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OXIDATIVE STABILITY OF DIFFERENT SUNFLOWER HYBRIDS

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Abstract: *The use of oils with high oxidation stability in agro-food processing ensures a longer life for food and thus food waste can be reduced. Four sunflower hybrids: linoleic (L), high oleic(HO), ultra high oleic (UHO) and high oleic high stearic (HOHS) grown in the western plains of Romania were tested for oxidation stability both as seeds and as oil extracted by different methods: cold pressing, hot extraction, microwave extraction. The ultra high oleic and high oleic sunflower oil was the most stable oil with the highest IP value, while the high stearic high-oleic oil also showed better oxidative stability than the traditional sunflower oil.*

• Introduction

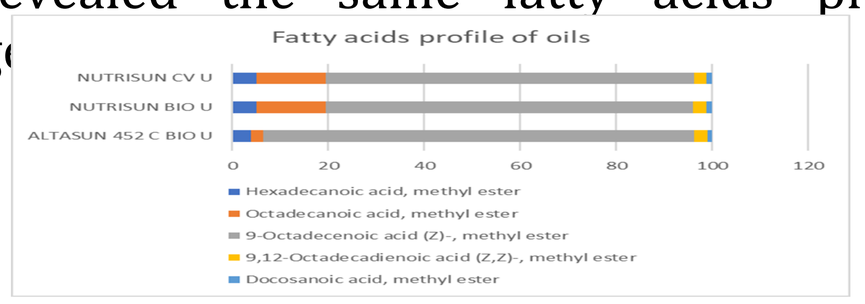
The use of oils with high oxidation stability in agro-food processing ensures a longer life for food and thus food waste can be reduced. Sunflower oil obtained from linoleic hybrids contains a high proportion of polyunsaturated fatty acids, beneficial for the health, but with low oxidation stability.
Sunflower hybrids with a high content of oleic acid and stearic acid have a reduced proportion of polyunsaturated fatty acids, which determines a high oxidation stability.

• Material and method

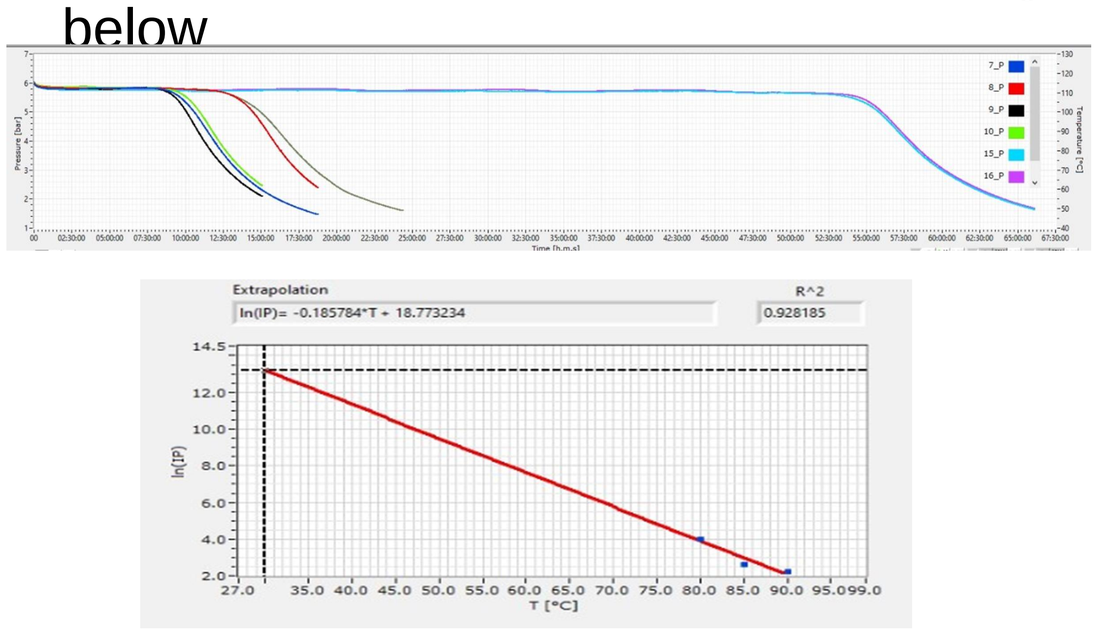
The study focused on the analysis of the oil obtained from HO-Alta Sun 452 and HOHS-Nutrisun hybrids cultivated experimentally in the western region of Romania 46°6′47″N 20°47′5″E.
The profile of fatty acids in the oil obtained by different methods: cold pressing, Soxhlet extraction and microwave extraction was analyzed by gas chromatography, performed with Shimadzu QP 2010 Plus apparatus (Columbia, SC, USA).
The evaluation of the oxidation stability of the oils was carried out by the accelerated oxidation method at 6 barr pressure of O2 and different temperatures 90, 85, 80°C, in triplicates, determining the induction period IP at which the oxidation products appear. The analyzes were done with the OXITEST apparatus from Velp, Italy. Based on the IP, the shelf life of the oils was estimated.

• Results and discussions

The chromatographic analyses by GC-MS revealed the same fatty acids profile as ge



The induction periods IP determinated and shelf life estimated are shown in figures below



Shelf life of HOHS sunflower oil

• Conclusions

HO, UHO and HOHS sunflower oil presented induction periods 3 times longer than linoleic sunflower oil and a saturated fatty acid/unsaturated fatty acid ratio similar to olive oil.