

In case of linden (*Tilia*) however three common compounds have been found in the flower and honey distillates. Linden ether (a name from the source, *i.e.* marker), *cis*-Rose-oxid and Chrysanthenon have not been found yet in any other investigated honey samples. These compounds could be used as marker compounds and could prove the floral origin of the honey.

Goldenrod (*Solidago*) honeys and flowers show very special volatile spectra due to the presence of sesquiterpene Germacrene D and its derivatives. Germacrene is not uncommon in plants because it is a key intermediate in the biosynthesis of many sesquiterpenes. Literary sources do not however report any occurrence of it in honey samples neither it has appeared in our honey samples investigated so far. Germacrene D, delta- Elemene and delta-Cadinene seem to be good marker compounds of the floral origin of *Solidago* honeys.

REFERENCES

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MICROWAVE AND CONVENTIONAL HEATING EFFECTS ON SOME PHYSICOCHEMICAL PARAMETERS OF HIGH OLEIC AND LINOLEIC SUNFLOWER OIL

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ABSTRACT

The effect of microwave heating on some physicochemical parameters and oxidative stability of two sunflower oil (oleic and linoleic type), which have different lipid composition was studied. Each oil was heated by microwave energy of 360, 600 and 900W for 3, 6, 9 and 12 minutes. The results were juxtaposed to the ones, received by conventional heating and duration of 18 minutes. It was determined that by microwave and conventional heating of 900W for of sunflower oil no hydrolysis processes are observed. The oxidation degree in both types of oil increases with the increase of energy and the duration of microwave heating. The peroxide value and the conjugated dienes after 12

min of microwave heating at maximum power increase about 2 times, irrelevant of the fact that the two types of oil have a different oxidation stability and different degree of oxidation. The colour value increases, and the quantity of tocopherols decreases about 1.5 times. The nature of the oxidation changes in conventional heating does not differ significantly from those in microwave heating.

Table 1
Characteristic values and composition of sunflower oil of oleic and linoleic type

Physicochemical characteristic	Sunflower oil	
	oleic type	linoleic type
Acid value, (mg KOH/g)	0.2±0.01	0.3±0.05
Peroxide value, (meqO ₂ /kg)	5.8±0.5	14.9±0.5
Tocopherols, (mg/kg)	145±10	336±10
Oxidation stability, (h)	23±0,5	10±0,5
Fatty acids composition, %		
Myristic (C _{14:0})	tr.	0.2±0.1
Palmitic (C _{16:0})	4.2±0.1	7.5±0.1
Palmitoleic (C _{16:1})	tr.	0.5±0.1
Stearic (C _{18:0})	3.0±0.1	4.2±0.1
Oleic (C _{18:1})	81.5±0.1	36.4±0.1
Linoleic (C _{18:2})	11.5±0.1	51.2±0.1

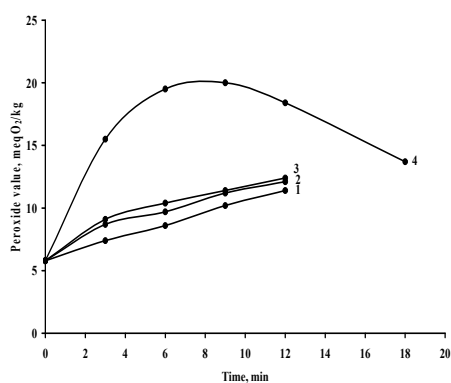


Figure 1
Change of the peroxide value

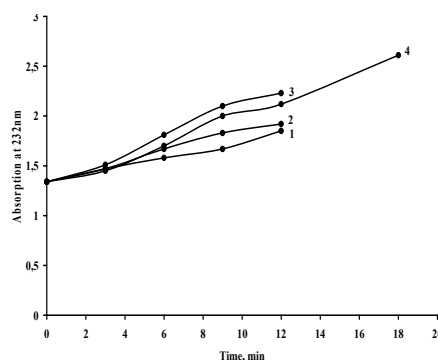


Figure 2
Change of the absorption at 232 nm

Table 2

Basic physicochemical values of sunflower oil (oleic and linoleic type), subjected to microwave and conventional heating for different periods of time and different power

Time	Acid value	Tocopherols	Lovibond	Acid value	Tocopherols	Lovibond
min	mgKOH/g	mg/kg	Colour	mgKOH/g	mg/kg	Colour
	Oleic type sunflower oil			Linoleic type sunflower oil		
0	0.2	145	2.8	0.3	336	4.2
Microwave heating at 360 W						
3	0.3	136	2.8	0.4	326	5.6
6	0.3	131	2.8	0.4	316	5.8
9	0.4	116	2.8	0.5	253	7.4
12	0.4	108	3.4	0.5	243	9.8
Microwave heating at 600 W						
3	0.4	126	2.8	0.4	300	5.4
6	0.4	116	2.8	0.5	286	6.4
9	0.4	110	3.1	0.5	256	9.4
12	0.4	102	4.4	0.5	203	12.6
Microwave heating at 900 W						
3	0.4	120	9.0	0.5	282	5.6
6	0.4	106	9.6	0.5	257	9.4
9	0.4	101	10.8	0.5	231	12.1
12	0.5	98	11.8	0.5	189	13.4
Conventional heating						
6	0.2	136	2.8	0.4	308	4.8
12	0.2	131	4.4	0.4	220	6.4
18	0.3	100	6.0	0.5	200	8.0
SD	±0.01	±10	±0.1	±0.01	±10	±0.1

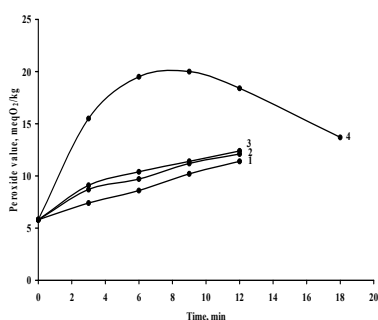


Figure 3
Change of the peroxide value

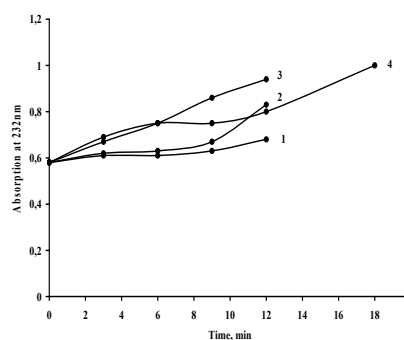


Figure 4
Change of the absorption at 232 nm