SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

EUROFINS SCIENTIFIC; NUTRITION ANALYSIS CENTER
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CHEMICAL

Valid To: March 31, 2020 Certificate Number: 2927.01

In recognition of the successful completion of the A2LA evaluation process (including an assessment of the laboratory's compliance with the A2LA Food Testing Program Requirements, containing the 2015 "*AOAC International Guidelines for Laboratories Performing Microbiological and Chemical Analyses of Food, Dietary Supplements, and Pharmaceuticals*"), accreditation is granted to this laboratory to perform the following tests on commodities, spices, foods, dietary supplements, feeds, and pet foods:

Test Type/Technology:	**Test Method(s):**
Acid Value (or Acid Number)	AOAC 940.28 AOCS Cd 3d-63 Eurofins Method: MET3334
Amino Acids by Acid Hydrolysis (HPLC) Alanine, Arginine, Aspartic Acid, Glutamic Acid, Glycine, Histidine, Hydroxyproline, Isoleucine, Leucine, Phenylalanine, Proline, Lysine, Serine, Threonine, Tyrosine, Valine	AOAC 982.30 Eurofins Method: MET3307
Amino Acids by Alkaline Hydrolysis (HPLC) – Tryptophan	AOAC 988.15 Eurofins Method: MET3302
Amino Acids by Performic Acid Oxidation (HPLC) – Cystine, Taurine and Methionine	AOAC 994.12 Eurofins Method: MET3306
Ash	AOAC 942.05 AOAC 945.38c (ref 923.03)
ASTA Color	ASTA 20.1
Calories from Fat and Saturated Fat	Calculated using the Atwater (4.9.4) formula, as cited in 21CFR101.9(c)(1)(A&B)
Capillary Melting Point	AOCS Cc 1-25, Eurofins Method: MET3330
Cholesterol by GC	AOAC 994.10 Eurofins Method: MET3353
Choline by High Performance Ion-Exchange Chromatography – Conductivity Detection (HPIC-CD)	AOAC 2012.20 Eurofins Method: MET18670

Test Type/Technology:	**Test Method(s):**
Choline by HPLC-Fluorescence with Chemical Derivatization	AOAC 999.14 Analytica Chimica Acta 664 (2009) 90-94 Eurofins Method: MET3400
Crude Fat by Acid and/or Alkaline Hydrolysis	AOAC 954.02 AOAC 945.44 AOAC 925.12 AOAC 922.06 AOAC 989.05 AOAC 933.05 AOAC 925.32 AOAC 935.38 AOAC 974.09 AOAC 995.19 AOAC 932.02 AOAC 932.06 AOAC 952.06 AOAC 950.54 Eurofins Method: MET3328
Crude Fat by Solvent Extraction	AOAC 920.39 AOAC 945.16 AOCS Ba 3-38 AOCS Ac 3-44 AOCS Aa 4-38 Eurofins Method: MET3373
Crude Fiber	AOCS Ba 6-84 AOAC 962.09 Eurofins Method: MET3363
Crude Fiber by Filter Bag Technique – Acid Detergent Fiber (ADF)	ANKOM Technology Method 10-21-05 Eurofins Method: MET3366
Crude Fiber by Filter Bag Technique – Neutral Detergent Fiber (NDF)	ANKOM Technology: NDF for Ankom 2000 Fiber Analyzer Eurofins Method: MET3367
Determination of Selenium (Se) by AAS (Atomic Absorption Spectroscopy)	AOAC 986.15 Eurofins Method: MET3290
Determination of Selenium (Se), Chromium (Cr), and Molybdenum (Mo) by ICP-MS	AOAC 2011.19 (Modified) ICP-MS 01 Software, Masshunter, Agilent Technologies Eurofins Method: MET17445
Dietary Fiber: Soluble, Insoluble, and Total Fiber	AOAC 991.43 Eurofins Method: 3402
Elements by ICP-OES: Calcium (Ca), Sodium (Na), Iron (Fe), Phosphorus (P), Potassium (K), Magnesium (Mg), Zinc (Zn), Copper (Cu), and Manganese (Mn)	AOAC 965.17 AOAC 927.02 Eurofins Method: MET3284 AOAC 984.27 AOAC 985.01 Eurofins Method: MET3285

Test Type/Technology:	**Test Method(s):**
Elements by ICP-OES: Sulfur	T.T. Nham. *Analysis of soil extracts using the Varian 725-ES,* Varian ICP-OES Application Note No. 34 A. R. Jurgensen, J. C. Hart, L. L. Farrow. *Sulfur limits of detection and spectral interference corrections for DWPF sludge matrices by inductively coupled plasma emission spectrometry*, WSRC-TR-2004-00090, Z. A. Grosser, L. J. Davidowski, P. Wee. *The analysis of biodiesel for inorganic contaminants, including sulfur, by ICP-OES,* Application note, PerkinElmer 2009 Eurofins Method: MET3289
Fatty Acid by GC – Marine Oil Fatty Acid Profile (MOFAP)	AOCS Ce 1b-89, Eurofins Methods: MET3360, MET3339
Fatty Acids by GC – Fatty Acid Profile Including Total Fat, Unsaturated, Saturated, and Trans Fat	AOAC 996.06 AOAC 925.32 Eurofins Method: MET3332
Fatty Acids by GC – Fatty Acid Profile non-NLEA	AOCS Ce 2-66, Ce 1b-89 Eurofins Method: MET3352, MET3339
Fatty Acids by GC – Omega-3 EPA and DHA	GOED Voluntary Monograph
Free Fatty Acid	AOAC 940.28, AOCS Ca 5a-40 Eurofins Method: MET3334
Glucosinolates in Rapeseeds	ISO 9167-1.*"Rapeseed – Determination of glucosinolates Content."* The 10th International Rapeseed Congress, 1999.*"Determination of glucosinolates in rapeseed. Improvement of the official HPLC ISO method (precision and speed)."* Japan Agricultural Research Quarterly, Vol. 31 No. 2, 73-80, 1997. *"Separation and Identification of Desulfoglucosinolates in Japanese Rapessed by LC/APCI-MS."* Eurofins Method: MET3324
Heavy Metals by ICP-MS; Arsenic (As), Cadmium (Cd), Mercury (Hg), Lead (Pb)	Method CLG-TM3.01, USDA Food Safety and Inspection Service, 2006 J. Entwisle. *Determination of Mercury in Microwave Digests of Foodstuffs by ICP-MS,* Application note, Agilent Technologies, 2004 Julshamn et al. *Determination of Arsenic, Cadmium, Mercury, and Lead by Inductively Coupled Plasma Mass Spectrometry in Foods after Pressure Digestion: NMKL Interlaboratory Study*, Journal of AOAC Int., 90, No 3, 2007 Zbinden, P. Andrey, D. *Determination of Trace Element Contaminants in Food Matrices Using a Robust, Routine Analytical Method for ICP-MS,* Atomic Spectroscopy, Vol. 19 (6), p. 214 - 219 Eurofins Method: MET3292
Iodine Value	AOCS Cd 1d-92

Test Type/Technology:	**Test Method(s):**
Moisture and Volatiles by Vacuum Oven	AOAC 920.151 AOAC 925.09 AOAC 925.45 AOAC 926.08 AOAC 927.05 AOAC 934.06 Eurofins Method: MET3409
Moisture by Forced Draft Oven (Loss on Drying)	AOCS Ba 2a-38 AOCS Ac 2-41 AOCS Aa 3-38 AOAC 925.10 AOAC 930.15 AOAC 935.29 AOAC 950.46 AACC 44-15.02 NFTA 2.2.2.5 (NFTA Method 2.1.4) Eurofins Method: MET3365
Moisture by Karl Fischer Titration	Metrohm 901 Titrando manual Metrohm Tiamo Tutorial Metrohm Water Determination by Karl Fischer Titration (Monograph) – 8.026.5013 – 2006-02 AOCS Ca 2e-84 Moisture Karl Fischer Reagent Eurofins Method: MET9062
Moisture by Toluene Distillation	AOAC 925.04
Neutral Oil Loss	AOCS Ca 9f-57
p-Anisidine Value	AOCS Cd 18-90
Peroxide Value	AOAC Cd 8-53
Protein, Combustion	AOCS Ba 4e-93 AOCS Ba 4f-00 AOAC 992.15 AOAC 990.03
Protein, Kjeltec	AOAC 2001.11 Eurofins Method: MET3368
Salt and Chloride - Soluble	AOAC 971.27 AOAC 2016.03
Saponification Value	AOCS Cd 3-25
Scoville Heat Units by UPLC	AOAC 995.03 ASTA 21.3 Eurofins Method: MET3311
Steam Volatile Oil	ASTA 5.0 ASTA 5.2
Sugar Profile (Fructose, Glucose, Sucrose, Maltose, Lactose) by HPLC-ELSD	AOAC 982.14 Nollet, L.M.L. (Ed.) (2000). *Food Analysis by HPLC*. New York, NY: Marcel Dekker, Inc. (Peris-Tortjada, M. (Author) HPLC *Determination of Carbohydrates in Foods* Chapter 7 p.287-302) Eurofins Method: MET3319
Total Calories	Calculated using the Atwater (4.9.4) formula, as cited in 21CFR101.9(c)(1)(A&B) OR As cited in 21CFR101.9(c)(1)(i)(C)

Test Type/Technology:	**Test Method(s):**
Total Carbohydrates	Calculated by difference, as cited in 21CFR101.9(c)(6)
Totox Value	GOED Voluntary Monograph
Unsaponifiable Matter	AOCS Ca 6a-40 Eurofins Method: MET3359
Vitamin A: Total Vitamin A, β-carotene, and Retinol by HPLC	AOAC 974.29 Eurofins Method: MET3391
Vitamin B1: Thiamin by Fluorescence Detection	AOAC 942.23 Eurofins Method: MET3390
Vitamin B12: Cobalamin by Microbiological Method	AOAC 952.20 modified Eurofins Method: MET3378
Vitamin B2: Riboflavin by Fluorometric Method	AOAC 970.65 Eurofins Method: MET3376
Vitamin B3: Niacin by Microbiological Method	AOAC 944.13 Eurofins Method: MET3379
Vitamin B5: Pantothenic Acid by Microbiological Method	AOAC 945.74 Eurofins method: MET3381
Vitamin B6: Pyridoxine by UPLC-FLR	Journal of AOAC International, 88, 30-37, (2005) Eurofins Method: MET3395
Vitamin B7: Biotin by Microbiological Method	Biotin, Methods of Vitamin Assay, 3rd edition, Interscience Publishers, 1966, chap 12 Eurofins Method: MET3377
Vitamin B9: Total Folate by Microbiological Method	AOAC 922.05 Eurofins Method: MET3389
Vitamin C by Fluorescence	AOAC 967.22 Eurofins Method: MET3375
Vitamin C: Ascorbic Acid and Isoascorbic Acid by HPLC	Journal of Food Chemistry, 94, 626-631 (2006) Eurofins Method: MET3396
Vitamin D: Total Vitamin D, D_2 (Ergocalciferol), and D_3 (Cholecalciferol) by HPLC	EN 12821:2009 *Determination of vitamin D by high performance liquid chromatography -Measurement of cholecalciferol (D3) and ergocalciferol (D2).* Eurofins Method: MET3388
Vitamin D: Total Vitamin D, D_2 (Ergocalciferol), and D_3 (Cholecalciferol) by LC-MS/MS	Huang et al.: Journal of AOAC International, 2012, Vol. 95, No.2, 1-3 Gilliand & Dowell: Journal of AOAC international, 2012, Vol 95, No.3, 583-588 Huang etc., Rapid Commun. Mass Spectrom 2014, 28, 2101-2110 Eurofins Method: MET3401
Vitamin E: Profile including: Total Vitamin E, and Tocopherol Isomers: alpha (α), beta (β), gamma (γ), and delta (δ) by HPLC	AOAC 971.30 Eurofins Method: MET3382
Water Activity	AquaLab Operator's manual, Version 3 for AquaLab Model Series 3TE Eurofins Method: MET3406

Accredited Laboratory

A2LA has accredited

EUROFINS SCIENTIFIC; NUTRITION ANALYSIS CENTER

Des Moines, IA

for technical competence in the field of

Chemical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of A2LA *R204 – Food and Pharmaceutical Testing Laboratory Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 13th day of March 2018.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2927.01
Valid to March 31, 2020
Revised February 26, 2020

For the tests to which this accreditation applies, please refer to the laboratory's Chemical Scope of Accreditation.