



JHG ANALYTICAL SERVICES LIMITED

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TEST REPORT

REPORT NO.: 23-11-31406

**CHEMICAL/MICROBIOLOGICAL
ANALYTICAL REPORT**

Date of Report: 29th. November 2023.

Nature of Product: Chondrus Crispus (Sea Moss).

Sample Reference: THHG INC.

Sample Volume: 1 x 100 grams.

THHG INC
2665 Bayshore Dr Suite 220
Coconut Grove Florida
33133
Email: thhgimr@gmail.com

For the attention of : THHG INC

TEST REPORT**REPORT NO.: 23-11-31406****Heavy Metals Analysis**

Parameter/Test	Method of Analysis	Units of Measurement	Reported Results
Arsenic (Total)	ICP/IC-OES	mg/kg.	3.500
Cadmium as Cd.	ICP/IC-OES	mg/kg.	< 0.0005
Mercury as Hg.	Cold Vapour A.A.S.	mg/kg.	0.00005
Lead as Pb.	ICP-OES	mg/kg.	< 0.00002
Chromium as Cr.	ICP/IC-OES	mg/kg.	< 0.00002
Nickel as Ni.	ICP-OES	mg/kg.	< 0.00002
Silver as Ag.	ICP-OES	mg/kg.	< 0.000001
Aluminium as Al.	ICP-OES	mg/kg.	1.875
Antimony as Sb.	ICP-OES	mg/kg.	< 0.00005
Molybdenum as Mo.	ICP-OES	mg/kg.	< 0.00003
Vanadium as V.	ICP-OES	mg/kg.	< 0.0004
Tin as Sn.	ICP-OES	mg/kg.	< 0.0005

TEST REPORT**REPORT NO.: 23-11-31406****Microbiological Profile Analysis**

Parameter/Determinand	Type of Analysis	Units of Measurement	Reported Levels
Staph. aureus	Pour Plate Method	CFU/g.	< 10 CFU/g.
Salmonella spp.	Pour Plate Method	CFU/25g.	Absent/25g.
Yeasts/Moulds	Pour Plate Method	CFU/g.	< 100 CFU/g.
Bacillus cereus	Pour Plate Method	CFU/25g.	Absent/25g.
Total Viable Count TVC @ 20oC.	Pour Plate Method	CFU/g.	1,565 CFU/g.
Total Viable Count TVC @ 37oC.	Pour Plate Method	CFU/g.	2,120 CFU/g.
Camphylobacter spp.	Pour Plate Method	CFU/g.	Absent/g.
Clostridium perfringens	Pour Plate Method	CFU/g.	Absent/g.
Enterobacteriaceae	Pour Plate Method	CFU/g.	Absent/g.
Eschericia Coli	Pour Plate Method	CFU/g.	Absent/g.
Listeria Monocytogenes	PCR-Immunoassay Method	CFU/g.	Absent/g.
Total Coliforms	Pour Plate Method	CFU/g.	Absent/g.
Pseudomonas aeruginosa	PCR-Immunoassay Method	CFU/g.	Absent/g.

Saponins Profile Analysis

Saponin	Method of Analysis	Units	Reported Results
Triterpene Glycosides	RP-HPLC-MS-MS	g/100g.	-
Alkaloid Glycosides	RP-HPLC-MS-MS	g/100g.	0.800g.
Holothurin A.	RP-HPLC-MS-MS	g/100g.	-
Echinaside A.	RP-HPLC-MS-MS	g/100g.	0.125g.
Quinones	RP-HPLC-MS-MS	g/100g.	0.369g.
Oleonanes	RP-HPLC-MS-MS	g/100g.	-
Lanostanes	RP-HPLC-MS-MS	g/100g.	-

TEST REPORT**REPORT NO.: 23-11-31406****Nutritional Analysis**

Test	Units	Methodology	Method Ref.	Result per 100grams.	Result per gram.
Protein Content	g/100grams.	Kjeldahl Distil/Digestion	ISO 20483	8.100g.	0.081
Fat Content	g/100grams.	Soxhlet Distillation	ISO 659	1.150g.	0.0115
Saturates	g/100grams.	HPLC-PDA	ISO 5508	0.150g.	0.002
Monounsaturates		HPLC-PDA	ISO 5508	0.200g.	0.002
Polyunsaturates		HPLC-PDA	ISO 5508	0.800g.	0.008
Omega-3	g/100grams.	LC-MS-MS	Internal Lab.	0.500g.	0.005
Omega-6	g/100grams.	LC-MS-MS	Internal Lab.	0.300g.	0.003
Omega-9	g/100grams.	LC-MS-MS	Internal Lab.	-	-
Carbohydrates	g/100grams.	HPLC-PDA	ISO 11292	38.500g.	0.385
Sugars		HPLC-PDA	ISO 11292	17.200g.	0.172
Ash Content	g/100grams.	Muffle Furnace	ISO 735	10.500g.	0.105
Fibre Content	g/100grams.	Digestion/Distillation	ISO 5498	2.670g.	0.0267
Salt Content	g/100grams.	ICP-OES	Internal Lab.	2.045	0.0205
Energy Kcal.	Kcal/100g.	Bomb Calorimetry.	Internal Lab.	238 Kcal.	-
Energy KJ.	KJ/100g.	Bomb Calorimetry.	Internal Lab.	991 KJ.	-

TEST REPORT**REPORT NO.: 23-11-31406****Bioactives Profile**

Parameter	LOD	Method Type	Units	Results
Alginic acid	0.002%	HPLC-PDA	g/100g.	10.480
β-D-mannuronic acid				7.350
α-L-guluronic acid				3.130
Laminarin	0.002%	HPLC-PDA	g/100g.	0.900
1,3-β-D-glucopyranose				0.630
1,3-β-D-galactopyranose				0.270
Fucoidan	0.002%	HPLC-PDA	g/100g.	1.250
Sulphated Fucans				1.100
Sulphated Mannans				0.150
Mannitol	0.002%	HPLC-PDA	g/100g.	2.650

Sugars Analysis

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Carbohydrate	HPLC-PDA	ISO 11292	g/100g.	38.500
Sucrose				22.500
α-Glucose				4.400
β-Glucose				3.000
Fructose				2.600
Glucopyranose				2.500
Galactofuranose				2.400
Raffinose				1.100
Inositol				-

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Chemical Compositional

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Potassium as K.	ICP-OES	APHA 3500	g/100g.	3.235
Phosphorus as P.	ICP-OES	APHA 3500	g/100g.	0.400
Nitrogen as N.	Kjeldahl Distillation	APHA 3500	g/100g.	0.600
Organic (Ureic)				0.600
Inorganic (Anionic)				-
Iron as Fe.	ICP-OES	APHA 3500	mg/kg.	141
Elemental Sulphur S.	Elemental Analyser	In-House Method	mg/kg.	4.880
pH Value	Electrometric	In-House Method	pH Units	5.25
Organic Matter	Elemental Analyser	In-House Method	g/100g.	88.550
Specific Gravity	Densitometry	In-House Method	-	-
Fulvic acid Content	RP-HPLC-PDA	In-House Method	g/100g.	0.200

TEST REPORT**REPORT NO.: 23-11-31406****Trace Minerals Analysis**

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Magnesium as Mg.	ICP-OES	APHA 3500	grams/kg.	3.312
Calcium as Ca.	ICP-OES	APHA 3500	grams/kg.	2.435
Sodium as Na.	ICP-OES	APHA 3500	grams/kg.	3.000
Manganese as Mn.	ICP-OES	APHA 3500	mg/kg.	11
Zinc as Zn.	ICP-OES	APHA 3500	mg/kg.	15
Copper as Cu	ICP-OES	APHA 3500	mg/kg.	3.280
Iodine as I2	IC/ICP-OES	APHA 3500	mg/kg.	91
Selenium as Se	ICP-OES	APHA 3500	mg/kg.	0.785
Chromium as Cr	ICP-OES	APHA 3500	mg/kg.	< 0.002
Molybdenum as Mo.	ICP-OES	APHA 3500	mg/kg.	< 0.002
Boron as B.	ICP-OES	APHA 3500	mg/kg.	< 0.002

TEST REPORT**REPORT NO.: 23-11-31408****Amino Acids Profile**

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Glutamic acid	LC-MS	JHG-097	mg/100grams.	1,250
Aspartic acid	LC-MS	JHG-097	mg/100grams.	1,350
Arginine	LC-MS	JHG-097	mg/100grams.	1,000
Glycine	LC-MS	JHG-097	mg/100grams.	700
Alanine	LC-MS	JHG-097	mg/100grams.	810
Serine	LC-MS	JHG-097	mg/100grams.	390
Proline	LC-MS	JHG-097	mg/100grams.	450
Leucine	LC-MS	JHG-097	mg/100grams.	332
Tyrosine	LC-MS	JHG-097	mg/100grams.	334
Valine	LC-MS	JHG-097	mg/100grams.	139
Methionine	LC-MS	JHG-097	mg/100grams.	350
Histidine	LC-MS	JHG-097	mg/100grams.	270
Iso-Leucine	LC-MS	JHG-097	mg/100grams.	336
Cystine	LC-MS	JHG-097	mg/100grams.	480
Phenylalanine	LC-MS	JHG-097	mg/100grams.	362
Tryptophan	LC-MS	JHG-097	mg/100grams.	200
L-Taurine	LC-MS	JHG-097	mg/100g	167
L-Lysine	LC-MS	JHG-097	mg/100g	224
L-Anserine	LC-MS	JHG-097	mg/100g	70
L-Asparagine	LC-MS	JHG-097	mg/100g	223
Hydroxyproline	LC-MS	JHG-097	mg/100g	-
L-Ornithine	LC-MS	JHG-097	mg/100g	-

TEST REPORT**REPORT NO.: 23-11-31406****Vitamin Profile**

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Vitamin E	HPLC-PDA	JHG-088	mg/100g.	7
Vitamin B1	HPLC-PDA	JHG-088	mg/100g.	3.125
Vitamin B2 (Riboflavin)	HPLC-PDA	JHG-088	mg/100g.	11
Vitamin B3 (Niacin)	HPLC-PDA	JHG-088	mg/100g.	7
Vitamin B5 (Pantothenic acid)	HPLC-PDA	JHG-088	mg/100g.	1.435
Vitamin B6 (Pyridoxine)	HPLC-PDA	JHG-088	mg/100g.	0.727
Vitamin B12 (Cobalamine)	HPLC-PDA	JHG-088	µg/100grams.	0.300
Vitamin C	HPLC-PDA	JHG-088	mg/100grams.	148
Vitamin D	HPLC-PDA	JHG-088	IU/100grams.	196
Vitamin K	HPLC-PDA	JHG-088	µg/100grams.	155
Choline	HPLC-PDA	JHG-088	mg/100grams.	-

Plant Hormones Profile

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Betaines Content	HPLC-PDA	JHG-088	mg/kg.	89
Auxins Content	HPLC-PDA	JHG-088	mg/kg.	33
Gibberellins Content	HPLC-PDA	JHG-088	mg/kg.	-
Cytokinins Content	HPLC-PDA	JHG-088	mg/kg.	-
Strigolactones Content	HPLC-PDA	JHG-088	mg/kg.	-
Brassinosteroids Content	HPLC-PDA	JHG-088	mg/kg.	-

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Flavonoids Analysis

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Quercetin	SPME-HPLC	In-House Method	mg/kg.	-
Apigenin	SPME-HPLC	In-House Method	mg/kg.	13
Flavanone	SPME-HPLC	In-House Method	mg/kg.	11
Caffeic acid	SPME-HPLC	In-House Method	mg/kg.	4.445
Catechin	SPME-HPLC	In-House Method	mg/kg.	3.915
Gallic acid	SPME-HPLC	In-House Method	mg/kg.	5.016

Phlorotannins Analysis¹

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Phloroglucinol	SPME-HPLC	In-House Method	mg/kg.	22
Eckol	SPME-HPLC	In-House Method	mg/kg.	-
Dieckol	SPME-HPLC	In-House Method	mg/kg.	-
Phlorofucofuroeckol	SPME-HPLC	In-House Method	mg/kg.	13

All test methods were performed in accordance with the requirements of ISO: IEC 17025.

The test results relate only to the product listed in this report.

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SHELF-LIFE TESTING PROGRAMME

Shelf-Life Testing was performed to test the Bacterial and Chemical integrity of the finished product. Demonstrating both the absence of Pathogenic bacteria and undesirable Chemical agents in the product are the safest ways of avoiding consumer cases of illness. The finished report may be used as an excellent sales tool as it indicates that the product is shelf stable and free of Pathogenic bacteria for the estimated time.

TESTING REGIME

An initial sample was tested for the following Microbiological Series when the samples were first received. After Microbiological Analysis, the sample was dispatched to the Chemistry Laboratory, where it underwent a series of Chemical contaminant tests, as well as a suite of Physical and Sensory assessments. The remaining samples underwent the same testing regime at agreed time points and the testing programme continued until the product reached the end of its Shelf-Life.

Microbiological**Chemical****Physical****Sensory***Total Aerobic Count @ 22o C**Hydroxyl Value**Water Activity**Smell**Total Aerobic Count @ 37o C**Peroxide Value**pH Value**Taste**Esch. Coli**Free Fatty Acid**Conductivity**Texture**Salmonella spp.**TBA Rancidity**Colour**Enterobacteriaceae**TOTOX Value**Coagulase (+) Staphylococcus**Listeria Monocytogenes**Clostridium Perfringens**Campylobacter spp.**Pseudomonas spp.*

**TEST REPORT****REPORT NO.: 23-11-31405**STABILITY TEST CONDITIONS

METHODOLOGY:	ACCELERATED SHELF-LIFE (Ambient)
DATE OF COMMENCEMENT OF TESTING:	11th. November 2023
DATE OF CONCLUSION OF TESTING:	24th. November 2023
DATE OF REPORT:	29th. November 2023
DATA ANALYSIS:	EXCEL 2007 Spreadsheet
TEMPERATURE OF TESTING:	Ambient Temperature.
SAMPLE PREPARATION:	No Preparation.
STABILITY METHOD:	Micro/Rancidity/Chemical
DATE OF SAMPLE:	11th. November 2023
PRODUCT CODE:	THHG INC

SHELF-LIFE CERTIFICATE FOR THHG INC

Chondrus Crispus (Sea Moss)

This is to certify that the product

‘Chondrus Crispus (Sea Moss)’

when stored under recommended Ambient conditions and, if the packaging is unopened and undamaged, is guaranteed to have a Shelf-Life of 15 months from Date of Production.

Signed:  _____ Technical Director

JHG Analytical Services Limited

Riverstown Business Park, Tramore

Co. Waterford X91 YH76

Republic of Ireland.

Dated: 29th. November 2023