Biologically-active Phytochemicals in Food

Analysis, Metabolism, Bioavailability and Function

Edited by

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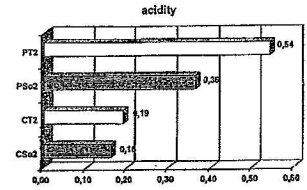

Figure 3 *Acidity values relative oils from harvesting time 2000*

In addition a rapid SPME procedure was applied in order to compare the volatile fractions of these oils. Preliminary results show no differences between CT2 and CSo2. Some peculiarities were evidenced for PT2 and PSo2, particularly a fraction contained compounds analogous of octadiend resulted more abundant for PT2 . A more in-depth investigation is in progress.

Abbreviations table

P= Peranzana	C=Coratina
T=Traditional	So=Stoned olives
1=Harvesting time 1999	2=Harvesting time 2000

4 REFERENCES

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2. A. Romani, P. Pinelli, N. Mulinacci, F.F. Vincieri and M. Tattini, *Chromatographia*, 1999, 49, 17.
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Moreover the per cent of hydrolysis, expressed as (Tyr+OH-Tyr/Total CMP)100 was also evaluated. Usually low values indicate a better stability of the oil over time. Figure 1 shows higher values of this parameter for all the samples obtained applying a traditional milling with respect to the others. In light of these data, oils from pitted olives would seem to have a long shelf life.

Ageing tests were conducted in different experimental conditions (direct light and dark) in order to verify the ability of CT1 and CSo1 oils to maintain the chemical and organoleptic characteristics.

In Figure 2 are summarised the Δk and the acidity values up to 7 months of ageing.

The CT1 oil stored in direct light shows higher values of this parameter with respect to the CSo1 oil . It is interesting to underline that for CT1 oil this value exceeds the limits fixed by a decree-law of the European Community (n° 2568/91) while the CSo1 sample remains below these limits.

As shown in Figure 3 for all the samples from pitted olives lower acidity values were obtained with respect to those of traditional oils. This behaviour is confirmed also for the samples of 1999 as evidenced in Figure 2 at time 0.

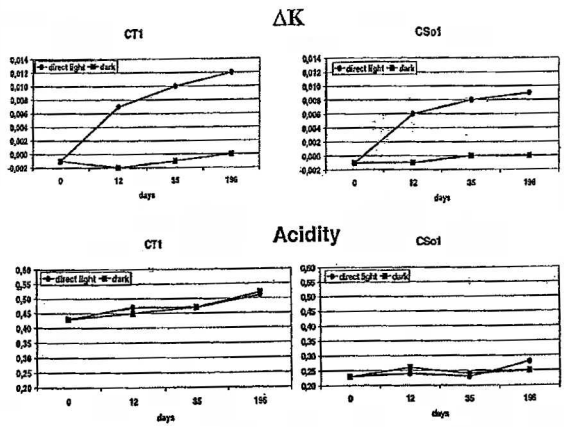

Figure 2 *Variations of Δk and acidity for ageing samples harvesting time 1999.*

GC-MS ThermoQuest MD 800 equipped with a chromatographic column PS 264 (30 m x 0.25), 3 µm, (MEGA), was used.

3 RESULTS AND DISCUSSION

During the first year only two samples of Coratina oils were analysed (CSo1; CT1). Together with the determination of MPC other common chemical tests were performed both on the fresh and aged oils. Initially higher values for acidity, peroxides and Δk for the CT1 sample with respect to the CSo1 one were evidenced. The other two couples of oils, PT2 and PSo2 and CT2 and CSo2, were only analysed immediately after milling. The same chemical evaluations were performed and no data are reported on their ageing.

Concerning the MPC determination, a method recently described [1] able to evaluate the total compounds as a sum of four chemical classes was applied: tyrosol (Tyr) and hydroxytyrosol (OH-Tyr), elenolic acid (EA) and its derivatives, secoiridoidic compounds (Sec der), flavonoids (Fla). In Tables 1 and 2 are shown the total CMP amounts. A wider variability in total amounts can be observed comparing traditional oils with the "new" ones.

Table 1

mg/L	*CT2*	*CSo2*	*PT2*	*PSo2*
OH-Tyr+Tyr	73,1	18,6	13,83	10,27
EA + der	43,3	23,3	44,76	31,43
Sec. der	259,8	534,9	326,35	532,29
Fla.	5,5	6,0	7,38	6,50
Total	*381,8*	*582,8*	*392,32*	*580,49*

Table 2

mg/L	*CSo1*	*CT1*
OHTyr+Tyr	7,17	29,74
EA+der	7,26	35,51
Sec. Der	133,62	272,03
Fla.	1,65	2,32
Total	*149,70*	*339,60*

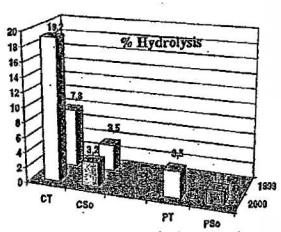

Figure 1 *% Hydrolysis of all the analysed oil samples*

COMPARISON OF CHEMICAL PARAMETERS FOR QUALITY EVALUATION OF VIRGIN OLIVE OILS FROM STONED OLIVES

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1 INTRODUCTION

In recent years great interest has been focused on the healthy effects of dietary intake of virgin olive oil and the minor polar component, (MPC) seem to play an essential positive role. Until now the virgin and extra virgin olive oils are obtained from the crushing of fruits *in toto*, but recently, commercial extra virgin oils from stoned olives have been found on the market[1].

In this work a comparison between these new oils and the traditional virgin oils, both obtained from the same batch of fruit, was carried out. The amounts of MPC, expressed as tyrosol, hydroxy tyrosol, elenolic acid, secoiridoidic derivatives and flavonoids, were calculated. Other common analytical parameters (acidity, Δk, peroxides, etc.) were also evaluated. In addition a comparison among the volatile fractions of these two types of virgin olive oils was preliminarily performed applying a rapid sampling procedure with SPME technique and a GC/MS analysis.

2 MATERIALS AND METHODS

2.1 Materials

A total of six extra virgin olive oil samples from cultivars Coratina and Peranzana (Puglia, Italy), obtained from crushing fruit *in toto* and stoned olives, were analysed. Four samples were from Coratina (CSo1; CT1; CSo2; CT2) and two from Peranzana (PSo2; PT2).

2.2 Extraction and Quantitation of CMP

A quantity of 50 mL of each oil was extracted and analysed according to the procedure previously described[2,3] and the quantitative evaluation was performed through the use of authentic standards, such as tyrosol (280 nm), oleuropein (280 nm), luteolin (350 nm).

2.3 SPME-GCMS

For SPME a silicon fibre (DVB/CAR/PDMS by Supelco) was used. The method requires 5 mL of olive oil, absorption temperature 38°C, desorption at 250°C into the GC injector. A