Lab Report

Report ID:Report\_834

Introduction

This report details the analysis of various oil-based mixtures using different analytical instruments. The objective of this study was to measure the physical and chemical properties of mixtures containing combinations of Almond Oil, Jojoba Oil, Coconut Oil, Beeswax, Vitamin E, and Cetyl Alcohol. The importance of this research lies in understanding the interplay between these ingredients, widely used in cosmetic and healthcare industries.

Materials and Methods

Sample Preparation

Each mixture was prepared by combining specified ingredients to form a homogeneous solution. Care was taken to maintain consistent mixing and storage conditions to ensure reliability across tests.

Instruments Used

The instruments employed include:

Observations and Measurements

Almond Oil, Cetyl Alcohol

|  |  |  |  |
| --- | --- | --- | --- |
| **Instrument** | **Measurement** | **Value** | **Unit** |
| Spectrometer Alpha-300 | Wavelength | 670 | nm |
| HPLC System HPLC-9000 | Concentration | 345 | mg/L |

Almond Oil, Beeswax, Vitamin E

|  |  |  |  |
| --- | --- | --- | --- |
| **Instrument** | **Measurement** | **Value** | **Unit** |
| Mass Spectrometer MS-20 | Mass-to-charge | 1578 | m/z |

Jojoba Oil, Beeswax

|  |  |  |  |
| --- | --- | --- | --- |
| **Instrument** | **Measurement** | **Value** | **Unit** |
| FTIR Spectrometer FTIR-8400 | Wavenumber | 2750.0 | 1/cm |
| Ion Chromatograph IC-2100 | Ion Concentration | 0.035 | mM |

Jojoba Oil, Beeswax, Vitamin E

|  |  |  |  |
| --- | --- | --- | --- |
| **Instrument** | **Measurement** | **Value** | **Unit** |
| Rheometer R-4500 | Viscosity | 500 | Pa-s |
| Conductivity Meter CM-215 | Conductivity | 1200 | uS/cm |

Coconut Oil, Beeswax

|  |  |  |  |
| --- | --- | --- | --- |
| **Instrument** | **Measurement** | **Value** | **Unit** |
| Viscometer VS-300 | Viscosity | 4907.52 | cP |
| Viscometer VS-300 | Viscosity | 4913.32 | cP |

Additional Findings

Irrelevant to the main analysis but noted during testing,PCR Machine PCR-96revealed a cycle threshold (Ct) of 25 for Jojoba Oil variants. This unrelated observation highlights consistency in this device's results.

Conclusion

Through various advanced spectrometric and analytic techniques, this report has demonstrated the intricate relationships and properties of oil-based mixtures commonly used in dermatological formulations. Each method brought unique insights into the physicochemical aspects of the compounds involved, important for the development of more effective cosmetic products. Further exploration into the stability and reactivity of these mixtures could yield valuable information, potentially leading to optimized formulation strategies.

Note: The findings in this report might be subject to further verification due to natural variation in ingredient source and preparation method, possibly impacting repeatability under different conditions.

In summary, this study provides a comprehensive understanding of the tested mixtures, contributing significantly to the field of chemical product analysis.