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TRADE STANDARD APPLYING TO
OLIVE OIL AND OLIVE-POMACE OIL

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RESOLUTION NO. RES-3/71-IV/94

**TRADE STANDARD APPLYING TO OLIVE OIL
AND OLIVE-POMACE OIL**

THE INTERNATIONAL OLIVE OIL COUNCIL,

Having regard to the international trade standard applying to olive oils and olive-pomace oils, COI/T.15/NC no. 1/Rev. 1 of 19 February 1987, which was unanimously adopted on 19 February 1987 by Resolution no. RES-3/IV-S.ex.6/87, and to the amendment of that same standard, dated 18 May 1990, concerning the designation for the blend of refined olive oil and virgin olive which was implemented in compliance with the decision taken by the IOOC at its 62nd session in May 1990 to amend the relevant provision of the International Agreement on Olive Oil and Table Olives, 1986,

Having regard to the Resolution no. RES-3/64-IV/91 of 30 May 1991 by which the IOOC adopted the international trade standard applying to olive oils and olive-pomace oils, COI/T.15/NC no. 1/Rev. 2 of 30 May 1991, in order to bring the terms therein covering the definition of virgin olive oils into line with the terms of the International Agreement on Olive Oil and Table Olives, 1986, as amended in compliance with Resolution no. RES-2/64-IV/91 of 30 May 1991,

Having regard to the Resolution no. RES-2/65-IV/91 of 21 November 1991 by which the IOOC adopted the international trade standard applying to olive oils and olive-pomace oils, COI/T.15/NC no. 1/Rev. 3 of 21 November 1991, which incorporated the analytical methods and the limits adopted for each of the relevant criteria determined for the various categories of olive oils and olive-pomace oils,

Having regard to the Resolution no. RES-3/66-IV/92 of 28 May 1992 by which the IOOC adopted the international trade standard applying to olive oils and olive-pomace oils, COI/T.15/NC no. 1/Rev. 4 of 28 May 1992, which took into account the introduction of the methods and limits adopted at the 66th session as well as the tolerance margin permitted until 31 October 1993 for the minimum organoleptic rating for extra virgin olive oil and fine virgin olive oil,

Having regard to the adoption at the 67th session of the international trade standard applying to olive oils and olive-pomace oils, COI/T.15/NC no. 1/Rev. 5 of 25 November 1992, which incorporated the provisionally approved limits and attendant methods for steroidal hydrocarbons,

Having regard to Resolution no. RES-3/68-IV/93 of 10 June 1993 on the international trade standard applying to olive oils and olive-pomace oils, COI/T.15/NC no. 1/Rev. 6 of 19 June 1993 whereby the limits for several analytical criteria were amended, notably fatty acid composition and wax and contaminant content,

Having regard to Resolution no. RES-4/70-IV/94 of 3 June 1994 by which the IOOC adopted the trade standard applying to olive oil and olive-pomace oil, COI/T.15/NC no. 2 of 3 June 1994, which incorporated the amendments made to the designations and definitions for olive oils and olive-pomace oils in article 26 of the International Agreement on Olive Oil and Table Olives, 1986, as adopted by Resolution no. RES-3/70-IV/94 of 3 June 1994,

Having regard to Resolution no. RES-2/71-IV/94 of 17 November 1994 by which the IOOC provisionally adopted the method for the organoleptic assessment of virgin olive oil (COI/T.20/Doc. no. 15 of 17 November 1994) and the related standards on the general methodology for the organoleptic assessment of virgin olive oil (COI/T.20/Doc. no. 13) and the guide for the selection, training and monitoring of tasters (COI/T.20/Doc. no. 14),

Considering the proposals framed by the Sub-Committee for Olive Oil Chemistry at its 37th meeting regarding the limits for the maximum difference between real and theoretical ECN 42 triglyceride content in the various types of oils, as well as the insertion of a specific note for the application to lampante virgin olive oils and crude olive-pomace oils of the method for the determination of triglycerides and the insertion of the method on the organoleptic assessment of virgin olive oil adopted by the IOOC by Resolution no. RES-2/71-IV/94;

DECIDES

The trade standard applying to olive oil and olive-pomace oil, COI/T.15/NC no. 2/Rev. 1 of 17 November 1994, shall replace and rescind the trade standard applying to olive oil and olive-pomace oil, COI/T.15/NC no. 2 of 3 June 1994.

The Members shall take whatever measures are appropriate, in the manner required by their legislation, to apply the approved standard and shall notify the Executive Secretariat of any such measures as soon as they are taken.

The governments of non-Member States involved in international trade in olive oils and olive pomace-oils shall take into consideration the standard adopted and shall adapt their regulations to the provisions thereof.

Madrid, 17 November 1994.

**TRADE STANDARD APPLYING TO OLIVE OIL
AND OLIVE-POMACE OIL**

1. SCOPE

This standard applies to olive oil and olive-pomace oil that is the object of international trade or of concessional or food aid transactions.

2. DESIGNATIONS AND DEFINITIONS

2.1. Olive oil is the oil obtained solely from the fruit of the olive tree (*Olea europaea sativa* Hoffm. et Link), to the exclusion of oils obtained using solvents or re-esterification processes and of any mixture with oils of other kinds. It is marketed in accordance with the following designations and definitions:

2.1.1. Virgin olive oil is the oil obtained from the fruit of the olive tree solely by mechanical or other physical means under conditions, particularly thermal conditions, that do not lead to alterations in the oil, and which has not undergone any treatment other than washing, decantation, centrifugation and filtration.

2.1.1.1. Virgin olive oil fit for consumption as it is ^{1/} includes:

i) **Extra virgin olive oil**: virgin olive oil that has an organoleptic rating of 6.5 or more and a free acidity, expressed as oleic acid, of not more than 1 gram per 100 grams, with due regard for the other criteria laid down in this standard.

^{1/} Oil which may be referred to as "natural".

ii) Virgin olive oil (the qualifier "fine" may be used at the production and wholesale stage): virgin olive oil that has an organoleptic rating of 5.5 or more and a free acidity, expressed as oleic acid, of not more than 2 grams per 100 grams, with due regard for the other criteria laid down in this standard.

iii) Ordinary virgin olive oil: virgin olive oil that has an organoleptic rating of 3.5 or more and a free acidity, expressed as oleic acid, of not more than 3.3 grams per 100 grams, with due regard for the other criteria laid down in this standard.

2.1.1.2. Virgin olive oil not fit for consumption as it is, designated lampante virgin olive oil, is virgin olive oil that has an organoleptic rating of less than 3.5 and/or a free acidity, expressed as oleic acid, of more than 3.3 grams per 100 grams, with due regard for the other criteria laid down in this standard. It is intended for refining or for technical purposes.

2.1.2. Refined olive oil is the olive oil obtained from virgin olive oils by refining methods which do not lead to alterations in the initial glyceridic structure.

2.1.3. Olive oil is the oil consisting of a blend of refined olive oil and virgin olive oil fit for consumption as it is.

2.2. Olive-pomace oil is the oil obtained by treating olive pomace with solvents, to the exclusion of oils obtained by re-esterification processes and of any mixture with oils of other kinds. It is marketed in accordance with the following designations and definitions:

2.2.1. Crude olive-pomace oil is olive-pomace oil intended for refining with a view to its use in food for human consumption, or intended for technical purposes.

2.2.2. Refined olive-pomace oil is the oil obtained from crude olive-pomace oil by refining methods which do not lead to alterations in the initial glyceridic structure.

2.2.3. Olive-pomace oil is the oil comprising the blend of refined olive-pomace oil and virgin olive fit for consumption as it is. In no case shall this blend be called "olive oil".

3. PURITY CRITERIA

The identity characteristics comprising the purity criteria shall be applicable to olive oil and olive-pomace oil.

3.1. Sterol composition
% of total sterols

	<u>Olive oils and olive-pomace oils</u>
cholesterol	≤ 0.5
brassicasterol	≤ 0.1
campesterol	≤ 4.0
stigmasterol	< campesterol in edible olive oils
delta-7-stigmastenol	≤ 0.5
beta-sitosterol + delta-5- avenasterol + delta-5-23- stigmastadienol + clerosterol + sitostanol + delta 5-24- stigmastadienol	≥ 93.0

3.2. Total sterols content (mg/100 g)

Virgin olive oils		≥ 100
Refined olive oil		
Olive oil		
Crude olive-pomace oil		≥ 250
Refined olive-pomace oil		≥ 180
Olive-pomace oil		≥ 160

3.3. Fatty acid composition using gas-liquid
chromatography (% m/m of methyl esters):

Myristic acid	≤ 0.05
Palmitic acid	7.5 - 20.0
Palmitoleic acid	0.3 - 3.5
Heptadecanoic acid	≤ 0.3
Heptadecenoic acid	≤ 0.3
Stearic acid	0.5 - 5.0
Oleic acid	55.0 - 83.0
Linoleic acid	3.5 - 21.0
Linolenic acid	≤ 0.9
Arachidic acid	≤ 0.6
Gadoleic acid (eicosenoic)	≤ 0.4
Behenic acid	≤ 0.2 *
Lignoceric acid	≤ 0.2

* Limit raised to ≤ 0.3 for olive-pomace oils.

3.4. Saturated fatty acid content in the 2-position in the triglycerides: The maximum acceptable level is the sum of the palmitic and stearic acids:

- virgin olive oil	≤ 1.5%
- refined olive oil	≤ 1.8%
- olive oil	≤ 1.8%
- crude olive-pomace oil	≤ 2.2%
- refined olive-pomace oil	≤ 2.2%

3.5. Unsaponifiable matter

- Olive oils	≤ 15 g/kg
- Olive-pomace oils	≤ 30 g/kg

3.6. Detection of olive-pomace oil

	Lampante virgin olive oil	Edible virgin oils	Refined olive oil	Olive oil
Waxes mg/kg C40+C42+C44+C46	≤ 350	≤ 250	≤ 350	≤ 350
Erythrodiol + uvaol/ total sterols %	≤ 4.5	≤ 4.5	≤ 4.5	≤ 4.5

3.7. Detection of seed oils

Maximum difference between the real and theoretical ECN 42 triglyceride content of:

Edible virgin olive oils	0.3
Refined olive oil	0.4
Olive oil	0.4
Lampante virgin olive oil	0.5
Refined olive-pomace oil	0.5
Olive-pomace oil	0.5
Crude olive-pomace oil	0.5

3.8. Detection of refined vegetable oils

	stigmastadienes ppm	R1	R2
edible virgin olive oils	≤ 0.15		
lampante virgin olive oil	≤ 0.50		
refined olive oil	≤ 50 <u>1/</u>	≥ 15 <u>1/</u>	≥ 15 <u>1/</u>
olive oil	≤ 50 <u>1/</u>	≥ 15 <u>1/</u>	≥ 15 <u>1/</u>
crude olive-pomace oil	≤ 0.50 <u>1/</u>	≥ 15 <u>1/</u>	≥ 15 <u>1/</u>
refined olive pomace oil	≤ 120 <u>1/</u>	≥ 15 <u>1/</u>	≥ 15 <u>1/</u>
olive-pomace oil	≤ 120 <u>1/</u>	≥ 15 <u>1/</u>	≥ 15 <u>1/</u>

The R1 and R2 ratios are to be applied to oils whose stigmastadiene content is greater than 4 ppm, where:

$$R1 = \frac{\text{stigmasta-3,5-diene}}{\text{campesta-3,5-diene}}, \text{ and}$$

$$R2 = \frac{\text{stigmasta-3,5-diene}}{\text{stigmasta-3,55,22-triene}}$$

3.9. Trans fatty acid content

	C18:1 T %	C18:2 T + C18:3 T %
Edible virgin olive oils	< 0.03	< 0.03 <u>1/</u>
Lampante virgin olive oil	≤ 0.10	≤ 0.10
Refined olive oil	≤ 0.20	≤ 0.30
Olive oil	≤ 0.20	≤ 0.30
Crude olive-pomace oil	≤ 0.20	≤ 0.10
Refined olive-pomace oil	≤ 0.40	≤ 0.35
Olive-pomace oil	≤ 0.40	≤ 0.35

1/ Provisional limits.

4. QUALITY CRITERIA

	Extra virgin olive oil	Virgin olive oil	Ordinary virgin olive oil	Lampante virgin olive oil 1/	Refined olive oil	Olive oil	Crude olive-pomace oil	Refined olive-pomace oil	Olive-pomace oil
4.1 Organoleptic characteristics									
- odour	≥ 6.5	≥ 5.5	≥ 3.5	< 3.5	acceptable	good		acceptable	good
- taste					acceptable	good		acceptable	good
- colour					light yellow	light, yellow to green		light, yellow to brownish yellow	light, yellow to green
- aspect at 20°C for 24 hours					limpid	limpid		limpid	limpid
4.2. Free acidity % m/m expressed in oleic acid	≤ 1.0	≤ 2.0	≤ 3.3	> 3.3	≤ 0.3	≤ 1.5	no limit	≤ 0.3	≤ 1.5
4.3. Peroxide value in milleq. peroxide oxygen per kg/oil	≤ 20	≤ 20	≤ 20	no limit	≤ 5	≤ 15	no limit	≤ 5	≤ 15
4.4. Absorbency in Ultra-Violet (K ^{1%} _{1cm})									
- 270 nm	≤ 0.25	≤ 0.25	≤ 0.30 2/	no limit 2/	≤ 1.10	≤ 0.90		≤ 2.00	≤ 1.70
- Δ K	≤ 0.01	≤ 0.01	≤ 0.01		≤ 0.16	≤ 0.15		≤ 0.20	≤ 0.18

1/ It is not obligatory for the criteria in 4.1, 4.2 and 4.3 to be concurrent; one is sufficient.

2/ After passage of the sample through activated alumina, absorbency at 270 nm shall be equal to or less than 0.11.

5. FOOD ADDITIVES

5.1. Virgin olive oils and crude olive-pomace oils:

none permitted.

5.2. Refined olive oil, olive oil, refined olive-pomace oil and olive-pomace oil: alpha-tocopherol permitted to restore natural tocopherol lost in the refining process.

Maximum level: 200 mg/kg of total alpha-tocopherol in the final product.

6. CONTAMINANTS

	Extra virgin olive oil	Virgin olive oil	Ordinary virgin olive oil	Lampante virgin olive oil	Refined olive oil	Olive oil	Crude olive-pomace oil	Refined olive-pomace oil	Olive-pomace oil
6.1 <u>Moisture and volatile matter</u> (% m/m)	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.3	≤ 0.1	≤ 0.1	≤ 1.5	≤ 0.1	≤ 0.1
6.2. <u>Insoluble impurities</u> (% m/m) in light petroleum	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.2	≤ 0.05	≤ 0.05		≤ 0.05	≤ 0.05
6.3. <u>Flash point</u>	-	-	-	-	-	-	$\geq 120^{\circ}\text{C}$	-	-
6.4. <u>Metal traces</u> mg/kg Iron Copper	≤ 3.0 ≤ 0.1	≤ 3.0 ≤ 0.1	≤ 3.0 ≤ 0.1	≤ 3.0 ≤ 0.1	≤ 3.0 ≤ 0.1	≤ 3.0 ≤ 0.1		≤ 3.0 ≤ 0.1	≤ 3.0 ≤ 0.1
6.5. <u>Halogenated solvents</u> Each solvent detected mg/kg	≤ 0.1	≤ 0.1	≤ 0.1		≤ 0.1	≤ 0.1		≤ 0.1	≤ 0.1
Sum of solvents detected, mg/kg	≤ 0.2	≤ 0.2	≤ 0.2		≤ 0.2	≤ 0.2		≤ 0.2	≤ 0.2

7. HYGIENE

It is recommended that the products intended for human consumption covered by the provisions of this standard be prepared in accordance with the appropriate sections of the General Principles of Food Hygiene recommended by the Codex Alimentarius Commission (CAC/RCP 1 - 1969, Rev. 2 - 1985).

8. PACKING

Olive oils and olive-pomace oils intended for international trade shall be packed in containers complying with the General Principles of Food Hygiene recommended by the Codex Alimentarius Commission (CAC/RCP 1 - 1969, Rev. 2 - 1985).

The containers used may be:

8.1. tanks, containers, vats, which permit the transportation in bulk of olive oils and olive-pomace oils;

8.2. metal drums, in good condition, hermetically-sealed, which should be internally covered with a suitable varnish;

8.3. metal tins and cans, lithographed, new, hermetically-sealed, which should be internally covered with a suitable varnish;

8.4. demi-johns, glass bottles or bottles made of suitable macromolecular material.

9. CONTAINER FILLING TOLERANCE

The volume occupied by the contents shall under no circumstances be less than 90% of the capacity of the container, except in the case of tin containers with a capacity of, or less than, 1 litre in which the volume occupied shall under no circumstances be less than 80% of the capacity of the container; this capacity is equal to the volume of distilled water at 20°C which the container can hold when full.

10. LABELLING

In addition to sections 2, 3, 7 and 8 of the Codex General Standard for the Labelling of Pre-packaged Foods (CODEX STAN 1-1985, Rev.1 - 1991) and the guidelines applying to food not intended for direct sale to consumers, the specific provisions providing the following information shall be applied:

10.1. On containers intended for direct sale to consumers

10.1.1. Name of the product

The labelling on each container shall indicate the specific designation of the product contained, complying in every way with the relevant provisions of this standard.

10.1.1.1. Designations of olive oil:

- extra virgin olive oil 1/
- virgin olive oil 1/
- ordinary virgin olive oil 1/
- refined olive oil
- olive oil 2/.

10.1.1.2. Designations of olive-pomace oil:

- refined olive-pomace oil
- olive-pomace oil.

10.1.2. Free acidity of the oil

The free acidity of the oil shall be declared on the label and expressed in terms of oleic acid (percentage m/m or degrees).

10.1.3. Net contents

The net contents shall be declared by weight or volume in the metric system ("Système International" units).

10.1.4. Name and address

The name and address of the manufacturer, packer, distributor, importer, exporter or seller shall be declared.

10.1.5. Country of origin

The name of the country of origin shall be declared. When the product undergoes processing or re-packing, including in small containers, in a second country, the country in which the processing was performed shall be considered the country of origin for the purposes of labelling.

1/ Oil which may likewise be referred to as "natural".

2/ The terms "pure" or "100% pure" may figure on the label as a specification of the product.

10.1.6. Indications of source and appellations of origin

10.1.6.1. Indications of source

The labels of virgin olive oils may indicate their source (country, region or locality) when they have been empowered to do so by their country of origin and when such virgin olive oils have been produced, packed and originate exclusively in the country, region or locality mentioned.

The labels for blends of refined olive oil and virgin olive oil may only indicate the source of the exporting country.

10.1.6.2. Appellations of origin

The labels of extra virgin olive oils may indicate their appellation of origin (country, region or locality) when they have been awarded such an appellation, in accordance with the terms provided under the regulations of their country of origin and when such extra virgin olive oil has been produced, packed and originates exclusively in the country, region or locality mentioned.

The labels for blends of refined olive oil and extra virgin olive oil packed and exported by the country providing the extra virgin olive oil may indicate the appellation of origin which would have been given to the extra virgin olive oil in the blend.

10.1.7. Lot identification

Each container shall be embossed or otherwise permanently marked in code or in clear to identify the producing factory and the lot.

10.1.8. Date marking and storage conditions

10.1.8.1. Date of packing

The date of packing shall be declared by the month and year in uncoded numerical sequence.

The month may be indicated by letters in those countries where such use will not confuse the consumer; if the month is December, the expression "end (stated year)" may be used as an alternative.

10.1.8.2. Date of minimum durability

In the case of pre-packaged products intended for the end consumer, the date of minimum durability (preceded by the words "best before end") shall be declared by the month and year in uncoded numerical sequence. The month may be indicated by letters in those countries where such use will not confuse the consumer; if the shelf life of the product is valid to December, the expression "end (stated year)" may be used as an alternative.

The period of durability shall not exceed 12 months after the date of packing. It may however be extended to 18 months for oils packed in metal containers.

10.1.8.3. Storage instructions

Any special conditions for storage shall be declared on the label if the validity of the date of minimum durability depends thereon.

10.2. On forwarding packs of oils intended for human consumption

In addition to the details noted under section 10.1., the following inscription shall appear:

- number and type of containers held in pack.

10.3. On containers allowing the transportation in bulk of olive oils and olive-pomace oils

The labelling on each container shall include:

10.3.1. Name of the product

The name shall indicate the specific designation of the product contained, complying in every way with the provisions of this standard.

10.3.2. Net contents

The net contents shall be declared by weight or volume in the metric system ("Système International" units).

10.3.3. Name and address

The name and address of the manufacturer, distributor or exporter shall be declared.

10.3.4. Country of origin

The name of the exporting country shall be declared.

11. METHODS OF ANALYSIS AND SAMPLING

The methods of analysis and sampling given below are international referee methods.

Prior to the determinations for fixing the purity criteria, lampante virgin olive oil and crude olive-pomace oil shall undergo an alkaline neutralization process complying with paragraph 6 of the IUPAC method no. 2.210 "Determination of the Fatty Acids in the 2-Position in the Triglycerides".

11.1. Determination of the fatty acid composition

According to the ISO method 5508-1990 "Analysis by Gas Chromatography of Methyl Esters of Fatty Acids".

11.2. Determination of the unsaponifiable matter

According to the method COI/T.20/Doc. no. 10-1992, section 5.1., "Determination of the composition and content of sterols by capillary-column gas chromatography".

The results are expressed in g/unsaponifiable matter per kg/oil.

11.3. Detection of olive-pomace oil

According to the following methods:

- NGD C 80 - 1989 "Determination of Wax Content by Capillary-Column Gas Liquid Chromatography".

- IUPAC no. 2.431 "Determination of the Erythrodiol Content". Capillary columns are recommended.

11.4. Detection of seed oils

According to the following methods:

- IUPAC no. 2.324 "Determination of Composition of Triglycerides in Liquid Vegetable Oils in Terms of Their Partition Number by High-Performance Liquid Chromatography".

It is recommended that, prior to triglyceride analysis, lampante virgin olive oils and crude olive-pomace oils undergo purification with the aid of silica micro-cartridges.

- COI/T.20/Doc. no. 9 - 1991 "Theoretical ECN 42 and ECN 44 Triglyceride Composition in Olive Oils".

11.5. Detection of refined vegetable oils

According to the following methods:

- COI/T.20/Doc. no. 11/Rev.1 "Determination of Stigmastadienes in Vegetable Oils";

- COI/T.20/Doc. no. 12 - 1992 "Determination of Steroidal Hydrocarbons in Vegetable Oils". 1/

11.6. Determination of the trans fatty acid content

According to the method NGD C 84 "Determination of Trans Unsaturated Fatty Acids by Capillary Column Gas Chromatography.

11.7. Determination of the sterol composition and total sterols content

According to the method COI/T.20/Doc. no. 10 - 1992 "Determination of the Composition and Content of Sterols by Capillary-Column Gas Chromatography".

11.8. Determination of the fatty acids in the 2-position in the triglycerides

According to the IUPAC method no. 2.210 "Determination of the Fatty Acids in the 2-Position in the Triglycerides of Oils and Fats".

11.9. Determination of the organoleptic characteristics

According to the method COI/T.20/Doc. no. 15, "Organoleptic Assessment of Virgin Olive Oil".1/

11.10. Determination of the free acidity

According to the method AFNOR-NFT 60-204 "Determination of Acid Value and Acidity".

11.11. Determination of the peroxide value

According to the IUPAC method no. 2.501 "Determination of the Peroxide Value (P.V.)", or to the ISO method 3960-1977.

11.12. Determination of the absorbency in ultra-violet

According to the method NGD C 40/76 "Spectrophotometric investigation in the ultraviolet".

11.13. Determination of the alpha-tocopherol

According to the IUPAC method no. 2.411 "Identification and Determination of Tocopherols".

11.14. Determination of the moisture and volatile matter

According to the IUPAC method no. 2.601 "Determination of the Moisture and Volatile Matter", or to the ISO method 662-1980.

11.15. Determination of the insoluble impurities in light petroleum

According to the IUPAC method no. 2.604 "Determination of the Insoluble Impurities", or to the ISO method 663-1981.

11.16. Determination of the flash point

According to the AOCS Cc 9b-55 method, amended in 1977.

11.17. Detection of metal traces

According to the IUPAC method no. 2.631 "Determination of Copper, Iron and Nickel by Direct Graphite Furnace Atomic Absorption Spectrometry".

11.18. Detection of traces of halogenated solvents

According to the method COI/T.20/Doc. no. 8/Corr. 1 - 1990 "Determination of Tetrachloroethylene in Olive Oils by Gas-Liquid Chromatography".
