

**Date :** June 17, 2022

**CERTIFICATE OF ANALYSIS – TOTAL FATTY ACIDS METHYL ESTERS (FAMES)**

*SAMPLE IDENTIFICATION*

**Internal code :** 22F03-PTH01

**Customer identification :** Almond Sweet Virgin Kosher - AC0122R

**Type :** Vegetable oil & fats

**Source :** *Prunus dulcis*

**Customer :** Plant Therapy

*ANALYSIS*

**Method:** PC-MAT-010 - Fatty acids profiling of a vegetable oil or a plant by hydrolysis and derivatisation (FAMES).

**Analyst :** Seydou Ka, Ph. D.

**Analysis date :** June 15, 2022

Checked and approved by :

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Alexis St-Gelais, Ph. D., Chimiste 2013-174

*Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia. This report is digitally signed, it is only considered valid if the digital signature is intact. The results only describe the samples that were submitted to the assays.*

*This report is an update from the first version issued on June 17, 2022, to add the batch number.*

*PHYSICOCHEMICAL DATA*

**Physical aspect:** Light yellow viscous liquid

**Refractive index:** 1.4710 ± 0.0003 (20 °C; method PC-MAT-016)

*CODEX-STAN 210-1999 - ALMOND OIL (SEEDS)*

Compound	Min. %	Max. %	Observed %	Complies?
Caproic acid		0.05	ND	Yes
Caprylic acid		0.05	ND	Yes
Capric acid		0.05	ND	Yes
Lauric acid		0.05	ND	Yes
Myristic acid		0.1	ND	Yes
Palmitic acid	4.0	9.0	6.0	Yes
Margaric acid		0.2	0.1	Yes
Stearic acid		3.0	1.4	Yes
Oleic acid	62.0	76.0	67.3	Yes
Linoleic acid	20.0	30.0	23.0	Yes
Arachidic acid		0.5	0.1	Yes
Behenic acid		0.2	ND	Yes
Lignoceric acid		0.2	ND	Yes
Nervonic acid		0.05	ND	Yes
C16:1	0.2	0.8	0.5	Yes
C17:1		0.2	0.1	Yes
C18:3		0.5	ND	Yes
C20:1		0.3	ND	Yes
C20:2		0.05	ND	Yes
C22:1		0.1	ND	Yes
C22:2		0.05	ND	Yes
<b>Refractive index</b>	1.4680	1.4750	1.4710	Yes

ND: Not detected.

*EUROPEAN PHARMACOPOEIA 9.0 - 01/2015:0261 - ALMOND OIL, VIRGIN (AMYGDALAE OLEUM VIRGINALE)*

Compound	Min. %	Max. %	Observed %	Complies?
Palmitic acid	4.0	9.0	6.0	Yes
Stearic acid		3.0	1.4	Yes
Oleic acid	62.0	86.0	67.3	Yes
Linoleic acid	20.0	30.0	23.0	Yes
Arachidic acid		0.20	0.07	Yes
α-Linolenic acid		0.4	ND	Yes
Palmitoleic acid		0.8	0.5	Yes
Margaric acid		0.20	0.05	Yes
Behenic acid		0.20	0.01	Yes
Erucic acid		0.10	ND	Yes
Eicosenoic acids		0.3	ND	Yes

<C16 saturated fatty acids	0.10	0.04	Yes
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ND: Not detected.

### CONCLUSION

The oil features the expected fatty acids composition for sweet almond oil according to the European Pharmacopoeia and the Codex Alimentarius.

ANALYSIS DATA

Fatty acids						
Common name	Systematic name	Shorthand formula	R.T	R.I	%	Type
Myristic acid	Tetradecanoic acid	C14:0	9.70	1396	0.04	SFA
Palmitic acid	Hexadecanoic acid	C16:0	12.24	1602	5.99	SFA
Hypogeic acid	(7Z)-Hexadecenoic acid	C16:1 n-9 c	13.05	1654	0.02	MUFA
Palmitoleic acid	(9Z)-Hexadecenoic acid	C16:1 n-7 c	13.22	1664	0.46	MUFA
<i>cis</i> -Palmitvaccenic acid	(11Z)-Hexadecenoic acid	C16:1 n-5 c	13.45	1677	0.02	MUFA
Margaric acid	Heptadecanoic acid	C17:0	13.90	1702	0.05	SFA
<i>cis</i> -9-Heptadecenoic acid	(9Z)-Heptadecenoic acid	C17:1 n-8 c	15.06	1761	0.12	MUFA
Stearic acid	Octadecanoic acid	C18:0	16.14	1809	1.42	SFA
Oleic acid	(9Z)-Octadecenoic acid	C18:1 n-9 c	17.63	1869	67.31	MUFA
<i>cis</i> -Vaccenic acid	(11Z)-Octadecenoic acid	C18:1 n-7 c	17.73	1873	1.34	MUFA
Linolelaidic acid	(9E,12E)-Octadecadienoic acid	C18:2 n-6 tt	18.70	1910	tr	PUFA
<i>cis,trans</i> -9,12-Octadecadienoic acid	(9Z,12E)-Octadecadienoic acid	C18:2 n-6 ct	19.14	1927	0.02	PUFA
Linoleic acid	(9Z,12Z)-Octadecadienoic acid	C18:2 n-6 cc	19.77	1949	23.02	PUFA
Arachidic acid	Eicosanoic acid	C20:0	21.55	2009	0.07	SFA
$\alpha$ -Linolenic acid	(9Z,12Z,15Z)-Octadecatrienoic acid	C18:3 n-3 ccc	22.45	2039	0.02	PUFA
Gondoic acid	(11Z)-Eicosenoic acid	C20:1 n-9 c	22.96	2056	0.01	MUFA
Paullinic acid	(13Z)-Eicosenoic acid	C20:1 n-7 c	23.34	2068	0.01	MUFA
<i>cis</i> -15-Eicosenoic acid?	(15Z)-Eicosenoic acid	C20:1 n-5 c	23.85	2084	0.01	MUFA
Heneicosylic acid	Heneicosanoic acid	C21:0	24.66	2110	tr	SFA
Behenic acid	Docosanoic acid	C22:0	27.80	2213	0.01	SFA
Total PUFA: 23.04%			<b>Total identified 99.95%</b>			
Total MUFA: 69.17%						
Total SFA: 7.59%						

†: Peaks apexes were resolved, but peaks overlapped and were summed for analysis

tr: The compound has been detected below 0.005% of total signal.

Note: no correction factor was applied

R.T.: Retention time (minutes)

R.I.: Retention index

PUFA: Polyunsaturated fatty acid

MUFA: Monounsaturated fatty acid

SFA: Saturated fatty acid

