

Application in Feed products

Introduction

The survival, growth, development, productivity and fertility of animals are a reflection of their health. Feed quality is the most important external factor influencing animal health, especially in connection with intensive breeding conditions and the recent trend to avoid "chemicals" like antibiotics.¹

Microalgae are one of the potential sources of foods and feeds with the potential to feed an ever growing and affluent population. Microalgae are organisms on which an ever growing part of our food will have to come from.

Algae bring vigour and vitality to older animals and keep the younger ones healthy. It works synergistically to support animals immune function and overall well-being.

Experiences

Our knowledge and experience indicate that Phycor Chlorella algae:

- improve bowel function and therefore are an immune stimulator
- give significant reduction of antibiotic use (piglet feed in particular)
- improve overall wellbeing and health of laying hens

In feed the following animal groups benefit from algae:

Husbandry;	Pets;	Aqua culture;
• Poultry	• Dogs	• Bivalve (oysters, clams)
• Cattle	• Cats	• Discus fish
• Swine	• Birds	• Salmon
• Horses	• Tropical fish (koi)	

Microalgae possess many unique and interesting biochemical properties that are playing an increasingly important role in many aspects of daily lives from nutrition through to energy production². Beside the nutritional improvement that microalgae incorporation in feeds versus higher plants may bring to animals health, they are the only biomass material that allows production with daily harvest all year round. This could bring more security of supply on raw materials to the feed market.

The large number of nutritional and toxicological evaluations that were conducted in the past, demonstrate the suitability of algae as a valuable feed supplement. Aquaculture already successfully uses many species as an essential component of the live food chain in the production of a number of high valued species.

There are examples of algae with antiviral properties. In poultry an enhanced immune response is demonstrated in experiments. In addition the carotenoid pigment in algae improves the pigmentation of the egg yolk and the color of broilers. In studies it is found that piglets, sows, ewes and lambs achieve improved growth and final weight. Also with dairy cows milk yields increase and protein and fat content improvement was observed.

Phycor' algae products can provide an answer to meet high volume and quality demands.

Animals that benefit from algae in feed



CHLORELLA

Sorokiniana and Vulgaris

Benefits
GMP ⁺ certified
FSSC 22000 certified
100% EFSA compliant
100% Delivery guarantee
100% Dutch

Features
100% Natural algae strains
100% Superior food quality
100% GMO and Iodine free
100% Vegan

1) Pulz and Gross, 2004
2) Sweetman, 2009

Direct application of algae in feed

The application of the algae in feed is endless. For products like granules, chunk, flakes and other feed goods, there are various possibilities to add Chlorella. Dried algae are very heat stable. The recommended concentration is between 1 - 5% Algae related to the dry mixture weight.

Different types of algae demonstrated various anti-bacterial properties, which is very desirable because of the increasing resistance of bacteria to antibiotics in humans and in animal husbandry, in animal feed antibiotics by which one wants to restrict as much as possible.

Algae contain of several antioxidants (the pigments chlorophyll and carotenoids), these have anti-inflammatory properties and can prevent degenerative diseases. Algae promote the immune response resulting in improved growth, disease resistance, feed conversion, reproductive performance and appearance as healthy skin and a shiny coat.



Algae *Chlorella vulgaris*

Product name	100% <i>Chlorella vulgaris</i>
Origin	Nijkerk, The Netherlands
Part used	Whole algae
Appearance and colour	Fine, fresh green

Nutritional values per 100 gram dry weight*

Energy	1810 kJ / 434 kCal	
Fats	14,2	g
- Saturated fatty acid	6,7	g
- Monounsaturated fatty acids	4,1	g
- Polyunsaturated fatty acids	3,4	g
Carbohydrates	38,7	g
- of which sugars	5,0	g
Fibers	32,9	g
Protein	22,7	g
Salt**	0,38	g

Algae *Chlorella sorokiniana*

Product name	100% <i>Chlorella sorokiniana</i>
Origin	Nijkerk, The Netherlands
Part used	Whole algae
Appearance and colour	Intense green

Nutritional values per 100 gram dry weight*

Energy	1518 kJ / 365 kCal	
Fats	14,0	g
- Saturated fatty acid	4,8	g
- Monounsaturated fatty acids	2,7	g
- Polyunsaturated fatty acids	6,5	g
Carbohydrates	13,1	g
- of which sugars	4,9	g
Fibers	14,1	g
Protein	40,7	g
Salt**	0,26	g

* all natural product, so results may vary
 ** only naturally occurring Sodium

Phycom Products

- Fresh algae paste in any desired dry weight % with a maximum 25%DW, instant processing, easy soluble
- Individually Quick Frozen (IQF) pellets with a maximum 23% DW; ranging from 4 – 20 gram per pellet, thawed very soluble
- Crude algae flakes, brittle flakes of different sizes
- Algae Powder, easily mixed within dough formulations such as granules and (dog) chewings products
- Capsules and tablets; different sizes from ranging from 200mg - 1000 mg. easy dosing, easy to swallow different sizes for a perfect fit.



Phycom BV provides information on application possibilities and relevant regulations based upon our current knowledge and opinion at the time of printing. Nutress BV makes no representation or warranty of any kind, express or implied, including merchantability or fitness for a particular use, with respect to such information or its application. Purchasers must independently determine the suitability of our ingredients for the purchaser's intended product, use or process. Purchaser is responsible for observing all laws and regulations relevant to such products, uses or processes. The foregoing information and suggestions are also provided without warranty of non-infringement as to the intellectual property rights of third parties, and shall not be construed as any inducement to infringe the rights of third parties.