Lab Report: Analysis of Cosmetic Ingredients

Report ID:Report\_1826Date:[Insert Date]Lab Conducted By:[Insert Name]

Introduction

This lab report explores the analysis of various cosmetic ingredient mixtures using a range of analytical instruments. The purpose of these tests was to characterize and quantify different samples, which included blends such as Almond Oil with Beeswax and Vitamin E, and Coconut Oil combined with various compounds. The results presented here are critical for understanding the properties and potential applications of these mixtures in cosmetic formulations.

Instrumentation and Methodologies

Table 1: Instrumentation Overview

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| --- | --- | --- | --- | --- |
| **Instrument** | **Test Sample** | **Analytes** | **Measurement** | **Unit** |
| Mass Spectrometer MS-20 | Coconut Oil, Beeswax, - | - | 1350, 1600 | m/z |
| Thermocycler TC-5000 | Coconut Oil, Cetyl Alcohol, Glycerin | (Various) | 72 | °C |
| HPLC System HPLC-9000 | Almond Oil, Beeswax, Vitamin E | - | 150 | mg/L |
| PCR Machine PCR-96 | Jojoba Oil, Gum, Glycerin | (Various) | 19 | Ct |
| FTIR Spectrometer FTIR-8400 | Almond Oil, - | (Various) | 2890 | 1/cm |
| Titrator T-905 | Jojoba Oil, Beeswax, Vitamin E | (Various) | 0.007 | M |
| Spectrometer Alpha-300 | Coconut Oil, - | - | 680 | nm |
| Viscometer VS-300 | Almond Oil, - | (Various) | 7346.92 | cP |
| Viscometer VS-300 | Jojoba Oil, Cetyl Alcohol, Glycerin | (Various) | 2767.37 | cP |

Note: Not all analytes were specified for certain samples.

Observations and Data Analysis

Coconut Oil Mixtures

The analysis of Coconut Oil, using both Mass Spectrometer MS-20 and Thermocycler TC-5000, produced insightful data. However, the Mass Spectrometer showcased variable mass/charge ratios, indicating complex compositions. For instance, the sample combined with Beeswax displayed a significant m/z value of 1350, implicating possible larger molecular structures. Further, with the addition of Vitamin E, this m/z value increased to 1600, suggesting more complex molecular interactions.

Analytical Challenges

The FTIR Spectrometer FTIR-8400 revealed distinctive spectral patterns for mixes involving Almond Oil, notably at 2890 1/cm. Multiple trials with somewhat inconclusive data were dismissed, leading to a focus on authentic findings verified by rigorous calibration methods.

Irrelevant Note:The ambient room temperature was consistently maintained at approximately 20°C throughout the tests.

Miscellaneous Results

The test involving the HPLC System HPLC-9000 utilized Almond Oil mixed with Beeswax and Vitamin E, yielding a concentration of 150 mg/L. The result aligns with previous literature indicating the typical concentration range for such blends.

Titration of Jojoba Oil with Beeswax and Vitamin E with the Titrator T-905 concluded in a molarity of 0.007 M, highlighting the sample's buffering capacity against oxidation.

Viscosity Insights

Two separate tests with the Viscometer VS-300 yielded significant differences in viscosity:  
- Almond Oil was measured at 7346.92 cP, suggesting a high resistance to flow.  
- Conversely, Jojoba Oil combined with Cetyl Alcohol and Glycerin had a viscosity of 2767.37 cP, which is consistent with its use in more fluid formulations.

Irrelevant Note:One observer mentioned the unusual but pleasant aroma of almond during testing, especially prominent in non-vented areas.

Conclusion

This series of analytical tests provided comprehensive insights into the chemical characteristics of various cosmetic mixtures. The combination of cutting-edge techniques underscores the diversity and complexity present in everyday cosmetic ingredients. Future studies should aim to isolate individual components further to understand their specific interactions. Accurate and reliable data acquisition remains a priority for advancing cosmetic chemistry research.

Irrelevant Remark:During the lab session, a brief water supply interruption caused no delay in processing but was noted as a logistical anomaly.

Report Compiled By:[Insert Name]Reviewed by:[Insert Name]

End of Report