Lab Report 1179

Introduction

The following report encompasses a series of experiments conducted using various scientific instruments to analyze samples composed of different ingredient mixtures. Each sample was subjected to a range of tests to determine its chemical and physical properties. The mixtures studied included combinations such as Jojoba Oil with Cetyl Alcohol and Glycerin, among others. The aim was to gain insights into their characteristics and potential applications.

Materials and Methods

A variety of analytical instruments were employed, ranging from a Mass Spectrometer (MS-20) to a Viscometer (VS-300). Each instrument provided specific data pertinent to the composition and properties of the mixtures.

Sample Descriptions

Results and Discussion

Table 1: Mass Spectrometer and Other Analytical Measurements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sample ID** | **Instrument** | **Main Ingredient** | **m/z** | **Measurement Unit** |
| A | Mass Spectrometer MS-20 | Almond Oil | 1430.0 | m/z |
| B | Thermocycler TC-5000 | Coconut Oil | 57.0 | C |
| G | Microplate Reader MRX | Jojoba Oil | 1.2 | OD |
| D | Conductivity Meter CM-215 | Jojoba Oil | 1020.0 | uS/cm |
| E | Four Ball FB-1000 | Jojoba Oil | 0.632 | mm |
| C | Centrifuge X100 | Jojoba Oil | 12000.0 | RPM |

Observations

TheMass Spectrometer(MS-20) was utilized to analyze Sample A (Almond Oil mix). The resulting m/z ratio was 1430, indicative of a predominantly mono-elemental ion.

Thermocycling Findings

Sample B, comprised of Coconut Oil, was processed using the Thermocycler TC-5000. The operation revealed a critical temperature peak at 57°C. This measurement is crucial for recognizing the oil's thermal stability.

Table 2: Additional Chromatographic and Viscosity Data

|  |  |  |  |
| --- | --- | --- | --- |
| **Sample ID** | **Instrument** | **Measurement** | **Unit** |
| B | Liquid Chromatograph LC-400 | 15.7 | ug/mL |
| F | Viscometer VS-300 | 5299.83 | cP |
| G | Viscometer VS-300 | 2045.18 | cP |
| H | Viscometer VS-300 | 4857.39 | cP |

Complex Descriptions and Further Considerations

Samples F, G, and H were subjected toviscosity measurementswith intriguing results. The coconut oil mixtures (F and H) displayed higher viscosities (5299.83 cP and 4857.39 cP, respectively) compared to the Jojoba oil mixture (G) at 2045.18 cP. This implies a potential variance in application based on the oil's consistency.

ThePCR analysisconducted using the PCR Machine PCR-96 on Sample A determined a crucial threshold cycle (Ct) value of 25, indicating the presence and abundance of nucleic acid derivatives.

Irrelevancies and Distractors

Interestingly, during the phase of Microplate Reading for Sample C, an anomaly of 1.2 OD was noted; however, this was determined to be unrelated to the main objectives.

Theliquid chromatographic dataidentified an unexpected 15.7 ug/mL measurement for Sample B, which further analysis revealed potential extrinsic contamination, later deemed insignificant.

Conclusion

Through multi-instrumental testing and rigorous analysis, this report details diverse properties of various oil-based mixtures. From the mass analysis of Almond Oil to viscosity insights in Coconut Oil blends, each observation provides substantial knowledge with implications for further applied science development.

Despite potential distractors, these results underscore the varied characteristics and potential uses of such mixtures in industrial applications. Future studies should consider an expanded array of sample combinations to build on these findings.