



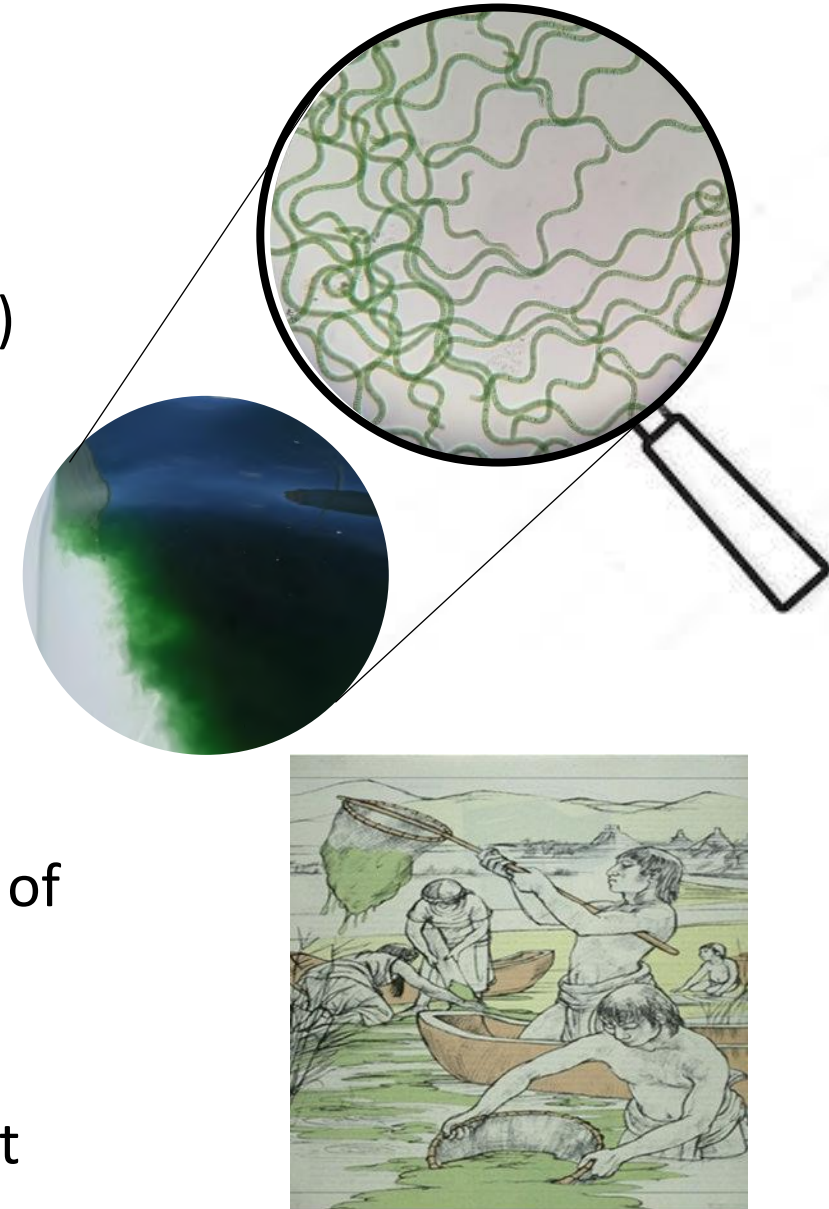
Allmicroalgae
natural products

**Beyond Organic Spirulina:
Paste NEW and Powder PT BIO 03**

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FACTS about Spirulina

- *Arthorspira platensis* (classified as Food by EFSA and FDA)
- Green-blue color (due to chlorophyll and phycocyanin)
- Has been consumed for centuries - Aztecs
- Considered a Super Food
- Considered the food of the future by the US Department of Agriculture and the United Nations
- Sustainable Protein Source - Low water and land footprint

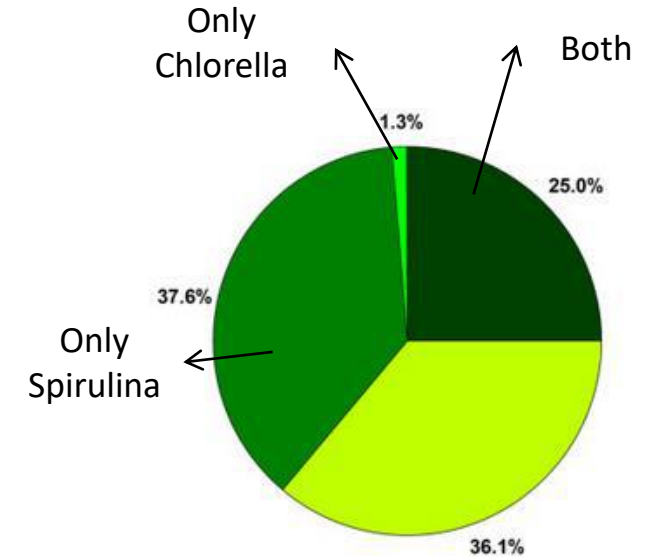


Why Spirulina?

- Increasing demand for EU Spirulina
- Sustainable and Artisanal Production
- Quality and Certifications of the Product
- The market size for *Spirulina* is 4x higher than for *Chlorella vulgaris*

How to be different?

Have you heard about Spirulina or Chlorella?



T. Lafarga *et al.*, "Consumer knowledge and attitudes towards microalgae as food: The case of Spain," *Algal Res.*, vol. 54, p. 102174, Apr. 2021. DOI:10.1016/j.algal.2020.102174.



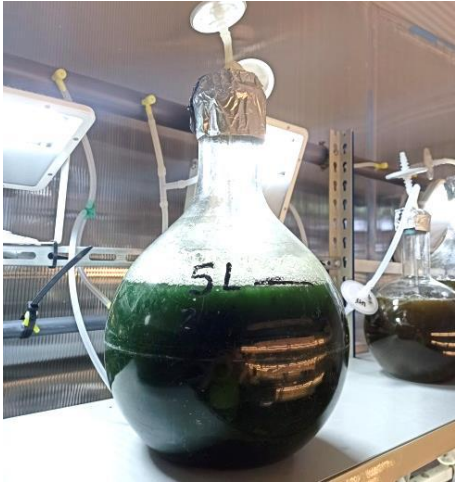
How to Market our **Spirulina**?

- **Cold supply chain** **Novel and New**
- Capacity to deliver tons of paste in EU
- Paste 5 – 20 % w/v
 - ✓ Maintains the nutritious profile
 - ✓ Mild flavor
 - ✓ Easy to use
 - ✓ Resistant to pH, temperature and salt
 - ✓ Alternative to B2B Food Market and to B2C consumers

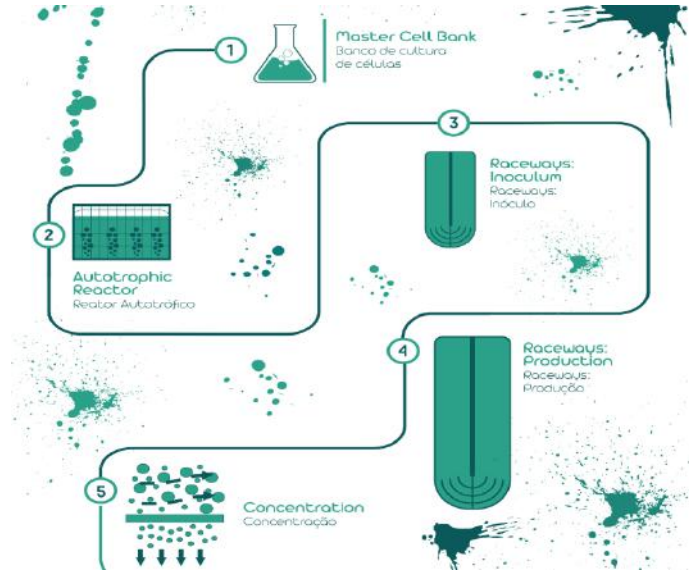


Allmicroalgae Spirulina production

1



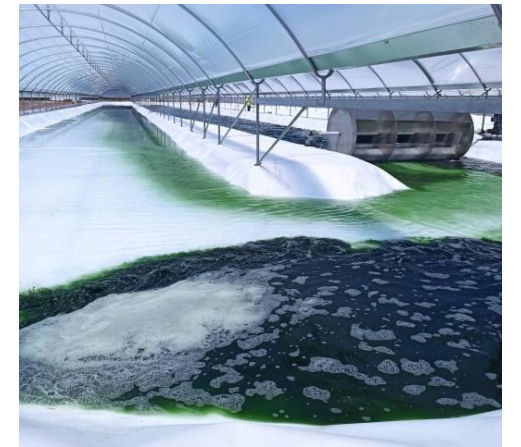
2



3



4



2021

2 Raceway – 200 m³

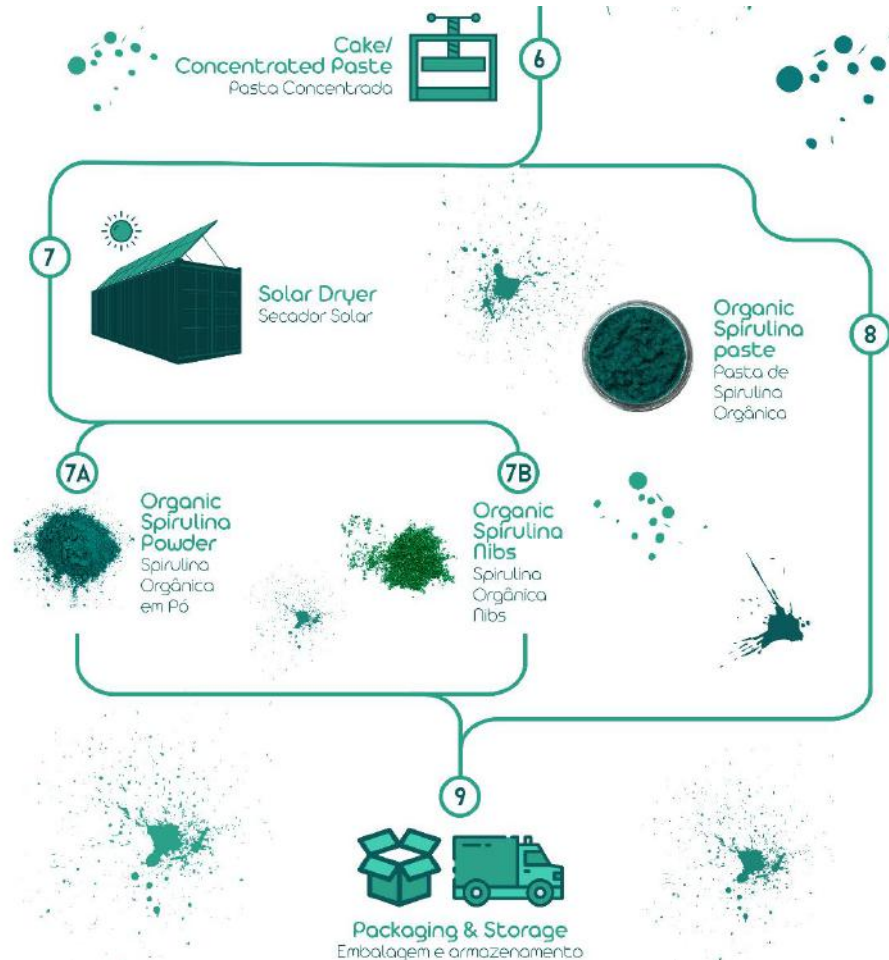
4 to 6 Tons/year

2022

+ 1 Raceway – 200 m³

+ 1 Raceway – 800 m³

20 Tons/year



Artisanal processing

- Low temperature drying
- Solar dryer



- More nutritious product
- Milder flavor
- Production capacity

Spirulina products

Food and Nutraceuticals

- Spirulina spray dried Powder BIO
- Spirulina Low Temperature dried Powder BIO
- Spirulina paste BIO
- NIBs, Flakes BIO

Key Nutritional Aspects:

- ✓ High Protein (60-70%)
- ✓ Well balanced amino acid profile
- ✓ Phycocyanin (12-16 %)
- ✓ Iron
- ✓ Vitamin B12
- ✓ Alpha-linoleic acid (ALA)



Spirulina products

Feed

- Improvement of chicken eggs quality
- Higher milk production on cows
- Improvement of milk quality

B. W. B. Holman and A. E. O. Malau-Aduli, "*Spirulina* as a livestock supplement and animal feed," *J. Anim. Physiol. Anim. Nutr. (Berl)*., vol. 97, no. 4, pp. 615–623, Aug. 2013. DOI:10.1111/j.1439-0396.2012.01328.x

Product nutritional profile

- High protein < 60%
- Phycocyanin < 12%



Bioactive properties

- Positive effects
 - Allergic rhinitis
 - Diabetes II treatment
 - Anemia
 - Chronic periodontitis
 - Pulmonary disease
 - Muscle and skeleton damage
 - HIV treatment
 - Hepatic-protective



Bioactive properties

- Cognitive effects
 - Anti-fatigue effects
 - Help the treatment of neurologic diseases
- Child and pregnant effects
 - Improvement of fine motor skills
 - Improvement in concentration
 - Improvement in cognition
 - Neuroprotective effect



PhD research



- Grow an 100% organic Spirulina with a high-protein and phycocyanin content
- Refine the Spirulina into organic high-value food ingredients
- Formulate new organic vegan products
- Life cycle assessment of the products to evaluate sustainability



CERTIFICAÇÃO
SATIVA BIO-PT-03



Allmicroalgae
natural products



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