



OBJECTIVES



To find out what spirulina is, focusing on its nutritional composition, health benefits it brings due to its bioactive compounds. Also, to explain how it is grown, what industrial applications it has and whether its properties would be useful against Covid-19.



HISTORY

Aztec tribes and African tribes consumed spirulina and as a result they began to investigate it to discover all its properties.

Nowadays, it is recognised by several food organizations as a safe food with healthy benefits.



CULTIVATION

Parameters:

Cultivation can be done in:

- Open systems (lakes, ponds or lagoons)
- Closed systems (photobioreactors)

- pH = 9-11
- Optimal temperature = 35°C
- Essential nutrients: C, N and minerals



APPLICATIONS

- Cosmetic industries
- Pharmaceutical industries
- Food industries

The most common way to sell it is in powder or capsule

Spirulina is characterized by:

- Its high protein content (60-70%)
- It contains all 9 essential amino acids
- It's rich in minerals and vitamins (B12)
- Its health benefits due to its bioactive compounds

Nutrient profile of Spirulina vs other foods:

- 180% more calcium than whole milk
- 670% more protein than tofu
- 3100% more B-carotene than carrots
- 5100% more iron than spinaches

MACRONUTRIENTS		MICRONUTRIENTS	
Calories	373	Vitamins (mg/100g):	
Total fat (g/100g):	4.3	Vitamin A (B-carotene)	211.15
Total carbohydrate (g/100g):	17.8	Riboflavin (Vitamin B2)	4.53
Fiber	7.7	Niacin (Vitamin B3)	14.9
Protein (g/100g):	63	Vitamin B6	0.96
Essential amino acids (mg/100g):		Vitamin B12	0.162
Isoleucine	3500	Minerals (mg/100g):	
Leucine	5380	Calcium	468
Valine	3940	Iron	87.4
		Phosphorus	961

Spirulina bioactive compounds and their benefits

✓	GLA	—————	Precursor of prostaglandin	+ Anticancer	+ Fat-metabolism	+ Treatment of arthritis
✓	Ficocianina	—————	Immunity enhancer	+ Anticancer	+ Antioxidant	+ Antiviral
✓	Beta-carotene	—————	Source of Vitamin A	+ Anticancer	+ Antioxidant	
✓	Ca-SP	—————	Immunity enhancer	+ Anticancer	+ Antiviral	
✓	Sulfolípidis	—————		Antiviral		
✓	Cianovirin-N	—————		Antiviral		



Spirulina and COVID 19

Further clinical research is needed to verify the speculations made about the use of bioactive algae compounds as a nutraceutical, in order to fight COVID-19.

CONCLUSIONS

- It is a highly nutritious food
- It can be considered a nutraceutical food due to its nutritional and therapeutic benefits
- Its properties are thanks to its bioactive compounds