Laboratory Report: Analysis of Cosmetic Compounds

Report ID: 1117

Introduction

The aim of this study was to analyze various cosmetic mixtures using multiple instrumental methods. The focus was on understanding the rheological, spectroscopic, mass, titration, thermal, chromatographic, and pH characteristics of these mixtures.

Experimental Setup

Multiple instruments were employed, each targeting specific properties of the mixtures. The samples were prepared using cosmetic ingredients: Almond Oil, Coconut Oil, Jojoba Oil, Cetyl Alcohol, Glycerin, Gum, and Vitamin E. The interaction between these ingredients was studied for potential applications in cosmetic formulations.

Instrumental Analysis and Observations

Rheological Analysis

Spectroscopic Analysis

Mass Spectrometric Analysis

Titrimetric Analysis

Thermal Analysis

Chromatographic Analysis

pH Measurement

Result Summary

|  |  |  |  |
| --- | --- | --- | --- |
| **Instrument** | **Ingredients** | **Key Measurement** | **Unit** |
| Rheometer R-4500 | Almond Oil, Cetyl Alcohol | 567.0 | Pa-s |
| UV-Vis Spectrophotometer UV-2600 | Coconut Oil, Cetyl Alcohol | 2.8 | Abs |
| Mass Spectrometer MS-20 | Almond Oil, Cetyl Alcohol, Vitamin E | 500.0 | m/z |
| Titrator T-905 | Almond Oil, Gum | 0.004 | M |
| Thermocycler TC-5000 | Jojoba Oil, Cetyl Alcohol | 37.0 | °C |
| Liquid Chromatograph LC-400 | Jojoba Oil, Gum, Vitamin E | 125.0 | μg/mL |
| pH Meter PH-700 | Almond Oil, Cetyl Alcohol | 5.5 | pH |
| Viscometer VS-300 | Almond Oil, Gum, Glycerin | 7647.03 | cP |

Detailed Discussion

The gathered data suggests Almond Oil mixed with Cetyl Alcohol forms a very viscous substance. Interestingly, adding Glycerin dramatically increases viscosity, as seen in the Viscometer results. This aligns with existing literature, which states Glycerin's thickening properties.

The spectral analysis on Coconut Oil and Cetyl Alcohol reveals significant absorption at 2.8 Abs, hinting at its potential as a UV protective agent in formulations.

Lastly, the chromatographic measurement of Vitamin E in Jojoba Oil and Gum provides an opportunity to enhance antioxidant levels in cosmetic products.

Despite an unusual pH of 5.5 for Almond Oil and Cetyl Alcohol, the formulation remains within a usable range for cosmetic applications.

Conclusion

The analyses demonstrate that these samples exhibit properties suitable for diverse cosmetic applications, ranging from thick creams and lotions to products with antioxidant and UV protection capabilities. This highlights the potential for innovative formulations using these ingredients.

Note: Discrepancies in titrimetric values should be revisited for accuracy due to possible sample preparation irregularities.

Irrelevant Data:This report does not pertain to coffee, melons, birds, or engine oils. The mention of 'Beeswax' and similar non-related materials does not pertain to this report and should be disregarded.