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ANALYSIS REPORT REFERENCE: 21-06-21090 (Re-Check)

**CHEMICAL/BIOCHEMICAL
ANALYTICAL REPORT**

Nature of Product: Liquid Seaweed Extract Fertilizer Sample.

Date of Report: 12th. August 2021.

Sample Reference: GroGreen Food and Shine Grontsager 100% Organic

Sample Ref.: As Dated 21.06.2021.

**E.Marker A/S
Okslundvej 8
BOV DK-6330
Padborg
Denmark.**

For the Attention of: Mr. Carsten Marker.

Contact No. +46 74670808

Email: Carsten@marker.DK.

Date of Sample: 21st. June 2021.

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Bioactives Profile

Parameter	LOD	Method Type	Units	Results
Alginic acid	0.002%	HPLC-PDA	% mass.	17.750%
β-D-mannuronic acid				12.500%
α-L-guluronic acid				5.250%
Laminarin	0.002%	HPLC-PDA	% mass.	4.800%
1,3-β-D-glucopyranose				3.500%
1,3-β-D-galactopyranose				1.300%
Fucoidan	0.002%	HPLC-PDA	% mass.	3.750%
Sulphated Fucans				2.550%
Sulphated Mannans				1.200%
Mannitol	0.002%	HPLC-PDA	% mass.	2.900%

Sugars Analysis

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Carbohydrate	HPLC-PDA	ISO 11292	% mass	29.400%
Sucrose				21.300%
α-Glucose				2.760%
β-Glucose				0.280%
Fructose				0.795%
Glucopyranose				1.100%
Galactofuranose				0.280%
Raffinose				1.680%
Inositol				0.812%

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Chemical Compositional

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Potassium as K.	ICP-OES	APHA 3500	% weight	6.144%
Phosphorus as P.	ICP-OES	APHA 3500	% weight	1.880%
Nitrogen as N.	Kjeldahl Distillation	APHA 3500	% weight	2.875%
Organic (Ureic)				2.700%
Inorganic (Anionic)				0.175%
Iron as Fe.	ICP-OES	APHA 3500	% weight	0.320%
Elemental Sulphur S.	Elemental Analyser	In-House Method	% weight	1.125%
pH Value	Electrometric	In-House Method	pH Units	5.14
Organic Matter	Elemental Analyser	In-House Method	% weight	1.785%
Specific Gravity	Densitometry	In-House Method	g/L ⁻¹ .	1.159

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Trace Minerals Analysis

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Magnesium as Mg.	ICP-OES	APHA 3500	% weight	0.122%
Calcium as Ca.	ICP-OES	APHA 3500	% weight	0.165%
Sodium as Na.	ICP-OES	APHA 3500	% weight	0.112%
Manganese as Mn.	ICP-OES	APHA 3500	% weight	0.021%
Zinc as Zn.	ICP-OES	APHA 3500	% weight	0.0019%
Copper as Cu	ICP-OES	APHA 3500	% weight	0.0025%
Iodine as I ₂	IC/ICP-OES	APHA 3500	% weight	0.0046%
Selenium as Se	ICP-OES	APHA 3500	% weight	0.004%
Chromium as Cr	ICP-OES	APHA 3500	% weight	< 0.0002%
Molybdenum as Mo.	ICP-OES	APHA 3500	% weight	< 0.0001%
Boron as B.	ICP-OES	APHA 3500	% weight	0.005%

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Amino Acids Profile

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Glutamic acid	LC-MS	JHG-097	mg/100mls.	1,232
Aspartic acid	LC-MS	JHG-097	mg/100mls.	1,149
Arginine	LC-MS	JHG-097	mg/100mls.	468
Glycine	LC-MS	JHG-097	mg/100mls.	390
Alanine	LC-MS	JHG-097	mg/100mls.	279
Serine	LC-MS	JHG-097	mg/100mls.	177
Proline	LC-MS	JHG-097	mg/100mls.	155
Leucine	LC-MS	JHG-097	mg/100mls.	508
Tyrosine	LC-MS	JHG-097	mg/100mls.	327
Valine	LC-MS	JHG-097	mg/100mls.	410
Methionine	LC-MS	JHG-097	mg/100mls.	400
Histidine	LC-MS	JHG-097	mg/100mls.	155
Iso-Leucine	LC-MS	JHG-097	mg/100mls.	381
Cystine	LC-MS	JHG-097	mg/100mls.	446
Phenylalanine	LC-MS	JHG-097	mg/100mls.	417
Tryptophan	LC-MS	JHG-097	mg/100mls.	118

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Plant Hormones Profile

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Betaines Content	HPLC-PDA	JHG-088	% weight	0.013%
Auxins Content	HPLC-PDA	JHG-088	ppm.	25
Gibberellins Content	HPLC-PDA	JHG-088	ppm.	32
Cytokinins Content	HPLC-PDA	JHG-088	ppm.	29
Strigolactones Content	HPLC-PDA	JHG-088	ppm.	0.215
Brassinosteroids Content	HPLC-PDA	JHG-088	ppm.	0.006

Heavy Metals Analysis

Heavy Metal	Method of Analysis	Units	Reported Results
Arsenic (Inorganic)	ICP-OES	mg/L. (ppm)	0.006
Arsenosugars (Organic)	ICP/IC-OES	mg/L. (ppm)	1.890
Antimony as Sb.	ICP-OES	mg/L. (ppm)	< 0.002
Cadmium as Cd.	ICP/IC-OES	mg/L. (ppm)	0.009
Mercury as Hg.	Cold Vapour A.A.S.	mg/L. (ppm)	< 0.0005
Lead as Pb.	ICP-OES	mg/L. (ppm)	< 0.002
Chromium as Cr ⁶⁺ .	ICP/IC-OES	mg/L. (ppm)	< 0.002
Nickel as Ni.	ICP-OES	mg/L. (ppm)	< 0.002
Silver as Ag.	ICP-OES	mg/L. (ppm)	< 0.002
Vanadium as V.	ICP/IC-OES	mg/L. (ppm)	< 0.002
Tin as Sn.	ICP-OES	mg/L. (ppm)	< 0.002
Aluminium as Al.	ICP/IC-OES	mg/L. (ppm)	< 0.002

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Herbicide Residues Analysis

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Sulfonyl Ureas/Ureas	UHPLC-MS	APHA 6630	µg/ml.	< 0.004
Imidazolinones/Diphenylethers	UHPLC-MS	APHA 6630	µg/ml.	< 0.005
Phenoxy/Chlorophenoxy	UHPLC-MS	APHA 6630	µg/ml.	< 0.006
Dinitroalinine/Acetamides	UHPLC-MS	APHA 6630	µg/ml.	< 0.002
Bipyridillums/Triketones	UHPLC-MS	APHA 6630	µg/ml.	< 0.004
Thiocarbamates	UHPLC-MS	APHA 6630	µg/ml.	< 0.035
Glyphosate/Glufosinate	UHPLC-MS	APHA 6630	µg/ml.	< 0.002
Atrazine desethyl deisopropyl	UHPLC-MS	APHA 6630	µg/ml.	< 0.001
Atrazine deisopropyl	UHPLC-MS	APHA 6630	µg/ml.	< 0.003
Atrazine desethyl	UHPLC-MS	APHA 6630	µg/ml.	< 0.002
Simazine	UHPLC-MS	APHA 6630	µg/ml.	< 0.005
Terbutylazine desethyl	UHPLC-MS	APHA 6630	µg/ml.	< 0.001
Atrazine	UHPLC-MS	APHA 6630	µg/ml.	< 0.001
Terbutryn	UHPLC-MS	APHA 6630	µg/ml.	< 0.001
Terbutylazine	UHPLC-MS	APHA 6630	µg/ml.	< 0.001
Alachlor	UHPLC-MS	APHA 6630	µg/ml.	< 0.004
Metolachlor	UHPLC-MS	APHA 6630	µg/ml.	< 0.005
Aminopyralid	LS-MS-MS	APHA 6630	µg/ml.	< 0.001
Clopyralid	LS-MS-MS	APHA 6630	µg/ml.	< 0.001
Triclopyr	LS-MS-MS	APHA 6630	µg/ml.	< 0.002

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Pesticide Residues Analysis

Parameter	Method of Analysis	Method Reference	Units	Reported Levels
Organochlorine Residues	UHPLC-MS	APHA 6630	µg/ml.	< 0.002
Organophosphorus Residues	UHPLC-MS	APHA 6630	µg/ml.	< 0.002
Organonitrogen Residues	UHPLC-MS	APHA 6630	µg/ml.	< 0.050
Carbamate Pesticides	UHPLC-MS	APHA 6630	µg/ml.	< 0.030
Pyrethroid Residues	UHPLC-MS	APHA 6630	µg/ml.	< 0.001
Organotin Residues	UHPLC-MS	APHA 6630	µg/ml.	< 0.002

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.

Analytical Assessor

John Gough BSc. MSc.

Assessor Credentials

BSc (Hons) in Analytical Chemistry with Quality Management.

MSc in Environmental Chemistry.

J.W. GOUGH

_____ **Technical Signatory.**

Dated: 12th. August 2021