

Date : November 05, 2021

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

SAMPLE IDENTIFICATION

Internal code : 21J22-PTH04

Customer identification : Meadowfoam Seed Oil Seed Solvent Extraction - MA0117R

Type : Vegetable oil & fats

Source : *Limnanthes alba*

Customer : Plant Therapy

ANALYSIS

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

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Analysis date : October 26, 2021

Checked and approved by :

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PHYSICOCHEMICAL DATA

Physical aspect: Faintly yellow viscous liquid

Refractive index: 1.4720 ± 0.0003 (20 °C; method PC-MAT-016)

CONCLUSION

The fatty acid profile observed is characteristic of meadowfoam oil, with peculiar (5Z)-unsaturated C20 and C22 fatty acids in expected proportions^{1,2}.

REFERENCES

- (1) Muuse, B. G.; Petrus Cuperus, F.; Derksen, J. T. P. Composition and Physical Properties of Oils from New Oilseed Crops. *Ind. Crops Prod.* 1992, 1 (1), 57–65.
- (2) Moser, B. R.; Knothe, G.; Cermak, S. C. Biodiesel from Meadowfoam (*Limnanthes Alba L.*) Seed Oil: Oxidative Stability and Unusual Fatty Acid Composition. *Energy Environ. Sci.* 2010, 3 (3), 253.

ANALYSIS DATA

Fatty acids		Shorthand formula	R.T	R.I	%	Type
Common name	Systematic name					
Myristic acid	Tetradecanoic acid	C14:0	9.79	1398	0.03	SFA
Palmitic acid	Hexadecanoic acid	C16:0	12.30	1600	0.17	SFA
Palmitelaidic acid?	(9E)-Hexadecenoic acid?	C16:1 n-7 t	12.90	1638	0.12	MUFA
Hypogeic acid	(7Z)-Hexadecenoic acid	C16:1 n-9 c	13.17	1654	0.05	MUFA
Palmitoleic acid	(9Z)-Hexadecenoic acid	C16:1 n-7 c	13.33	1663	0.01	MUFA
cis-Palmitvaccenic acid	(11Z)-Hexadecenoic acid	C16:1 n-5 c	13.57	1677	0.15	MUFA
Margaric acid	Heptadecanoic acid	C17:0	14.00	1701	0.07	SFA
cis-9-Heptadecenoic acid	(9Z)-Heptadecenoic acid	C17:1 n-8 c	15.15	1758	0.04	MUFA
cis-10-Heptadecenoic acid	(10Z)-Heptadecenoic acid	C17:1 n-7 c	15.28	1764	0.03	MUFA
Stearic acid	Octadecanoic acid	C18:0	16.15	1802	0.14	SFA
Elaidic acid	(9E)-Octadecenoic acid	C18:1 n-9 t	16.85	1833	0.01	MUFA
Octadecenoic acid isomer I	Octadecenoic acid	C18:1	17.04	1840	0.48	MUFA
Petroselinic acid?	(6Z)-Octadecenoic acid	C18:1 n-12 c	17.26	1848	tr	MUFA
Oleic acid	(9Z)-Octadecenoic acid	C18:1 n-9 c	17.52	1858	0.91	MUFA
cis-Vaccenic acid	(11Z)-Octadecenoic acid	C18:1 n-7 c	17.63	1862	0.42	MUFA
Linoleic acid	(9Z,12Z)-Octadecadienoic acid	C18:2 n-6 cc	19.76	1942	0.35	PUFA
Eicosenoic acid isomer I	Eicosenoic acid	C20:1	21.79	2010	0.82	MUFA
cis-5-Eicosenoic acid	(5Z)-Eicosenoic acid	C20:1 n-15 c	22.96	2049	57.11	MUFA
Gondoic acid	(11Z)-Eicosenoic acid	C20:1 n-9 c	23.12	2054	0.24	MUFA
Paullinic acid	(13Z)-Eicosenoic acid	C20:1 n-7 c	23.35	2061	0.84	MUFA
cis,cis-5,13-Eicosadienoic acid	(5Z,13Z)-Eicosadienoic acid	C20:2 n-7;15 cc	24.72	2105	0.16	PUFA
Behenic acid	Docosanoic acid	C22:0	27.77	2205	0.02	SFA
Docosenoic acid isomer I	Docosenoic acid	C22:1	27.98	2212	0.12	MUFA
cis-5-Docosenoic acid	(5Z)-Docosenoic acid	C22:1 n-17 c	28.89	2246	4.01	MUFA
Erucic acid	(13Z)-Docosenoic acid	C22:1 n-9 c	29.41	2268	13.34	MUFA
cis,cis-5,13-Docosadienoic acid	(5Z,13Z)-Docosadienoic acid	C22:0 n-9;17 cc	30.22	2302	16.92	PUFA
Tricosylic acid	Tricosanoic acid	C23:0	30.31	2306	0.01	SFA
Nervonic acid	(15Z)-Tetracosenoic acid	C24:1 n-9 c	33.34	2461	tr	MUFA
Total PUFA: 17.43%						
Total MUFA: 78.62%						
Total SFA: 0.44%						
			Total identified 96.58%			

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

