Lab Report: Analysis of Various Oil Mixtures

Introduction

The purpose of this lab report is to assess the physical and chemical properties of various oil mixtures using several analytical techniques. The mixtures were prepared with different combinations of oils, waxes, and other substances, such as Vitamin E and Glycerin. Analyses were conducted using specialized equipment, including Thermocyclers, Microplate Readers, HPLC Systems, pH Meters, and Viscometers.

Ingredients Examined

Analytical Procedures and Observations

Temperature Analysis

Coconut Oil with Gum and Vitamin E

Observations:

Optical Density (OD) Measurements

Coconut Oil, Cetyl Alcohol, Glycerin Mixture

Observations:

High-Performance Liquid Chromatography (HPLC) Analysis

Almond Oil, Cetyl Alcohol, Vitamin E Mixture

Results:

pH Level Assessment

Almond Oil, Gum, Glycerin Mixture

Results:

Viscosity Measurements

The viscosity of oil mixtures was evaluated using the Viscometer VS-300, revealing varied thickness levels.

The viscosity considerably surpassed standard expectations, with values recorded at7172.15cP and7381.16cP in different readings, suggesting sampling discrepancies.

Coconut Oil, Beeswax:

Tables of Results

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| --- | --- | --- | --- |
| **Sample** | **Measurement Type** | **Value** | **Units** |
| Jojoba Oil + Glycerin | Temperature | 67.0 | °C |
| Coconut Oil + Gum + Vitamin E | Temperature | 82.0 | °C |
| Coconut Oil + Gum + Glycerin | Optical Density | 3.7 | OD |
| Coconut Oil + Cetyl Alcohol + Glycerin | Optical Density | 1.8 | OD |
| Coconut Oil + Beeswax + Glycerin | Concentration | 256.8 | mg/L |
| Almond Oil + Cetyl Alcohol + Vitamin E | Concentration | 489.5 | mg/L |
| Almond Oil + Gum + Glycerin | pH Level | 5.2 | pH |

|  |  |  |  |
| --- | --- | --- | --- |
| **Sample** | **Viscosity** | **Value** | **Units** |
| Almond Oil + Cetyl Alcohol | Viscosity 1 | 7172.15 | cP |
| Almond Oil + Cetyl Alcohol | Viscosity 2 | 7381.16 | cP |
| Coconut Oil + Beeswax | Viscosity | 4752.6 | cP |

Discussion

Each mixture exhibits unique properties under various conditions:  
-Temperature Analyseswere indicative of thermally induced transformations and stabilities.  
-Optical Densityvariations reflected different degrees of transparency.  
-HPLC Dataemphasized the complexity and concentration of components.

Notably, thepH Measurementsprovided insight into the stability of mixtures in slightly acidic environments, andViscosity Levelsoutlined the textural richness of combinations, particularly those involving almonds and cetyl alcohol.

Conclusion

The experiments successfully delineated the interaction between multiple constituents within each mixture. Future studies may involve further refining the methodology to enhance precision and minimize variability in measurements.

\*Note: Ensure the next iteration of experimentation accounts for consistent batch preparation to harmonize the readings across various trials.