions within these formulations.