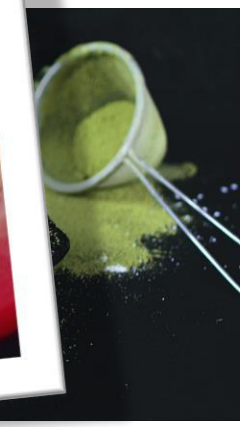
Allmicroalgae
natural products

Bright future for light-coloured Chlorella: Smooth, White and Yellow

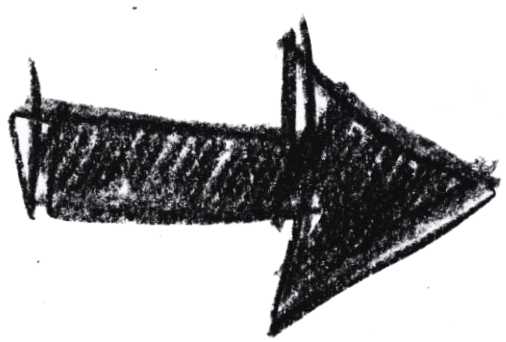
Maria Soares, Senior Fermentation Technician at Allmicroalgae – Natural Products

Organic *Chlorella vulgaris*



Challenges – Organoleptic Factors

- ✓ Color
- ✓ Taste
- ✓ Smell



Microalgae acceptability
on food suplements

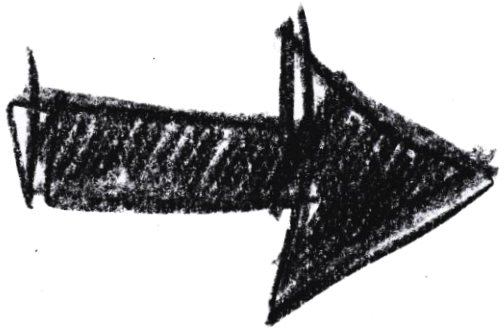
Challenges – Organoleptic Factors

- ✓ Color
- ✓ Taste
- ✓ Smell

Microalgae acceptability on food suplements

Challenges – Organoleptic Factors

- ✓ Color
- ✓ Taste
- ✓ Smell



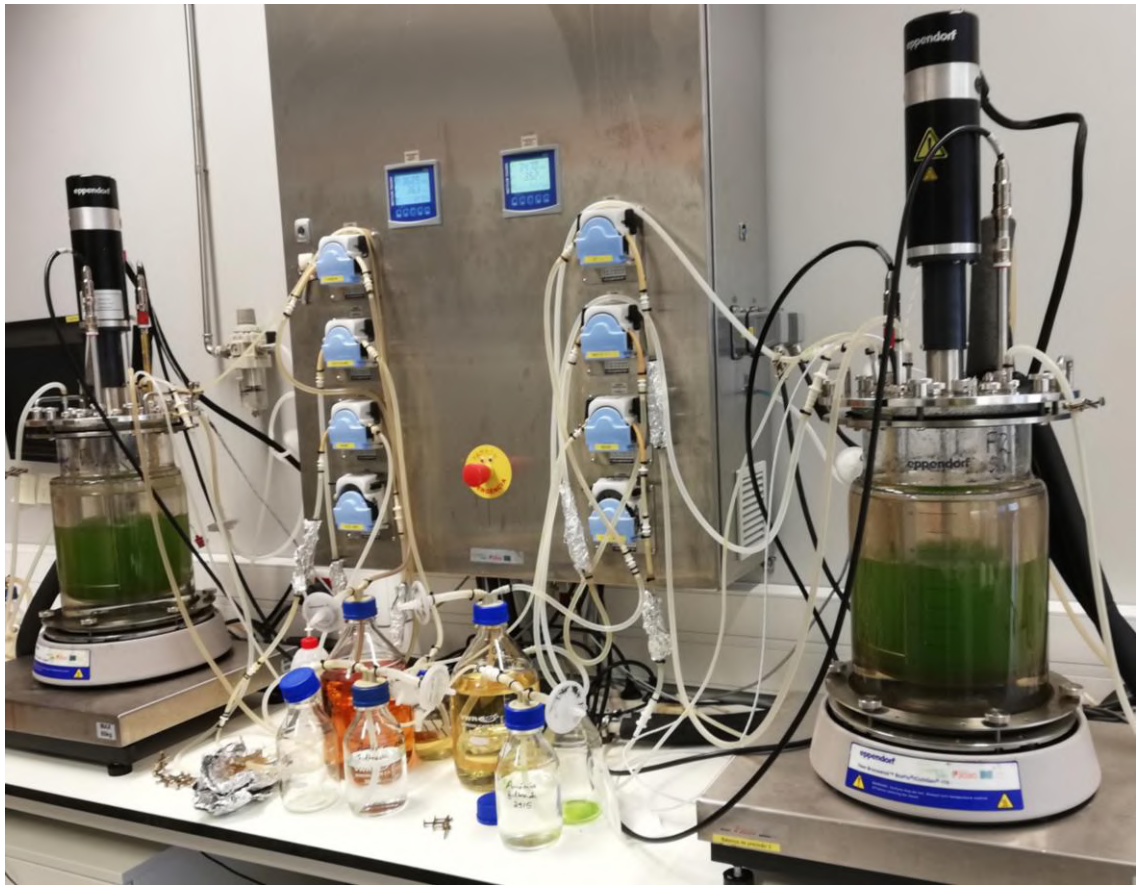
Chlorophyll Content

Fermentation Reactor

Reator de Fermentação

Smooth Chlorella

Smooth Chlorella



Fermentation Growth → **Light Absent Process** → **Lower Chlorophyll Content**

Fermentation
Reactor
Reator de
Fermentação

Smooth Chlorella

Honey Chlorella

Fermentation
Reactor
Reator de
Fermentação

Smooth Chlorella

Honey Chlorella

White Chlorella

Honey and White Chlorella

frontiers in Bioengineering and Biotechnology

ORIGINAL RESEARCH
published: 19 May 2020
doi: 10.3389/fbioe.2020.00469

Isolation and Characterization of Novel Chlorella Vulgaris Mutants With Low Chlorophyll and Improved Protein Contents for Food Applications

Lisa Schüler[1†], Etiele Greque de Morais[1†], Mafalda Trovão[2], Adriana Machado[2], Bernardo Carvalho[2], Mariana Carneiro[3], Inês Maia[1], Maria Soares[2], Paulo Duarte[1], Ana Barros[2], Hugo Pereira[1], Joana Silva[2] and João Varela[1]*

[1] Marine Biotechnology Group, Centre of Marine Sciences, University of Algarve, Faro, Portugal, [2] Allmicroalgae Natural Products S.A., Pataias, Portugal, [3] LEPABE – Laboratory for Process Engineering, Environment, Biotechnology and Energy, Faculty of Engineering of the University of Porto, Porto, Portugal

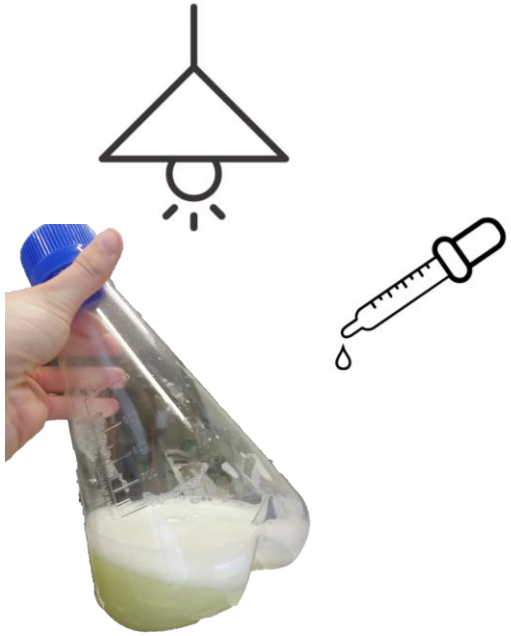
Allmicroalgae
natural products

CCMAR

UAlg
UNIVERSIDADE DO ALGARVE

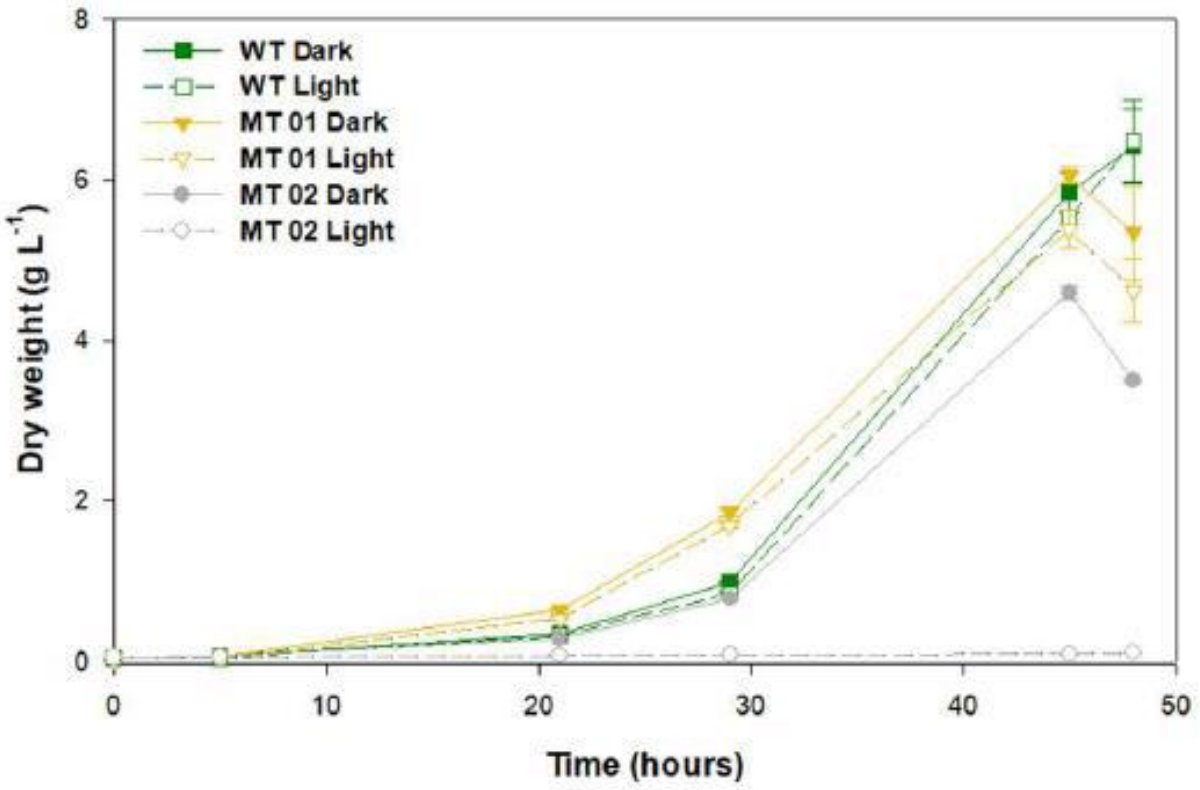
GreenCoLab
Joining the pieces in algal biotechnology

Honey and White Chlorella – Random Mutagenesis

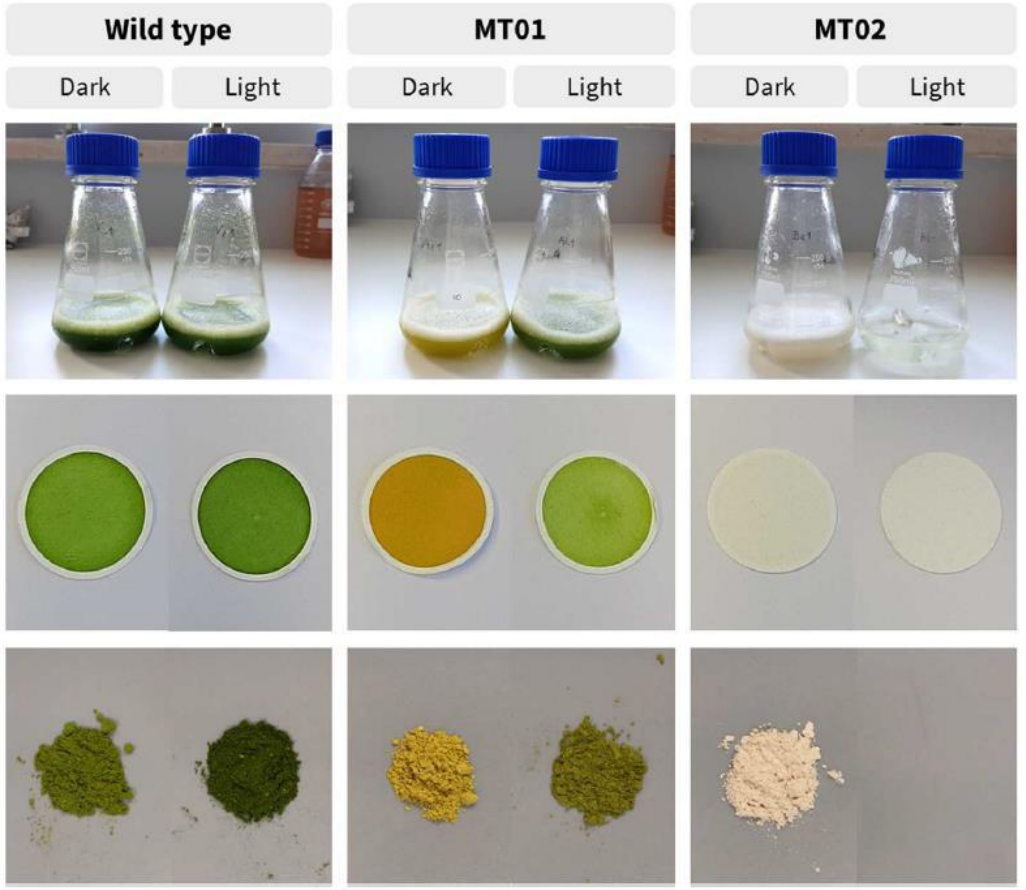


Culture Grown in stress conditions and Chlorophyll inhibitors → **Strain Selection** → **Yellow and White stable strains succefully grown**

Honey and White Chlorella - Growth



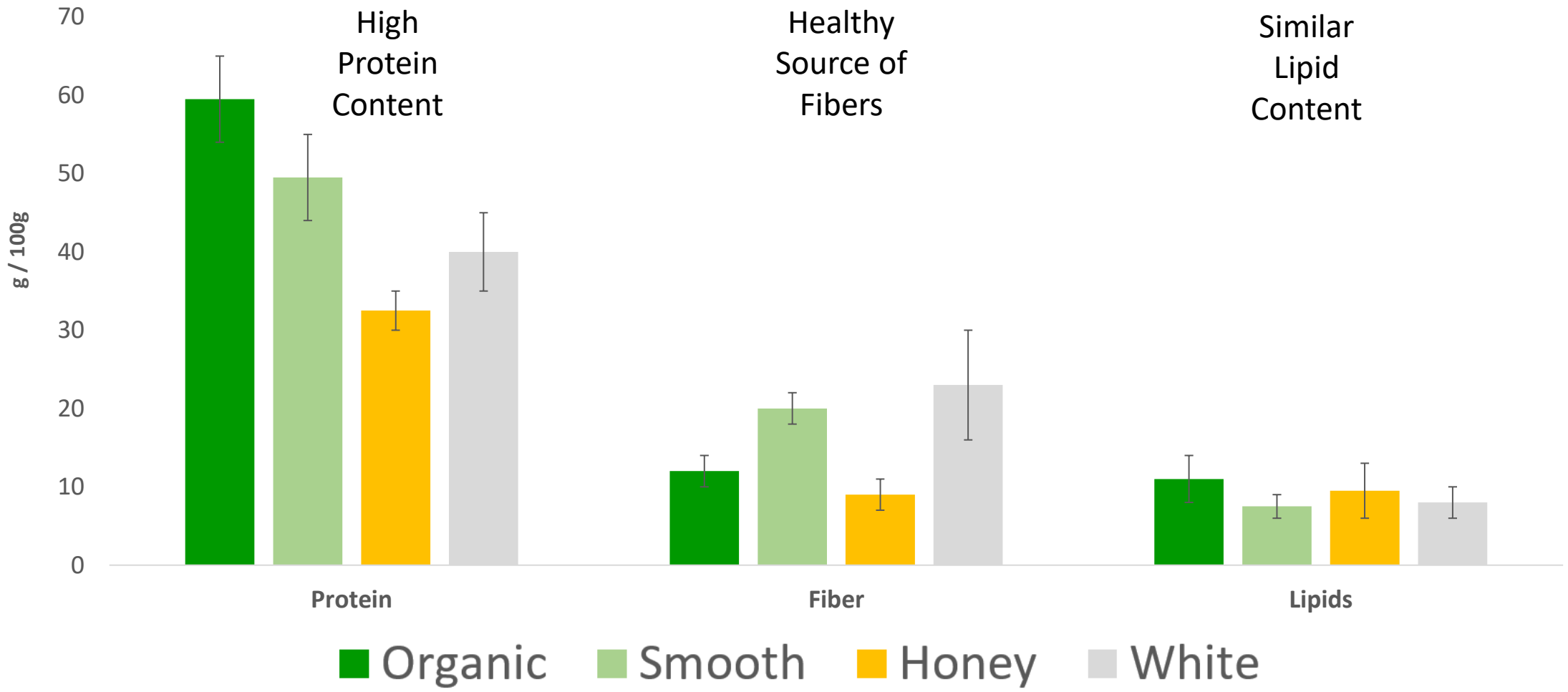
Growth curves of wild type and mutants, under light and dark conditions grown in 250-mL Erlenmeyer flasks for 48 h.



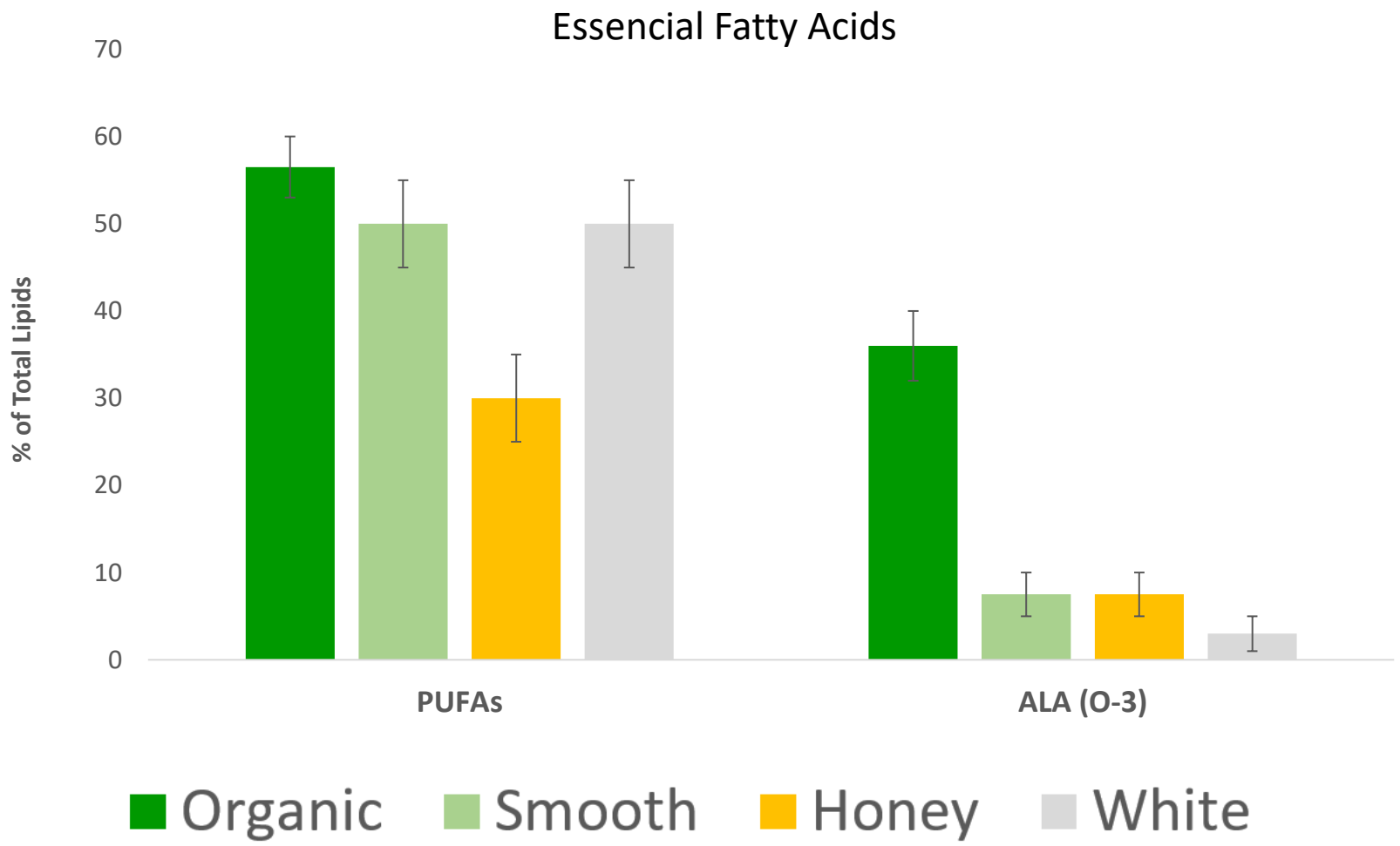
Different coloration of wild type and mutant cultures, dry weight filters and freeze-dried biomass, grown under light and dark conditions in 250-mL Erlenmeyer flasks, after 42 h.

Honey and White Chlorella - Growth

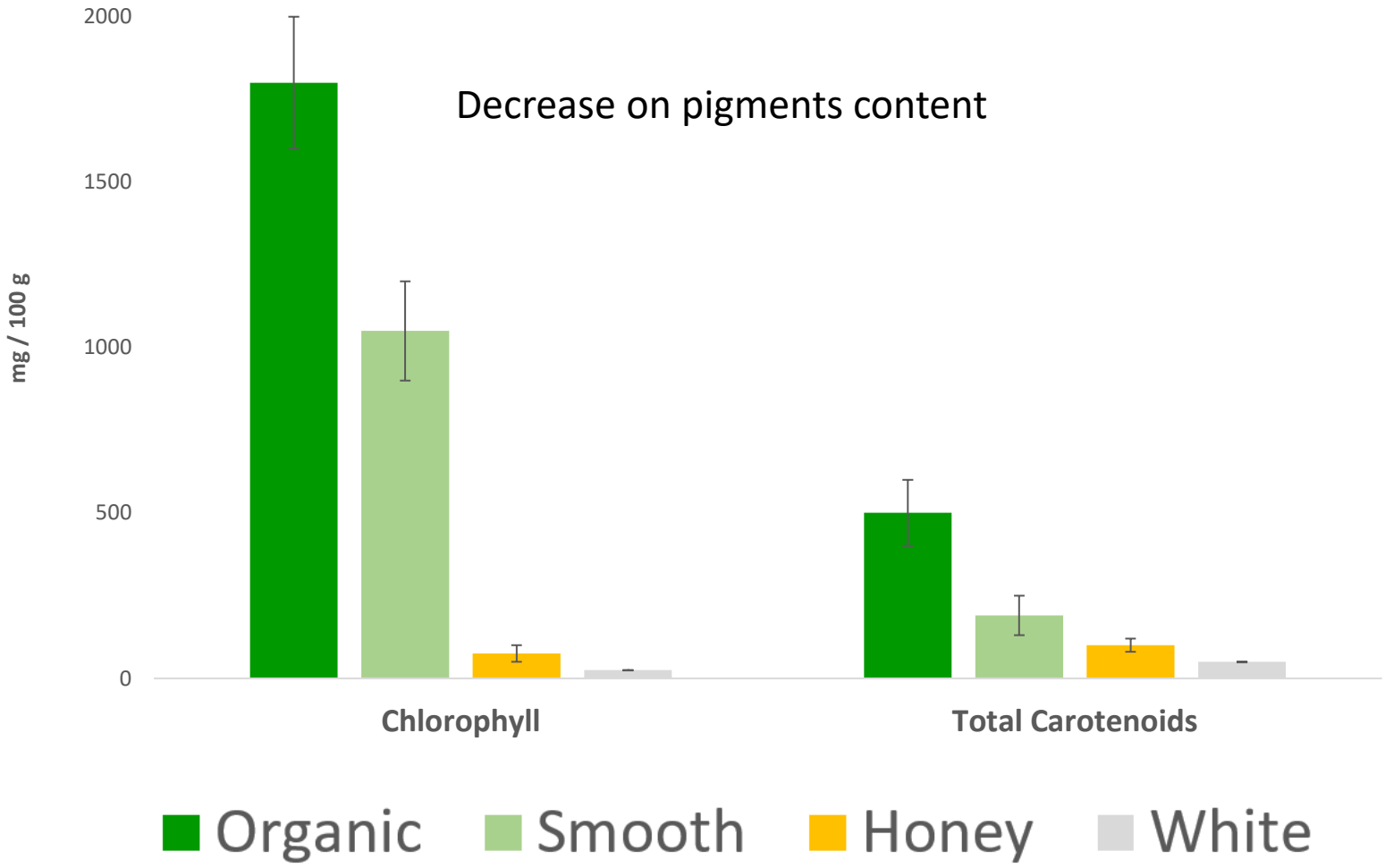
Honey and White Chlorella - Profile



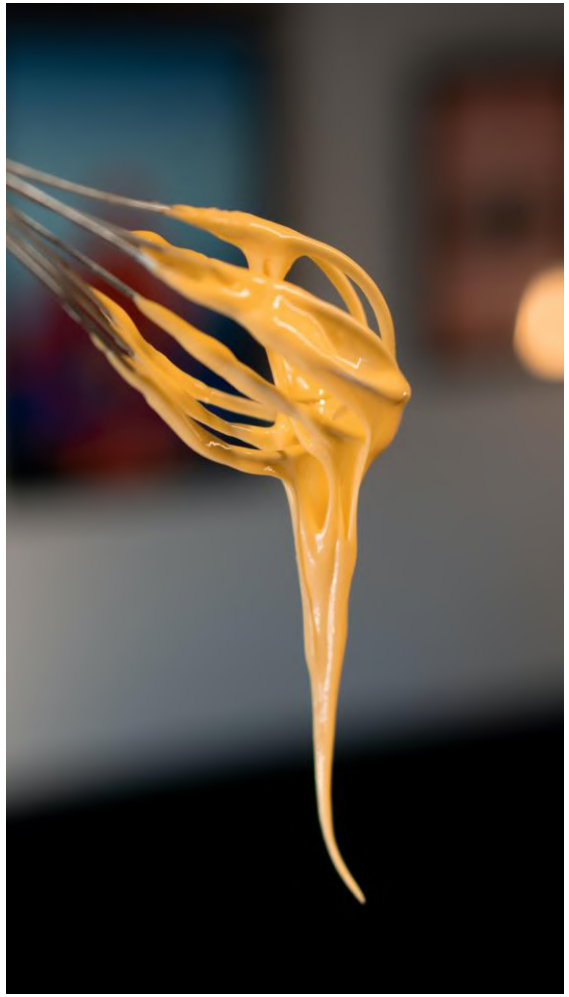
Honey and White Chlorella - Profile



Honey and White Chlorella - Profile

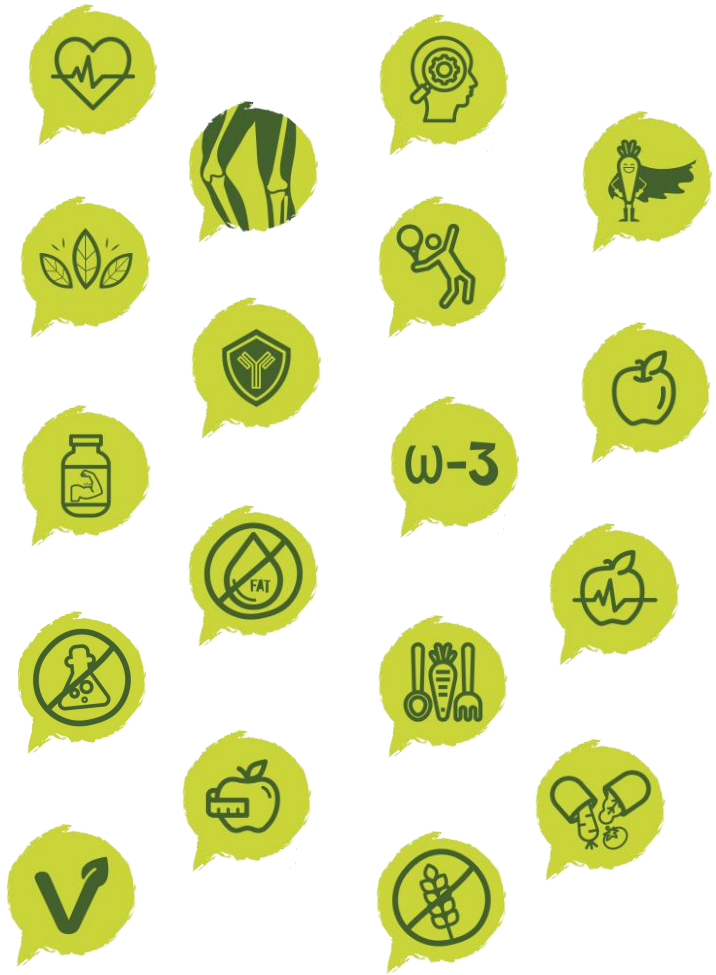


Honey and White Chlorella



Light-coloured *Chlorella vulgaris*

- ✓ Same species with improved characteristicts – GMO Free
- ✓ Well balance biochemical profile: rich in protein and bioactive compounds
- ✓ Improved Organoleptic Features
- ✓New nutricional aplications
- ✓ Increased health benephitcs
- ✓ Vegan suitable and possible replacer of other animal source suplements



A Brighter Future to Come:

- ✓ Organic Cultivation
- ✓ Improved Protein Content

Bright Fermentation Team

Thank You!