The phycobiotechnology sources complete cycle on the example of cyanobacteria industrial cultivating

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Phycobiotechnology

Biotechnology of algae, microalgae and cyanobacteria and their products for food, feed, pharmaceutics, fuel and other types of products.

Cyanobacteria in our lab

Nostoc linckia

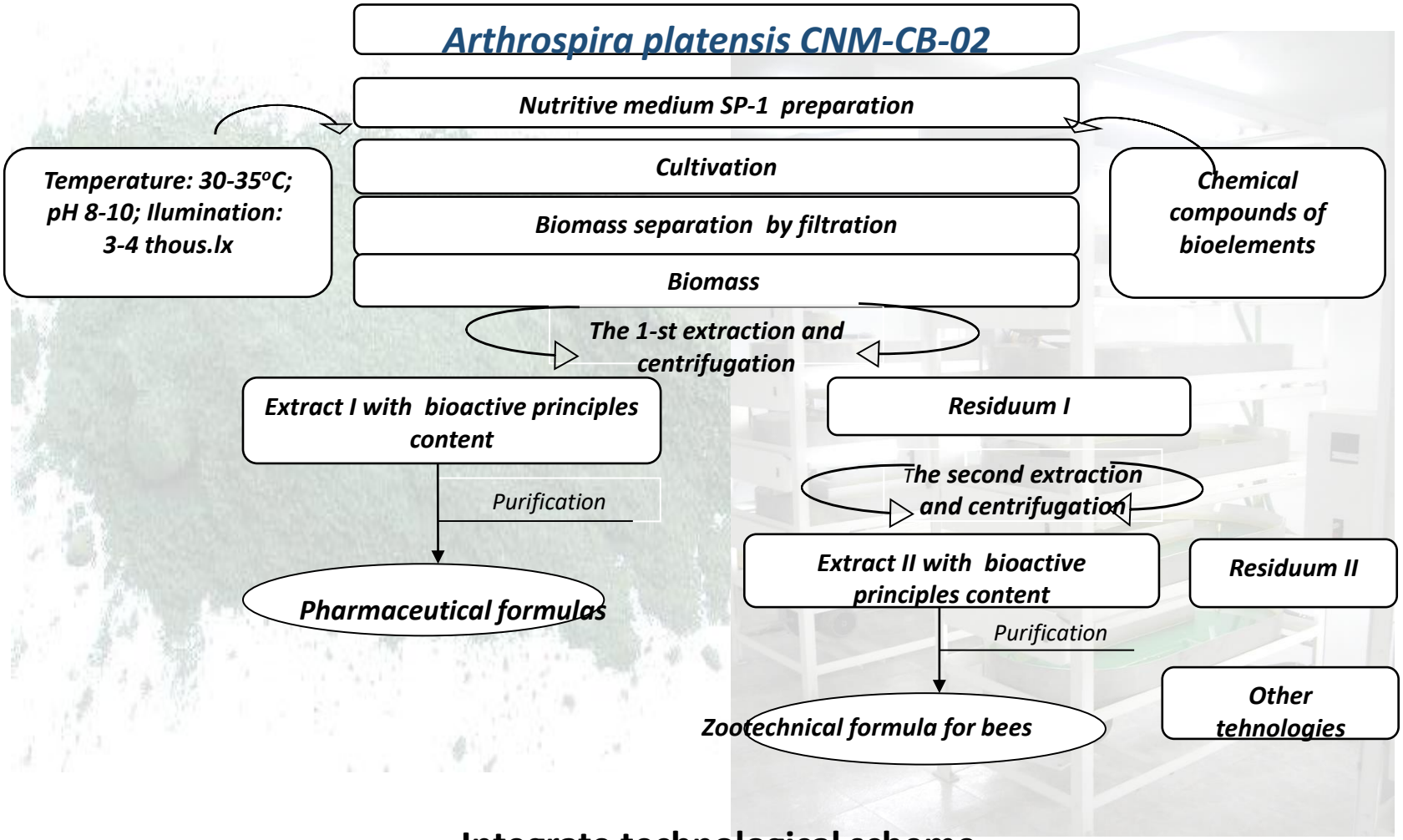
Cyanobacteria in our lab

Arthrospira (Spirulina) platensis

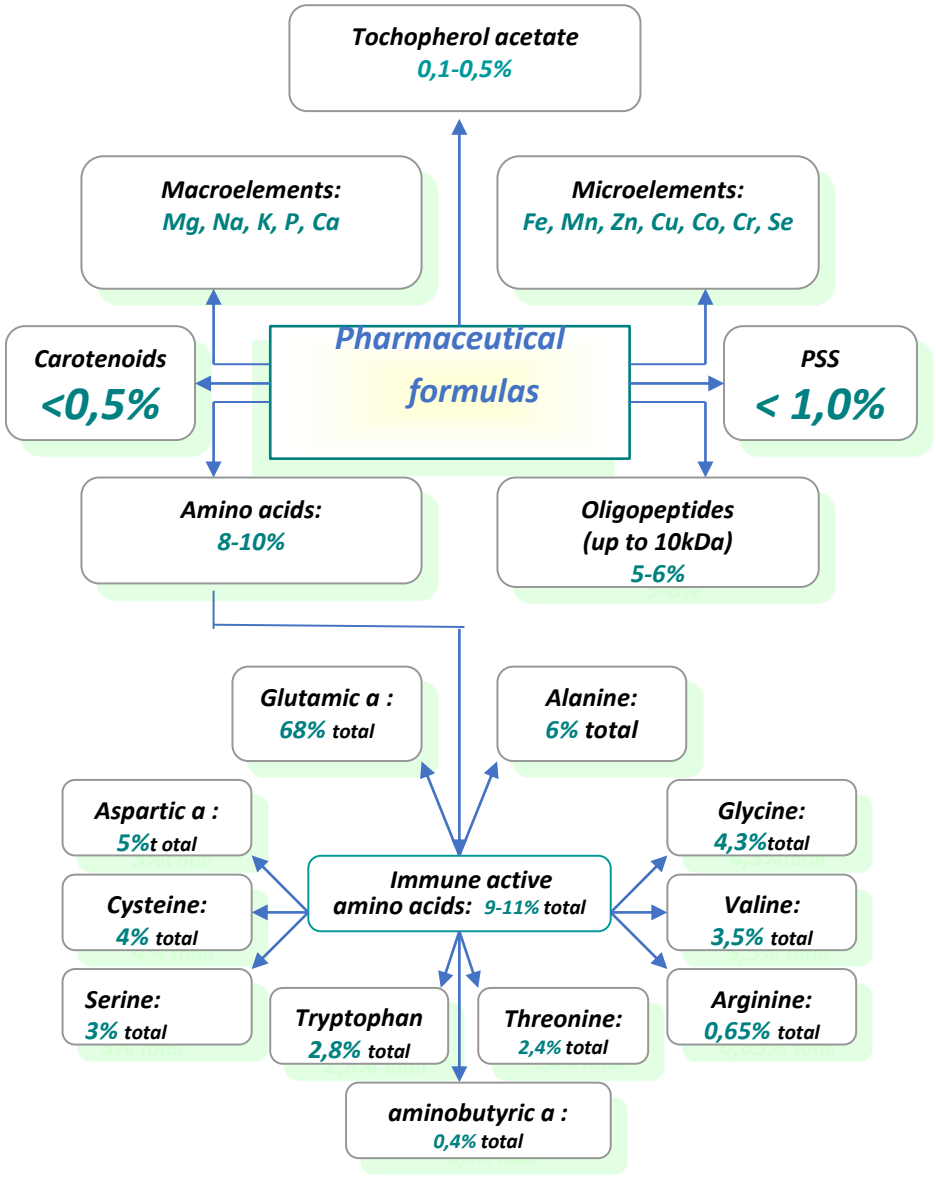
Cyanobacteria
Arthrospira (Spirulina) platensis

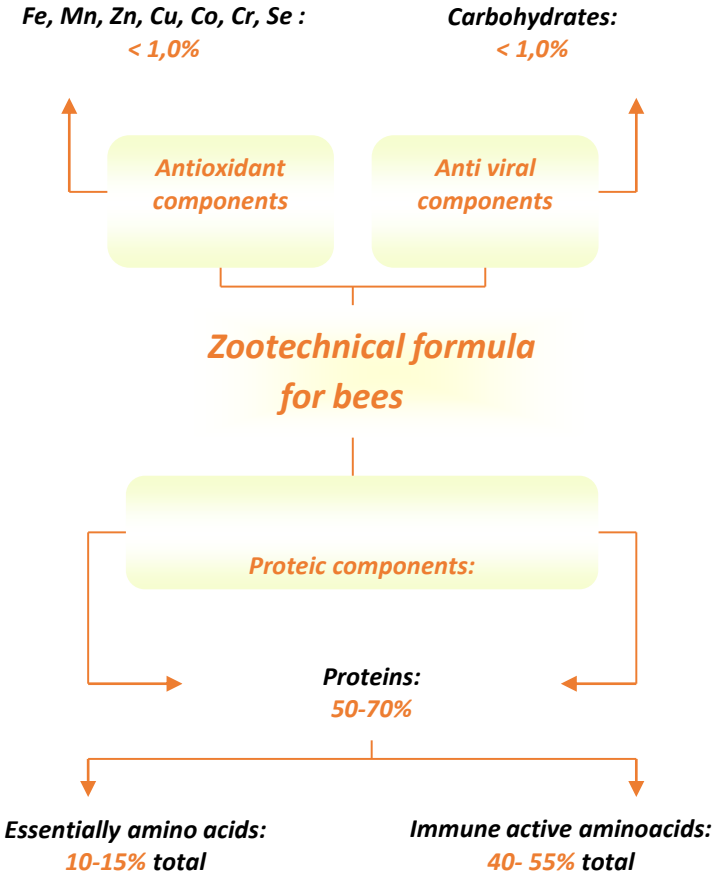
- **the most cultivated photosynthetic prokaryote planktonic filamentous cyanobacterium**
- **individual cells (about 8 µm in diameter)**
- **grows in subtropical alkaline lakes**
- **temperature optimum above 35 °C**
- **pH value between 9 and 10**

The elaboration of a new products by spirulina biomass biotechnological exploration



Integrate technological scheme


Tochopherol acetate
0,1-0,5%
Macroelements:
Mg, Na, K, P, Ca
Microelements:
Fe, Mn, Zn, Cu, Co, Cr, Se
Carotenoids
<0,5%
Pharmaceutical formulas
PSS
< 1,0%
Amino acids:
8-10%
Oligopeptides
(up to 10kDa)
5-6%
Glutamic a :
68% total
Alanine:
6% total
Aspartic a :
5%t otal
Glycine:
4,3%total
Cysteine:
4% total
Immune active amino acids: 9-11% total
Valine:
3,5% total
Serine:
3% total
Tryptophan
2,8% total
Threonine:
2,4% total
Arginine:
0,65% total
aminobutyric a :
0,4% total


Fe, Mn, Zn, Cu, Co, Cr, Se :
< 1,0%
Carbohydrates:
< 1,0%
Antioxidant components
Anti viral components
Zootechnical formula for bees
Proteic components:
Proteins:
50-70%
Essentially amino acids:
10-15% total
Immune active aminoacids:
40- 55% total

The integrate scheme of complex technologic cycle for new imunomodulating, osteoregenerative and anti anaemia preparations

Spirulina biomass with the predicted content of bioactive principles of Zn, Cr, and Fe.

The 1-st extraction and centrifugation

Biomass + Zinc, Chromium, Iron and Selen active complexes; Alcoholic extract I

Sediment I

Pigments extraction

Bioextract +Zinc, or/and Chromium, or/and Iron, or/and Selen active complexes Alcoholic extract II

2nd extraction and centrifugation

Bioextract +Zinc, or/and Chromium, or/and Iron, or/and Selen active complexes Aqueous extract I

Purification

Bioextract +Zinc, or/and Chromium, or/and Iron, or/Selen preparations

Bioextract +Zinc, or/and Chromium, or/and Iron, or/and Selen active complexes Aqueous extract II

Immunimodulating formula, capsulae 5 mg

Osteoregenerative formula, capsulae 5 mg

Anti anaemia formula, capsulae 5 mg

Conditioning, labeling packaging

New nutraceuticals from Arthrospira

SpiruFier

Proteins (58-68%)
Carbohydrates
(10-12%)
Lipids (3-5%)
Phycobiliproteins (6-9%)
Iron (1-1,15%)

SpiruChrom

Proteins (65-68%)
Carbohydrates
(15-20%)
Lipids (3-5%)
Phycobiliproteins (< 14%)
Chromium (0,3-0,5%)

SpiruSelen

Proteins (<67%)
Carbohydrates (10-12%)
Lipids (3-5%)
Phycobiliproteins (<15%)
Selenium (0,03%)

SpiruZinc

Proteins (61-68%)
Carbohydrates (<12%)
Lipids (5-7%)
Phycobiliproteins (9-11%)
Zinc (0,3-0,5%)

Obtained nutraceuticals are recommended in the complex therapy of the diverse etiology diseases and of the proteins, lipids and carbohydrates metabolism disorders, caused by the bio elements deficiency