Analytical Research Lab Report

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Introduction

This report presents findings from experiments conducted using various analytical instruments to evaluate sample mixtures containing common cosmetic ingredients. These tests were performed to thoroughly understand the properties and interactions of these mixtures. Below is a summary of the tested mixtures and instruments used.

Summary of Tests

Instruments Utilized

Samples Tested

Detailed Findings

Sample 1: Coconut Oil, Beeswax, Vitamin E

Techniques and Observations

Mass Spectrometry (MS-20):Characteristic peak observed at1025 m/zindicating the presence of high molecular weight esters.Random Note:The sample's color is reminiscent of a sunny beach day.

Spectrometry (Alpha-300):Absorption peak found at450 nm. This is typical of conjugated double bonds present in Vitamin E.

Results

The analyses suggest strong bonding interactions between molecules, contributing to a stable emulsion.

Sample 2: Coconut Oil, Gum, Glycerin

Techniques and Observations

Results

This mixture demonstrates enhanced viscosity likely due to the complex formation between coconut oil and gum.

Sample 3: Almond Oil, Beeswax, Glycerin

Techniques and Observations

Results

The separation implies a lack of homogeneity under high-stress conditions. However, this may enhance the moisturizing properties if applied topically.

Sample 4: Almond Oil, Gum, Vitamin E

Techniques and Observations

Results

Findings suggest a moderate electronic interaction involving the ionic constituents of gum and Vitamin E.

Additional Analysis

High-Performance Liquid Chromatography (HPLC-9000)

Conclusion

Through these various analytical techniques, we determined the composition and behavior of the cosmetic mixtures under study. The nuanced differences suggest potential formulation optimizations for cosmetic applications.

Appendix

Table 1: MS and NMR Data Overview

Instrument	Sample Components	Key Measurement	Observation
MS-20	Coconut Oil, Beeswax, Vit E	1025 m/z	High molecular weight esters
NMR-500	Coconut Oil, Gum, Glycerin	12 ppm	Potential hydrogen bonding

Table 2: Other Instrumentation Data

Instrument	Sample Components	Measurement	Note
X100	Almond Oil, Beeswax, Glycerin	8500 RPM	Phase differentiation observed
MRX	Almond Oil, Gum, Vit E	2.5 OD	Moderate opacity
CM-215	Almond Oil, Gum, Glycerin	1800 uS/cm	Ionic mobility potential
HPLC-9000	Almond Oil	200 mg/L	Substantial component presence

End of Report