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Recovery of soluble proteins from *Chlorella V.* by bead-milling and microfiltration

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Shuli Liu, Imma Gifuni, Hugo Mear, M. Frappart, Estelle Couallier. Recovery of soluble proteins from *Chlorella V.* by bead-milling and microfiltration. *Algaeurope 2020*, Dec 2020, Rome (online), Italy. hal-04212185

HAL Id: hal-04212185

<https://hal.science/hal-04212185v1>

Submitted on 20 Sep 2023

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Recovery of soluble proteins from *Chlorella V.* by bead-milling and microfiltration

- ✔ Modification during the cell disruption
- ⚙ Concentration
 - different rheological behaviour
- ⚙ pH, maceration time & temperature, ionic strength modifications
 - Physicochemical conditions
- ? Effect on the whole process

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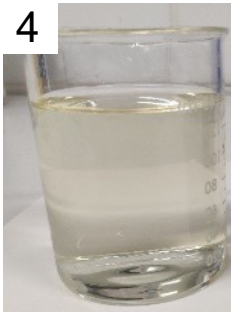

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1-3, December 2020

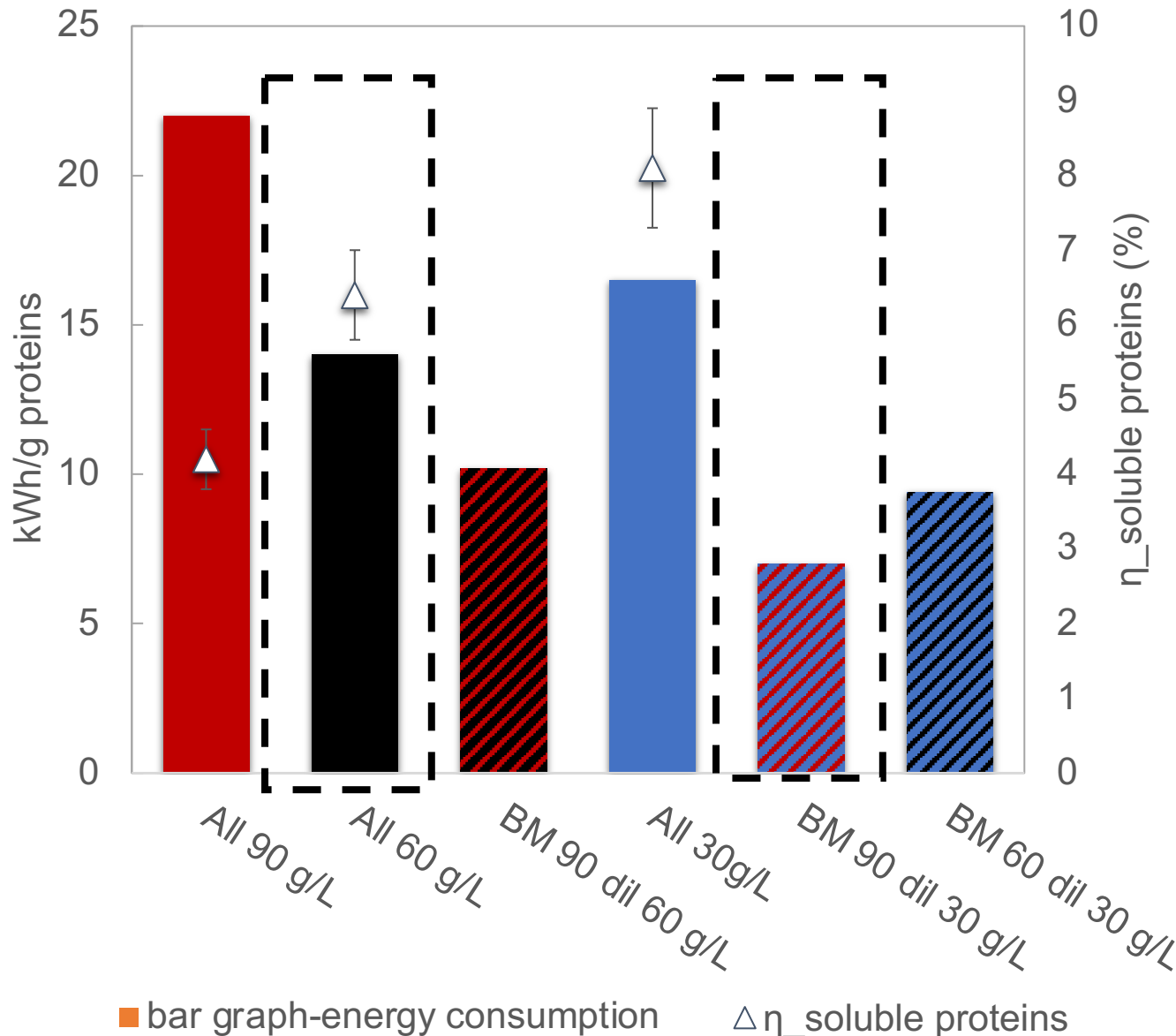
Process flow applied for the recovery of soluble proteins

! Ensure the integrity of the molecules

! Limit energy consumption

Process	Fraction i	Tested conditions	Real product
Bead milling	0: Frozen paste	Biomass dilution 30 - 60 - 90 g/L	0 
	1: Diluted biomass		2  3 
Centrifugation	2: Lysate	Lysate dilution, pH, maceration time & temperature, ionic strength modifications	3: Supernatant 3bis: Pellet
Microfiltration	3: Supernatant		4: Permeate 4bis: Retentate
	4bis: Retentate	Supernatant dilution	4  4bis 

Overall process balance and energy consumption



Best scenario:

- ✓ Dilution before process: 60 g/L
- ✓ Dilution between process:
90 g/L(milling) + 30 g/L(centrifugation, filtration)
- ✓ VRR=20 → 3.5 kWh/g
- A maceration at pH 7, 20 °C and NaCl 0.1M allowed soluble proteins recovery

The key point:

- decrease the soluble proteins retention rate during filtration.
- understand the organization of all compounds during the processes

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