

The Effect Of Ingredient Quality On Final Formulation Stability

INTRODUCTION

The nature and the quality of a constituent in a formulation may have repercussions on its stability. The formulators need to test the stability of their emulsions, suspensions and foams with different types of raw materials.



When dealing with natural products the difference in quality can be more noticeable when moving from one supplier to another.

In order to examine this, we have analysed, with the **Turbiscan Classic**, the effect on the stability of two cosmetic emulsions, of the introduction of Jojoba oil from different suppliers.

SAMPLES PREPARATION AND EXPERIMENT PLAN

Two kinds of emulsion («Sport lotion» and «Sensitive lotion») have been prepared with Jojoba oil from different suppliers:

- × with oil noted 1
- × with oil noted 2

Samples number	4	Temperature analysis	43°C
Analysis volume	6 ml	Duration analysis	24 hours

Two hours are needed to bring the samples to the required temperature (43°C).

The curve after 2 hours of analysis is selected as a reference. The subsequent traces then show the changes in back scattered light intensity (% , ordinate axis) on the tube height (mm, abscises axis) as a function of time (the last curve is always displayed in red).

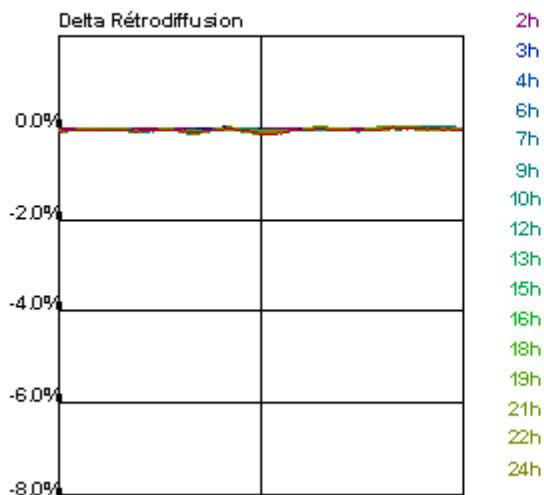
RESULTS

The profiles obtained show different kinds of backscattering variation :

- × no important backscattering variation at the top of the samples prepared with oil 1, characteristic of no changes in this zone (*Figure 1*).

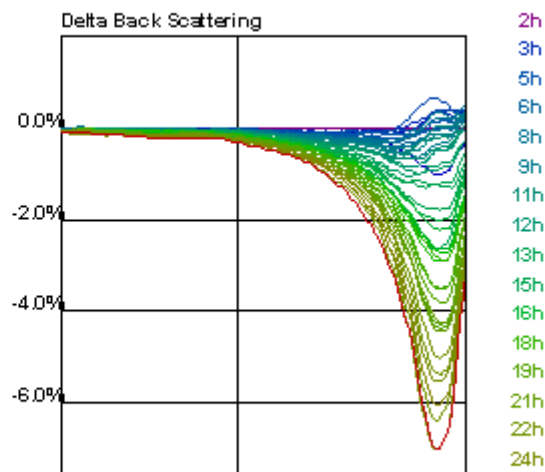
- × a backscattering decrease at the top of the samples prepared with oil 2, characteristic of a clarification of the samples in this zone (*Figure 2*).

SPORT LOTION / OIL 1 (24/12/96 17:23)



45mm
Figure 1

SPORT LOTION / OIL 2 (24/12/96 17:35)



45mm
Figure 2

The analysis of the top of samples allows the destabilisation kinetics as a function of time (*Figure 3*) to be followed.

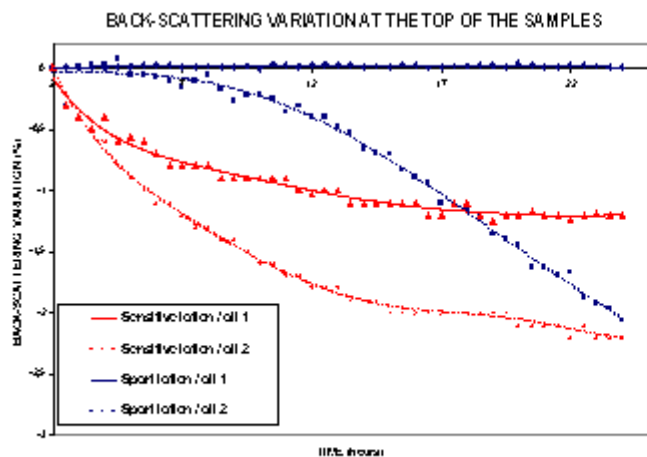


Figure 3

EFFECT OF THE JOJOBA OIL NATURE ON THE STABILITY OF TWO EMULSIONS

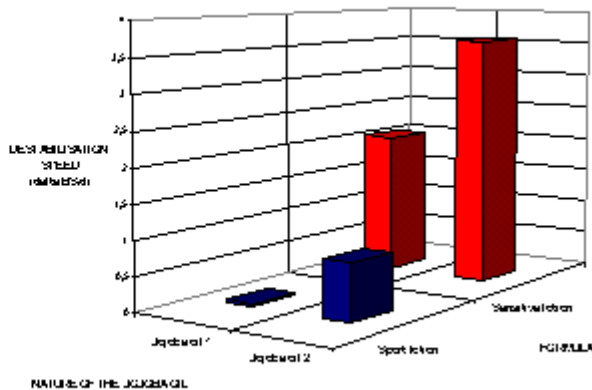


Figure 4

The calculation of the slope of the graph over 12 hours allows the calculation of the destabilisation speed, as a function of the Jojoba oil type used (*Figure 4*).

The jojoba oil 1 used in both formulations made more stable emulsions than the Jojoba oil 2. This quality difference can be explained by the different oil extraction methods employed by the suppliers.

CONCLUSION

The **Turbiscan Classic** is able to detect particle migration phenomena in a few hours. Furthermore, it allows a quantitative comparison of the results to be made for each sample. It is therefore a useful tool for the formulator who wants to study the effect of raw material variation on his samples.