

Raw Material Information Booklet

Dunaliella salina whole dried marine phytoplankton (microalgae)



Australian Marine Phytoplankton™

Natural Medicine and Superfood – nutrient rich biomass



Plankton Australia Pty Limited



incorporating AquaCarotene Natural Culture™



Rich Natural Biomass

Australian Marine Phytoplankton is an edible soft wall nutrient-dense marine microalgae made from 100% pure whole dried *Dunaliella salina* biomass. *Dunaliella salina* is renowned as being one of nature's richest sources of dietary mixed carotenoids and contains a large array of important daily nutrients known to support good health and vitality.

What is *Dunaliella Salina*?

Dunaliella salina is a single-celled green microalgae (phytoplankton). It is a unique micro organism that lives in coastal waters, brine rock pools and salt water lakes. On a gram for gram basis, it is arguably the most concentrated, nutrient rich food source on earth. It sits at the bottom of the food chain.

Under the right conditions, *Dunaliella salina* produces extremely high quantities of beta and alpha carotene, deep orange-red nutrient pigments. This combination of antioxidant nutrients, known as carotenoids, gives *Dunaliella salina* its distinctive orange-red colour.

Production and Harvesting

Our marine phytoplankton is farmed organically in large shallow ponds. The phytoplankton are grown in clean Australian marine waters collected from natural tidal catchment's and use pure sunlight as an energy source. No herbicides or pesticides are used. The phytoplankton are harvested and dried mechanically, without the use of chemicals or solvents. (Certified Organic USDA)

Nutrient Profile

A Rich Spectrum of Nutrients

Australian Marine Phytoplankton biomass is made from whole dried *Dunaliella salina*, a superfood rich in a spectrum of nutrients important in daily life, including vitamins, minerals, amino acids, essential fatty acids, carbohydrates, chlorophyll and other important nutrients.

Powerful Antioxidant Carotenoids

Dunaliella salina is nature's richest source of dietary beta-carotene and mixed carotenoids. *Dunaliella salina* contains a potent mixture of important carotenoids, including: beta-carotene, alpha-carotene, lutein, zeaxanthin, and cryptoxanthin. Carotenoids are naturally found in fruits and vegetables and considered one of the most important daily nutrients for people to consume every day. Research shows that carotenoids have antioxidant and immune supporting properties. They help to protect against free radical cell damage

responsible for premature ageing. The antioxidants found in *Dunaliella salina* can help promote healthy eyes and assist in the improvement and maintenance of general wellbeing .

Beta-carotene (9-cis and all-trans)

Dunaliella salina contains the important 9-cis beta-carotene isomer, one of nature's most powerful antioxidants. It also contains the important all-trans beta-carotene isomer, a special pro-vitamin A nutrient that can be converted to retinol (vitamin A) in the body as required, thus making *Dunaliella salina* a great natural source of safe, non-toxic vitamin A.

Minerals

Whole dried *Dunaliella salina* is exceptionally rich in electrolyte minerals. It contains a full array of nutrient minerals including: magnesium – vital for healthy cellular metabolism, energy, nerve and muscle function; selenium – a powerful antioxidant that aids in detoxification and immune health; lithium – required in brain function; and boron – contributes to healthy bones.

Vitamins

Dunaliella salina contains a range of nutrients including vitamin E, cobalamin (vitamin B12) and pro-vitamin A. Vitamin A plays an essential role in vision, growth, reproduction and regulation of the immune system. It also helps maintain the health and integrity of the skin and mucous membranes.

Amino Acids

Dunaliella salina has a high content of useable protein (amino acids). Amino acids are the basic building materials of life, required for the synthesis of muscles, skin and connective tissues, hormones, enzymes and neurotransmitters.

Essential fatty acids (EFAs)

Dunaliella salina contains EFAs, highly concentrated unsaturated lipids that may help; reduce cholesterol and fat levels in the blood, prevent heart disease, reduce inflammation in arthritis and support brain function. These lipids, including Omega 3, Omega 6, Linoleic Acid and Alpha Linoleic Acid are essential for the absorption of carotenoids, vitamin E and other fat-soluble nutrients.

Chlorophyll

Dunaliella salina is rich in chlorophyll. Chlorophyll is believed to be a powerful cleansing agent that may increase the body's elimination of harmful toxins.

How does *Dunaliella salina* compare?

A number of algae and nutrient-rich “super-foods” are available, including spirulina, chlorella, kelp, wheat grass and green barley. Carrots are famous for their high beta-carotene and carotenoid levels compared to other fruits and vegetables. When their nutrient content is compared, on a gram per gram basis, *Dunaliella salina* has superior overall mineral, carotenoid and phytonutrient levels.

Table 1. Typical Analysis of Australian Marine Phytoplankton whole dried *Dunaliella salina* powder

Nutrient	Australian Marine Phytoplankton, whole dried <i>Dunaliella salina</i> (Per 100g)	Australian Marine Phytoplankton, whole dried <i>Dunaliella salina</i> (Per 1g)
Protein	7.4g	74mg
Fat (total)	7.0g	70mg
Carbohydrates	29.7mg	297mg
Fibre	0.4g	4mg
Minerals (ash)	49g	490mg
Energy	893kj	8.93kj
Beta-carotene	1,100-2,100mg	11-21mg
Alpha-carotene	53.1-102.4mg	0.531-1.024mg
Lutein & Zeaxanthin	54.3-97.6mg	0.543-0.976mg
Cryptoxanthin	23.4-46.5mg	0.234-0.465mg
Chlorophyll	2210mg	22.1mg

Source: National Measurement Institute (Australia) and Craft Technologies (USA)



Natural and Organic is best

Consumers today prefer natural to synthetic nutrients. They also prefer organic produce as opposed to non-organic produce. Natural nutrients are thought to be absorbed more effectively than synthetic nutrients, such as those found in many multivitamin and mineral formulations. Australian Marine Phytoplankton is certified organic and provides a rich source of beta-carotene, mixed carotenoids and other daily nutrients in a 100% natural form.

Natural vs synthetic beta-carotene

- Synthetic beta-carotene contains only the all-trans beta-carotene isomer.¹
- Human clinical studies show that natural dietary beta-carotene reduces the risk of certain diseases, whereas synthetic supplemental beta-carotene does not.²

Table 2. Comparison of Minerals in green foods

Mineral (mg/100g)	Australian Marine Phytoplankton, whole dried <i>Dunaliella salina</i>	Spirulina	Chlorella	Kelp	Wheat grass	Green barley
Calcium	148	547	201	1443	937	384
Magnesium	6402	330	211	796	83	186
Potassium	6.5	5	5	7	6	6
Copper	0.3	1.1	0.1	.02	0.4	0.6
Zinc	1	2	1	3	2	2
Phosphorous	76.5	857	1040	106	290	281
Iron	27.3	50.5	214	26.9	13.7	8.4
Manganese	9.1	2.62	4.06	3.87	5.08	3.85
Chromium	0.35	0.53	0.06	0.23	0.09	0.11
Selenium	1.48	0.03	0.01	0.69	0.04	0.15
Boron	27.81	0.25	0.03	11.13	0.33	1.05
Cobalt	0.03	0.131	0.038	0.045	0.005	0.004
Molybdenum	0.04	0.105	0.042	0.094	0.05	0.066
Sulfur	2731	<2000	<2000	2426	<2000	<2000
Lithium	0.92	0.093	0.01	0.068	0.008	0.023

Source: Trace Elements Inc. USA (Nutrient levels will vary from batch to batch).



Australian
**Marine
 Phytoplankton™**

Natural Medicine and Superfood – nutrient rich biomass



Potential Health Benefits

- Rich in health-protective antioxidants^{2,3}
- Source of carotenoids and provitamin A²
- Helps support a healthy immune system^{2,4}
- Supports skin and eye health^{2,5}
- May help reduce the risk of premature ageing²
- Helps assist in the improvement and maintenance of overall health and wellbeing^{2,4,6}
- Helps support the body's natural detoxification processes⁶

Applications

- Human health dietary supplements, suitable for tablets, capsules and dry powder mixes
- Functional and superfood blends
- Combined green food and other superfood blends
- Nutrient-rich animal feed
- Pigments and dyes
- Cosmetics

PREMIUM GRADE Natural Product

Australian Marine Phytoplankton premium-grade *Dunaliella salina* offers superior value and quality to manufacturers of functional foods, nutritional supplements and high-quality animal feeds.

- Nutrient rich natural biomass
- Exceptional carotenoid levels
- No algal toxins, pesticides, herbicides or preservatives
- Certificate of Analysis provided with every batch
- 100% pure and natural
- Vegan friendly, non-GMO product
- Certified Organic (USDA)

Summary Specifications

Australian Marine Phytoplankton is made from *Dunaliella salina* pure whole dried marine microalgae biomass.

Package size: 10 kg (may vary)

Deep orange-red-brown granulated powder.

Full Product Specifications

Full product specifications and further information are available upon request.

PRODUCT OF AUSTRALIA



References:

1. Ben-Amotz A, Edelstein S & Auron M (1986). Use of the beta-carotene rich alga *Dunaliella bardawil* as a source of retinol, *Brit Poult Sci* 27, 613-9.
2. Murray MT (1996). *Encyclopedia of Nutritional Supplements*. Prima Publishing, Roseville, California
3. Astley SB, Hughes DA, Wright AJ, Elliott RM & Southorn S (2004). DNA damage and susceptibility to oxidative damage in lymphocytes: effects of carotenoids in vitro and in vivo, *Br J Nutr*, Jan, 91, 1, 53-61.
4. Werbach MR (1996). *Nutritional Influences on Illness*, 2nd ed. Third Line Press, Tarzana California.
5. Knekt P, Heliövaara, M, Rissanen A, Aromaa A & Aaran RK (1992). Serum antioxidant vitamins and risk of cataract, *BMJ*, Dec 5, 305, 6866, 1392-4.
6. Cohen M, Braun L. (2010). *Herbs & Natural Supplements: An evidence based guide*, 3rd ed. Elsevier, Australia

DISCLAIMER

The information provided in this document is for informational purposes only. Any interested parties in the described product are advised that they must rely solely on their own inquiries. You should not use any information in this document for diagnosis or treatment of any health problem and always consult with a healthcare professional before starting any supplementation program or if you suspect you might have a health problem. While all care is taken in providing reliable evidence based data, no warranty or guarantee is expressed or implied with any of the information contained herein.

Available from

Plankton Australia Pty Limited

PO Box 6446, Alexandria NSW 2015 Australia
Unit 6, 10 Bradford Street, Alexandria 2015 Australia

Phone: +61 2 9693 1911

Fax: +61 2 9693 1888

Email: admin@planktonaustralia.com

Web: www.planktonaustralia.com

Plankton Australia Pty Limited



incorporating AquaCarotene Natural Culture™