Lab Report: Analysis of Various Oil Samples

Report ID:772Date Conducted:[Date of the Experiment]Conducted By:[Researcher's Name]

Introduction

This report details the analysis of various oil samples tested using different equipment. The primary aim is to ascertain chemical properties and analyze the composition of mixtures containing Jojoba Oil, Coconut Oil, and Almond Oil combined with other compounds. The experiments were conducted to determine their spectroscopic, chromatographic, and mechanical characteristics.

Experimental Setup

Materials and Methods

Equipment Used

Samples Analyzed

Additional Compounds

Observations and Measurements

Infrared Spectroscopy

Sample:Jojoba OilDevice:FTIR Spectrometer FTIR-8400-First Measurement:0.002 cm?¹-Second Measurement:0.005 cm?¹Observations:Two peaks were noted, likely indicating distinct vibrational modes within the Jojoba Oil compound structure.

Conductivity

Observations:Jojoba Oil displays moderate conductivity, suggesting the presence of ionic species or polar molecules.

High-Performance Liquid Chromatography

Sample:Coconut OilDevice:HPLC System HPLC-9000-Measurement:0.25 mg/LObservations:The concentration of target analyte was determined, with a single predominant peak suggesting a low complexity in mixture.

Mechanical Testing

Sample:Coconut Oil + Gum + Vitamin EDevice:Four Ball Tester FB-1000-Measurement:0.320 mm wear scar diameterObservations:Minimal wear was evident, potentially due to the presence of Vitamin E as a lubricant additive.

pH Measurement

Sample:Almond Oil + GumDevice:pH Meter PH-700-Measurement:pH 7.5Observations:The mixed acidity and basicity of the sample led to a neutral solution.

Mass Spectrometry

Sample:Coconut Oil + Gum + Vitamin EDevice:Mass Spectrometer MS-20-Measurement:150 m/zObservations:The molecular ion peak at 150 m/z confirms the expected presence of Vitamin E's distinct fragments within the sample.

Data Tables

Table 1: Infrared Spectroscopy Results

Sample	Measurement 1 (1/cm)	Measurement 2 (1/cm)
Jojoba Oil	0.002	0.005

Table 2: HPLC and Conductivity Results

Sample	HPLC (mg/L)	Conductivity (uS/cm)
Coconut Oil	0.25	nan
Jojoba Oil	nan	150.0

Table 3: pH and Mechanical Testing

Sample	pH	Wear Scar Diameter (mm)

Almond Oil + Gum	7.5	nan
Coconut Oil + Gum + Vit E	nan	0.32

Discussion

The data presented provides a comprehensive overview of the properties of each sample. The FTIR results for Jojoba Oil indicate the presence of complex organic structures, thereby affecting conductivity. HPLC data from Coconut Oil suggests a single dominant constituent, whereas mechanical testing highlights the role of Vitamin E as an anti-wear agent. The neutral pH of the Almond Oil mixture ensures its suitability for applications requiring stability.

Conclusion

The extensive analysis of the oil samples demonstrates significant variance in their physical and chemical properties, influenced by individual and combined components. Additional studies could explore environmental factors affecting these properties.

Note:Some information may be irrelevant or incomplete due to experimental constraints or lack of record maintenance. Further verification and experimentation might be required for definite conclusions.