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FOOD PROTECTION

SyneRox HT

An advanced solution for making the most out of your frying oils and fats

Frying oils and fats are sensitive mixtures of various unsaturated fatty acids sensitive to oxidation. Deterioration process is even more pronounced after several cycles of frying (for example in potato chips or chicken nugget production), where oils and fats are repeatedly exposed to high temperatures and oxygen.

The result is the formation of heptanal, hexanal, acrolein and many other compounds that are harmful to human health.

Unwanted oxidation changes of frying oils and fats can be significantly reduced by using heat stable natural rosemary extract formulations.

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Table 1: **SyneROX HT (302144) Application Areas**

Type	Product	Recommended usage level	Application
Frying oils and fats	SyneROX HT (302144)	1,2 g/kg	Pour into oil or fat and mix well

Test protocol

SyneROX HT (302144) was tested in:
- sunflower oil,
- rapeseed oil,
- soy oil.

Oils were dosed with SyneROX HT at a concentration 0,12 %. The comparison products were commercially available natural and synthetic antioxidants added as per manufacturer's recommendation. Controls had no antioxidants added.

Potatoes were peeled, washed, cut in 1 cm x 1 cm strips, washed again, blanched and fried for 1 min at 180°C. Antioxidants were dosed to frying oil before frying and also by each replenishment of oil during frying. Samples of frying oil were taken every two hours during frying to perform quality measurements. Each oil was fried until it reached 2 % of FFA and 25 % of total polar material (TPM).

Oxidation stability was determined by:
- free fatty acid content,
- total polar material.

Free fatty acids are used to quantify the amount of free fatty acids present in a sample, which is a measure of hydrolytic rancidity. Lower FFA value indicates better oxidative stability of the product.

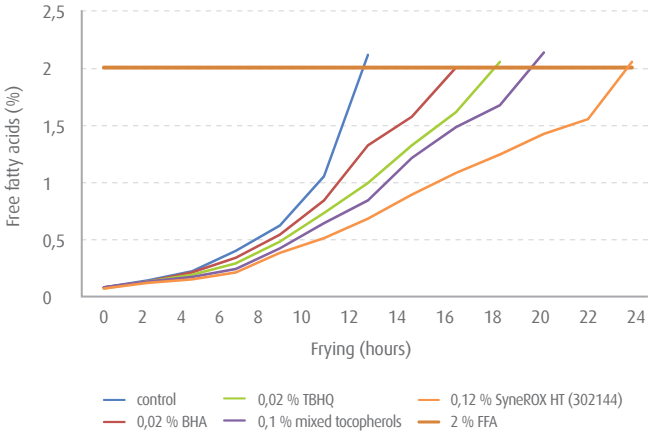
Total polar material is used as an indicator of the quality of frying fats. All degradation products other than non-polar fraction (unaltered triglycerides) are collectively called total polar material. This refers to all the polar materials present in oil, including those due to contamination from food materials.

Table 2: **Classification of oil according to % TPM**

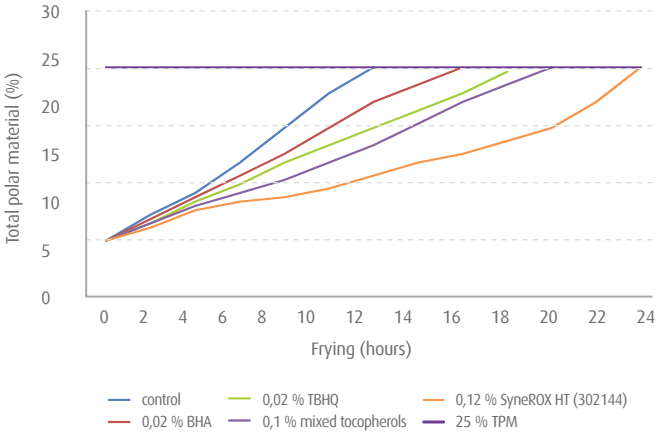
% TPM	Ranking based on aging of fat
1 – 14 %	Slightly used oil
14 – 18 %	Used oil
18 – 22 %	Used, but still acceptable
22 – 24 %	Widely used, need to renew
More than 24 %	Worn oil

Results

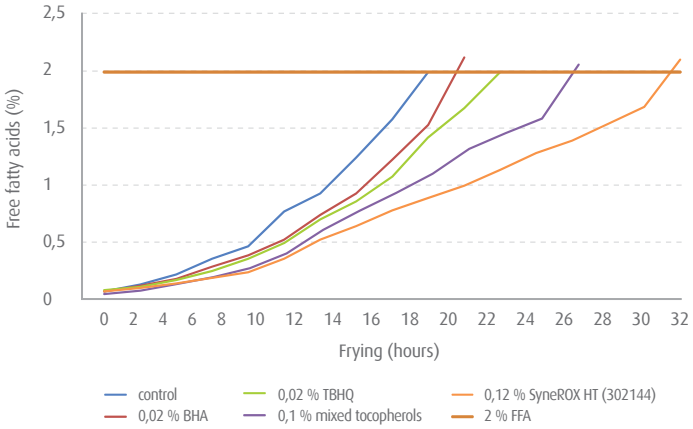
Graph 1: **Free fatty acids of sunflower oil**



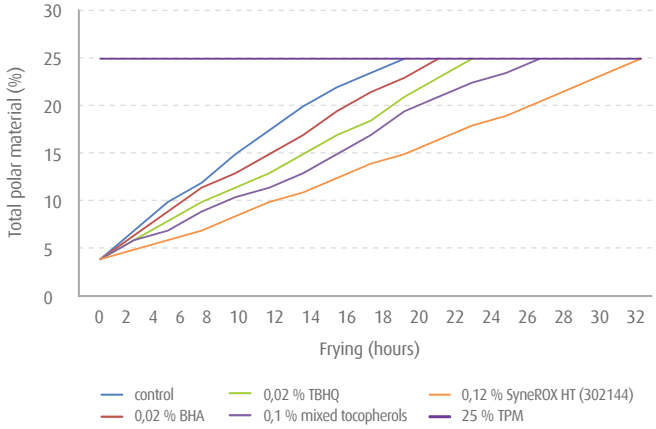
Graph 2: **Total polar material of sunflower oil**



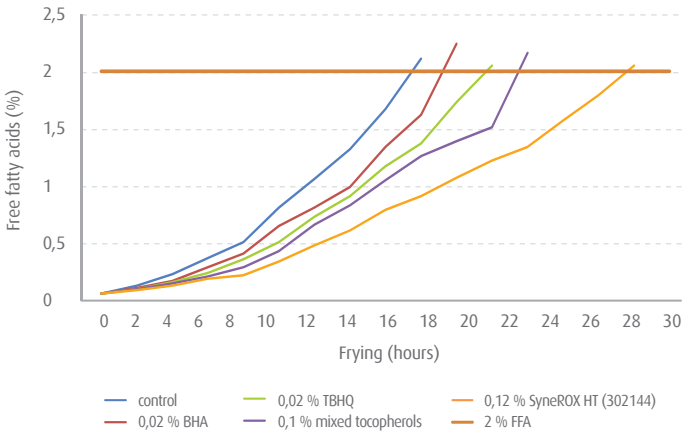
Graph 3: **Free fatty acids of rapeseed oil**



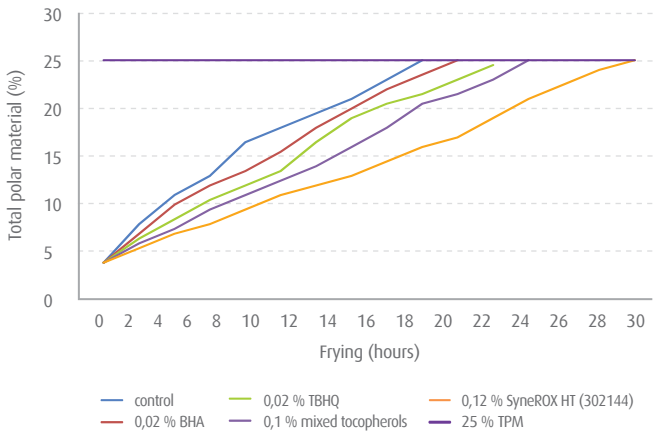
Graph 4: **Total polar material of rapeseed oil**



Graph 5: **Free fatty acids of soy oil**



Graph 6: **Total polar material of soy oil**



Conclusion

SyneROX HT (302144) is very efficient in protecting frying oils of different origin from rancidity already at low dosages of 50 ppm of active ingredient (dosage of 0,12 % of SyneROX HT).

With the addition of 0,12 % SyneROX HT (302144) to sunflower oil, 2 fold increase in shelf life was reached compared to the control oil.

Addition of SyneROX HT (302144) to rapeseed and soy oil allows 1,8 fold longer frying cycles compared to the control oil. While providing the benefit of protection, at the same time there is no change of taste, odour and other organoleptic properties of frying oils treated with SyneROX HT (302144).

Benefits

The benefits of using SyneROX HT (302144) in frying oil operations are:

- frying oil shelf life extension naturally,
- longer frying cycle without compromising oil or food quality,
- fried products taste fresh longer,
- no residue of active ingredients in fried products (no labelling required),
- better oxidation management and product market positioning,
- reducing frying oils usage – an effective cost management tool,
- 100 % natural non – allergenic formulation.

Regulatory

- For legislation status and additional labelling advices, please contact us at foodprotection@frutarom.com.

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FOOD PROTECTION

Vitiva
Nova vas pri Markovcih 98
2281 Markovci
Slovenia

tel: **+386 2 7888 738**
fax: **+386 2 7888 731**
e-mail: **foodprotection@frutarom.com**

www.vitiva.eu