

**GREEN PASTURES  
DAVE WETZEL  
BOX 486  
ONEILL NE 68763**

**REPORT OF ANALYSIS**

For: (20595) GREEN PASTURES  
FERMENTED COD LIVER OIL

Analysis	Level Found	Units	Reporting	Method	Analyst- Date	Verified- Date
	As Received		Limit			
Sample ID: <b>VHM15031</b> Lab Number: <b>2443714</b>						
Butyric (C4:0)	n.d.	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Caproic (C6:0)	n.d.	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Caprylic (C8:0)	0.01	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Capric (C10:0)	n.d.	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Lauric (C12:0)	0.03	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Tridecanoic (C13:0)	0.02	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Myristic (C14:0)	5.10	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Myristoleic (C14:1 Cis)	0.12	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Pentadecanoic (C15:0)	0.31	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Palmitic (C16:0)	13.4	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Palmitoleic (C16:1 Cis)	9.36	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Heptadecanoic (C17:0)	0.125	%	0.010	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
10-Heptadecanoic (C17:1)	0.32	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Stearic (C18:0)	3.15	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Eliadic (C18:1 Trans)	0.78	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Oleic (C18:1 Cis)	29.8	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Linolelaidic (C18:2 Trans)	0.18	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22

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	As Received		Limit			
<b>Sample ID: VHM15031</b>	Lab Number: 2443714 (con't)					
Linoleic (C18:2 Cis)	0.98	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
gamma-Linolenic (C18:3 gamma)	0.13	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Nonadecanoic (C19:0)	0.02	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
alpha-Linolenic (C18:3 alpha)	0.63	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Arachidic (C20:0)	0.08	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
11-Eicosenoic (C20:1)	2.94	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
11-14 Eicosadienoic (C20:2)	0.33	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Homo-gamma linolenic (C20:3)	0.10	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
11-14-17 Eicosatrienoic (C20:3)	0.13	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Arachidonic (C20:4)	0.75	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Eicosapentaenoic (C20:5)	18.8	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Heneicosanoic (C21:0)	n.d.	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Behenic (C22:0)	0.05	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Erucic (C22:1)	0.90	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Docosadienoic (C22:2)	0.06	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Docosapentaenoic (C22:5)	1.73	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Docosahexaenoic (C22:6)	9.08	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Tricosanoic (C23:0)	n.d.	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Lignoceric (C24:0)	n.d.	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22

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	As Received		Limit	Method		
<b>Sample ID: VHM15031</b>	Lab Number: <b>2443714</b> (con't)					
Nervonic (C24:1)	0.29	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Saturated fat (total)	22.3	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Polyunsaturated fats (total)	32.8	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Monounsaturated fats (total)	43.8	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Trans fatty acids (total)	1.09	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Omega 3 fatty acids (total)	30.4	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Omega 6 fatty acids (total)	2.23	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Omega 9 fatty acids (total)	30.7	%	0.01	AOAC 996.06 *	amw7-2015/09/17	tjp8-2015/09/22
Fat (acid hydrolysis)	100	%	0.1	AOAC 922.06 (mod) *	ems4-2015/09/17	ems4-2015/09/21
Peroxide value	2.8	meq/kg fat	2.0	AOCS Cd 8b-90 *	dtd7-2015/09/15	ems4-2015/09/21
TBA value	0.11	mg/kg	0.02	J. FOOD SCI	mnp3-2015/09/18	ems4-2015/09/21
p-anisidine value	12		2	AOCS Cd 18-90 *	nmk6-2015/09/18	ems4-2015/09/21

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REPORT NUMBER

**15-265-4118**

REPORT DATE  
**Sep 22, 2015**  
RECEIVED DATE  
**Sep 14, 2015**

SEND TO  
**20595**



13611 "B" Street • Omaha, Nebraska 68144-3693 • (402) 334-7770 • FAX (402) 334-9121  
www.midwestlabs.com

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ISSUE DATE  
**Sep 22, 2015**

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Analysis	Level Found	Units	Reporting		Analyst- Date	Verified- Date
	As Received		Limit	Method		

All results are reported on an AS RECEIVED basis., n.d. = not detected , ppm = parts per million, ppm = mg/kg

For questions please contact:

Sue Ann Seitz  
Account Manager  
sueann.seitz@midwestlabs.com (402)829-9892

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**GREEN PASTURES  
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Sample prep follows MWL HPLC 008 and analysis follows HPLC 004 which are both based on AOAC 996.06. The fat in the sample is extracted and saponified and the fatty acids methylated to form the fatty acid methyl esters (FAMES). The methyl ester extract (FAMES) is injected into a GC that uses a flame ionization detector (GC/FID). The response generated during analyses of the individual FAME is compared to standards which are used to quantitate the levels of fatty acids found in the sample. The standard reporting level is 0.01% of the fat.

**Fat (acid hydrolysis)**

Analysis follows MWL FO 08 which is based on AOAC 922.06. The homogenized sample is treated with hydrochloric acid and then washed at least twice with both petroleum ether and diethyl ether and the solution placed in a pre-weighed container. The ether solution, which contains the dissolved fat, is evaporated and the percent fat determined by the weight gain of the beaker.

**Peroxide value**

Peroxide value analysis is carried out using FO 033 which is based on AOAC 965.33 and AOCS Cd 8b-90. Samples are treated with a solvent that removes the fat and the fat-solvent solution treated with potassium iodide. The solution is titrated with sodium thiosulfate to measure the free iodide. A calculation is carried out to measure the peroxide value.

**Anisidine value**

Analysis follows MWL FO 063 which is based on modified AOCS Cd 18-90. The fat in a sample is extracted and then dissolved into iso-octane. The p-anisidine reagent is added and the resultant solution read at 350 nm.

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