Approaches to studying the oxidative stability of oleogels

Frolova Yuliya V
Sobolev Roman V
Sarkisyan Varuzhan A
Kochetkova Alla A

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Much attention is paid to the structural and morphological properties of oleogels, as well as the principles of their organization in the production process, while the oxidative stability of such systems has not been fully studied.

This work aimed to study the oxidative stability of oleogels based on sunflower oil and beeswax during storage.

Materials and Methods

1. ISO 3960:2007
2. Cd-12c-16 AOCS
3. Penetration depth of dye Sudan II

Potential industries using oleogels

- Pharmaceutics
- Cosmetics
- Food industries

Matrix for drug delivery

Substitutes for solid fats

Refined deodorized sunflower oil (SO)

Beeswax (BW)

Oleogel
Results

The appearance of the test tubes (bottom layer - oleogel, top layer - colored alcohol).
a - composition before incubation, b - composition during incubation.

The dynamics of changes in the peroxide value during storage of oil and oleogels for 144 hours at a temperature of 35 °C.

Graphical dependence of optical density on Sudan II in alcohol

Spectrum of dye Sudan II in alcohol depending on the concentration
Conclusion

The beeswax at a concentration of 3% and 6% in the composition of oleogels express prooxidant properties since oleogels based on it oxidize faster compared to the sunflower oil. In this case, the rate of oxygen diffusion into the volume of the oleogel, based on the results of the experiment with Sudan II, shows that with an increase in the content of the structuring agent, the diffusion rate decreases. The oxidation of oleogels may proceed faster not due to oxygen diffusion, but due to individual minor components contained in beeswax, which is confirmed by the data obtained under oxidation conditions at a temperature exceeding the melting point of beeswax.
Thanks for attention!

Frolova Yu. V.
Federal Research Centre of Nutrition, Biotechnology and Food Safety
e-mail: Y.operarius@yandex.ru

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