

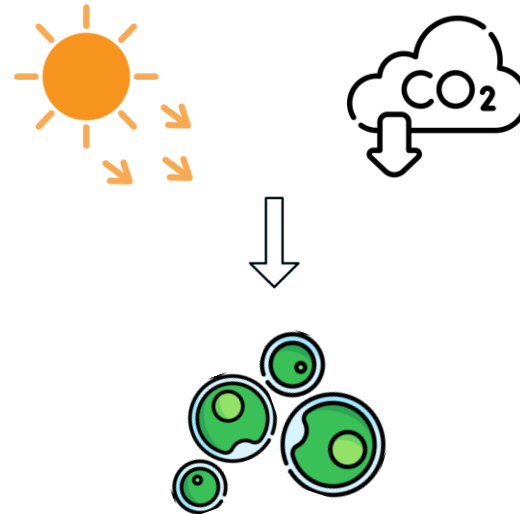


Optimisation and acclimatisation of *Chlorella vulgaris* grown on cow manure based digestate

Shruti Katti, Marcella Fernandes De Souza, Erik Meers

Date: 04/03/2026

What are **Microalgae**?



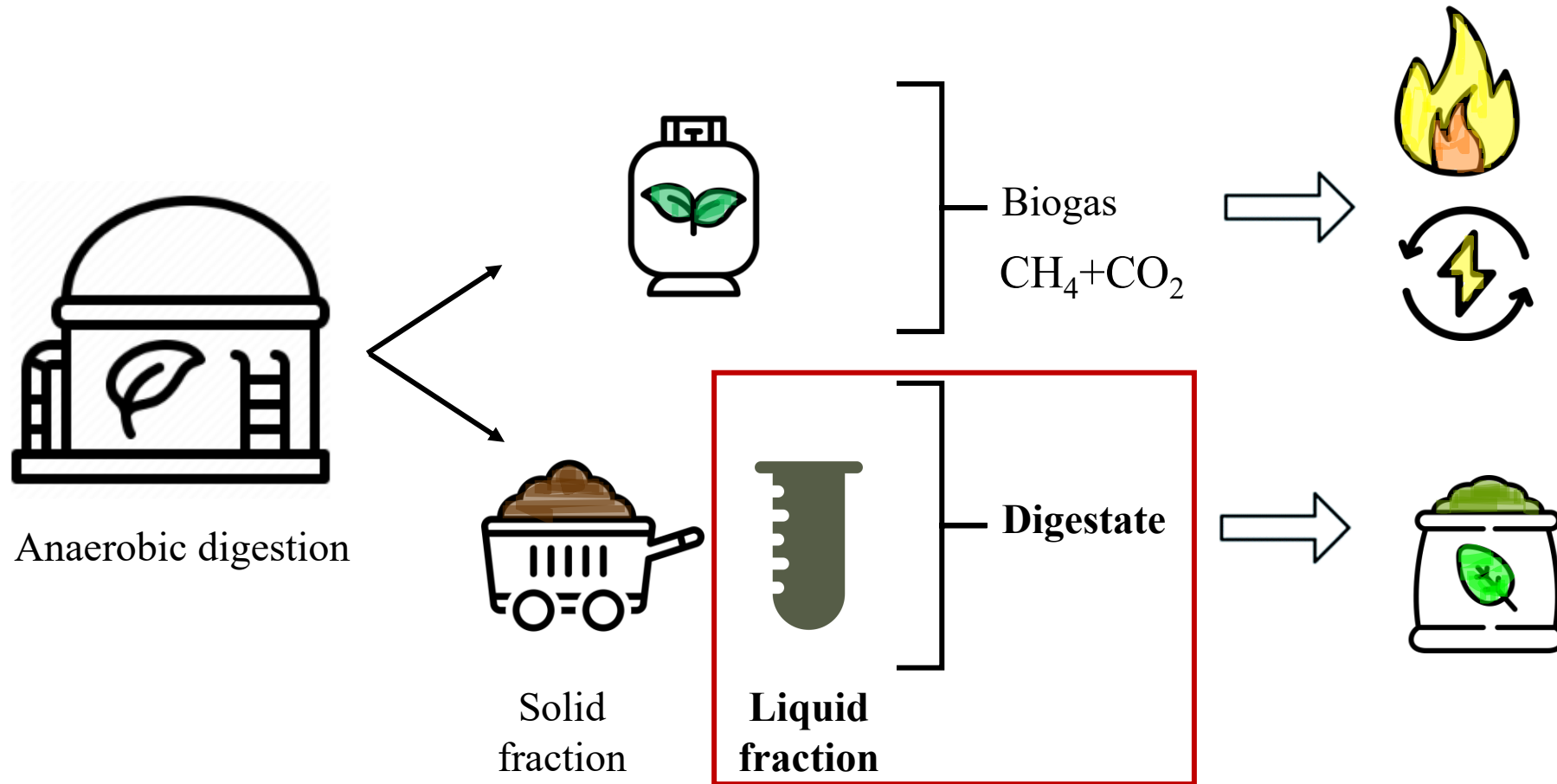
Source of novel biomass
and high-value nutritious
compound



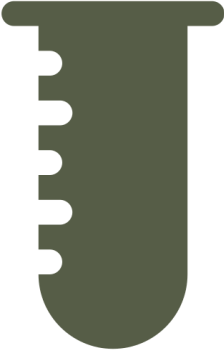

Dietary supplements

- Chlorophyll
- Carotenoids
- Lipids
- Proteins
- Essential amino acids

What is **Digestate**?

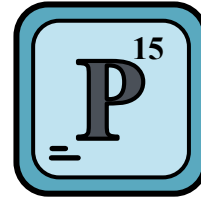
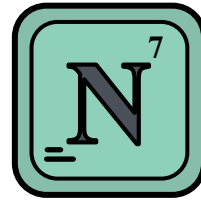


Is there a synergy?

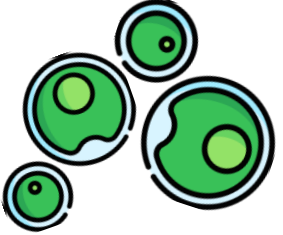




Nitrates Directive

Land application restriction



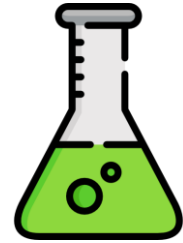
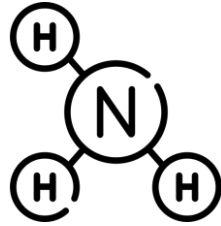
Chlorella vulgaris
(Freshwater species)

Digestate as a growth medium → Sustainable nutrient source

What did we do?

Growth



**Microalgae
cultivation**

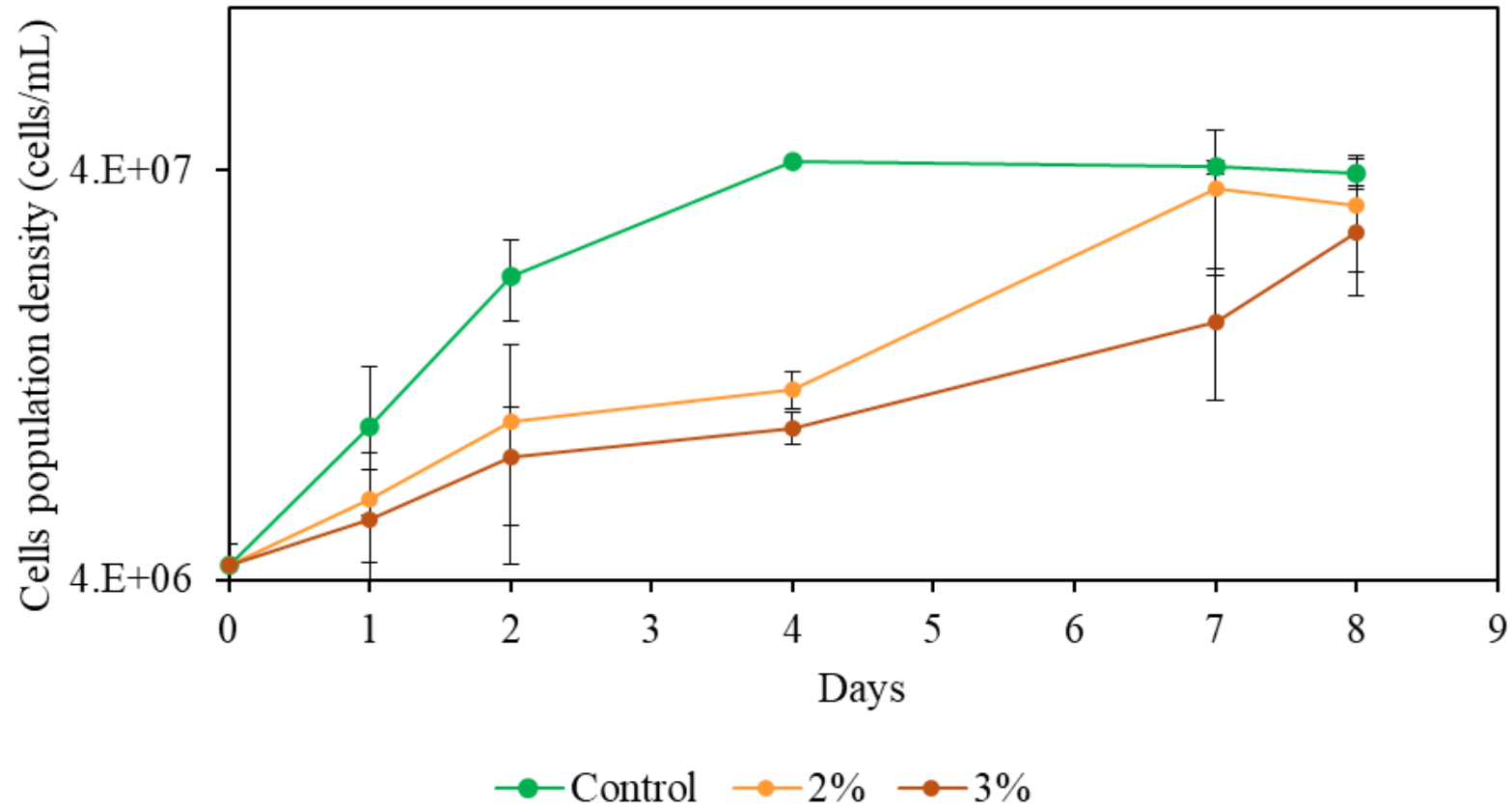
**Digestate pre-
treatment**

→ Aim to gradually reach a **15% digestate concentration** for microalgae cultivation in *Chlorella vulgaris*

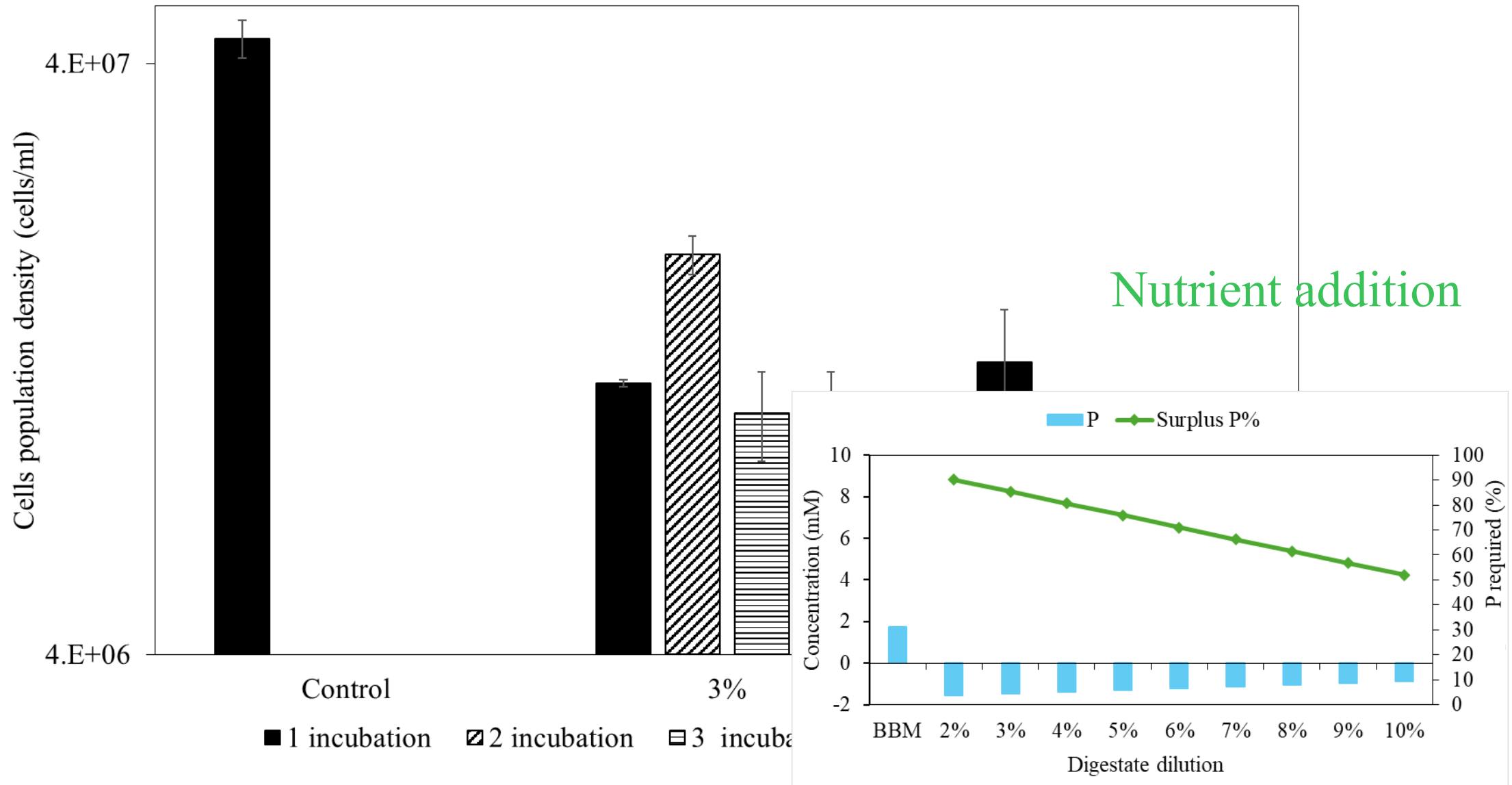
→ **Acclimatisation**

- ✓ Evaluate the effect of:
 - ✓ **Nutrient** deficiency
 - ✓ **Ammonia (NH₃)** removal on algal growth.

What concentration do we start with?

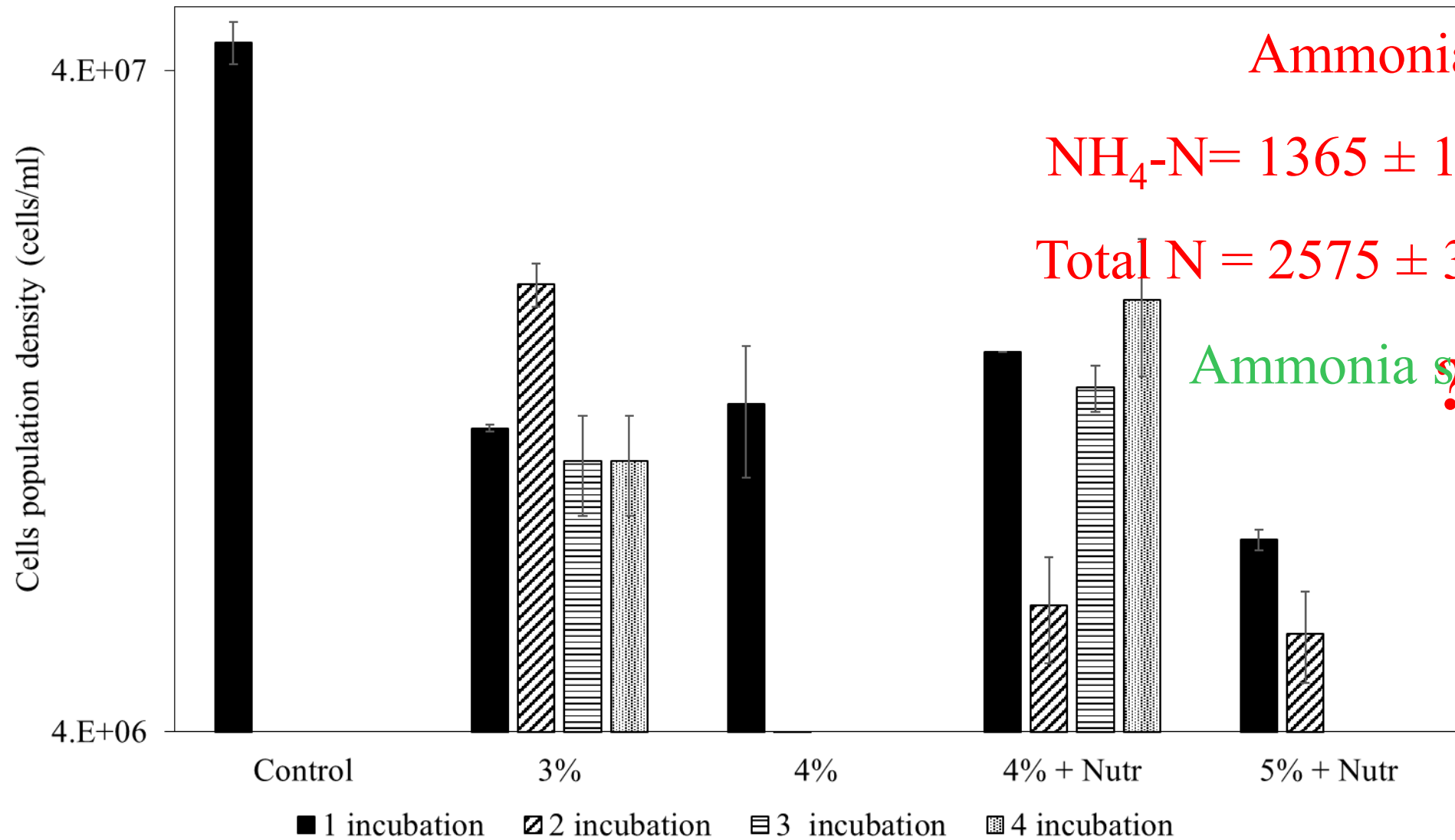


Effect of digestate

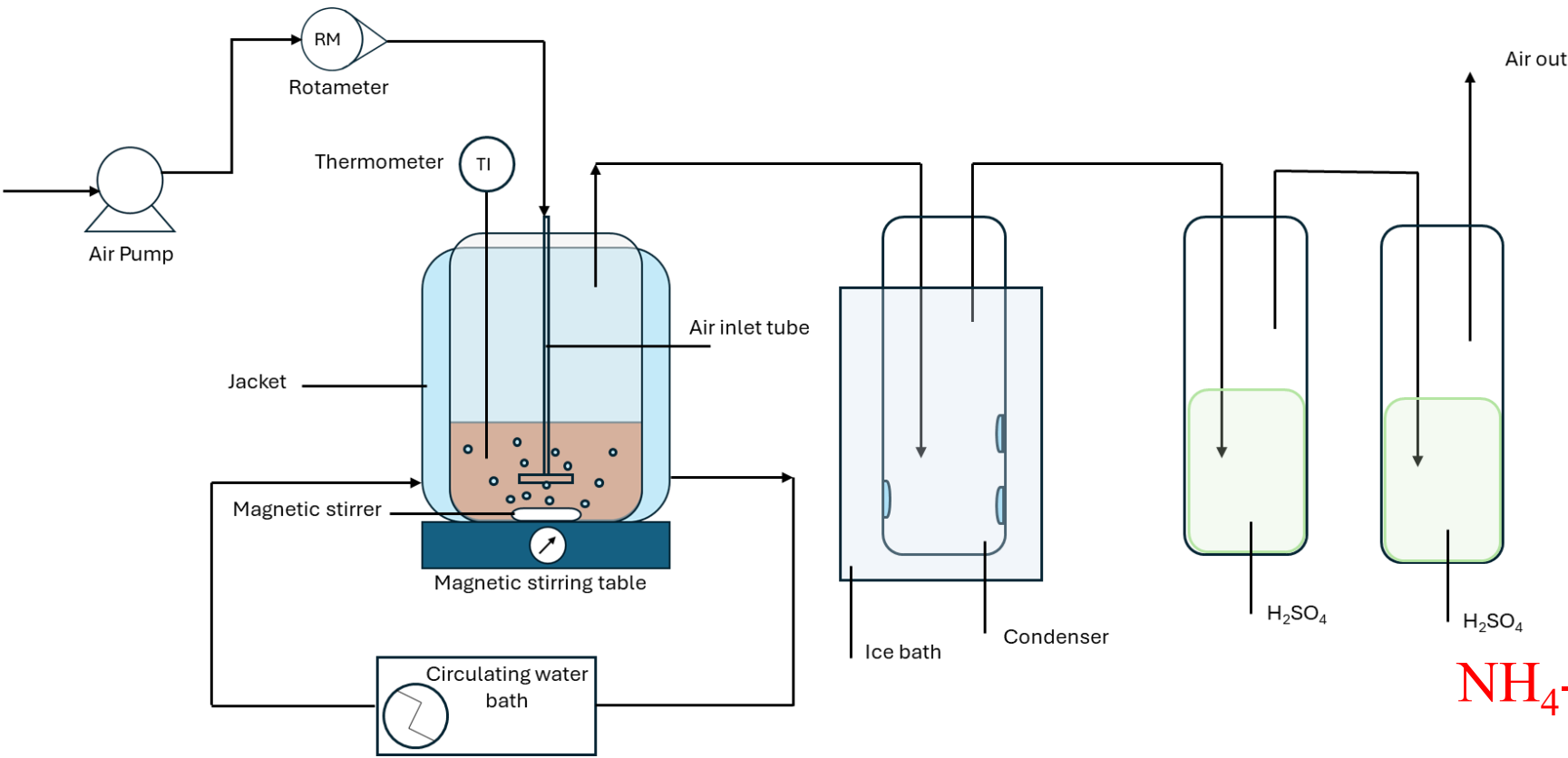


Control: BBM synthetic medium; %: % v/v Digestate

Effect of nutrient addition



Stripping of digestate



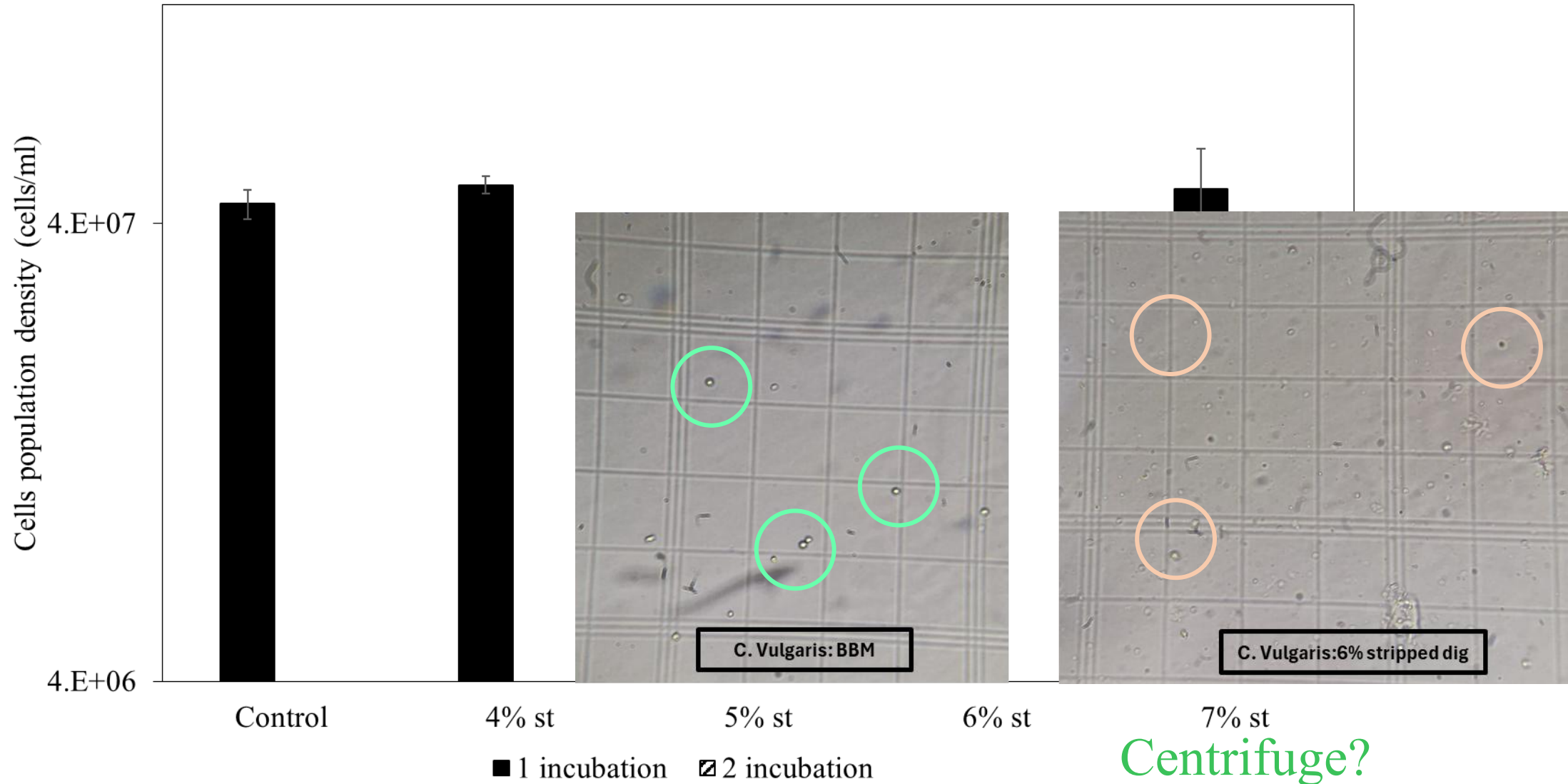
Temperature: 60°C
Airflow rate: 4L/min
Time: 4hr

$NH_4-N_{initial} = 1365 \pm 152.7 \text{ mg/L}$

$NH_4-N_{final} = 663.4 \pm 92.98 \text{ mg/L}$

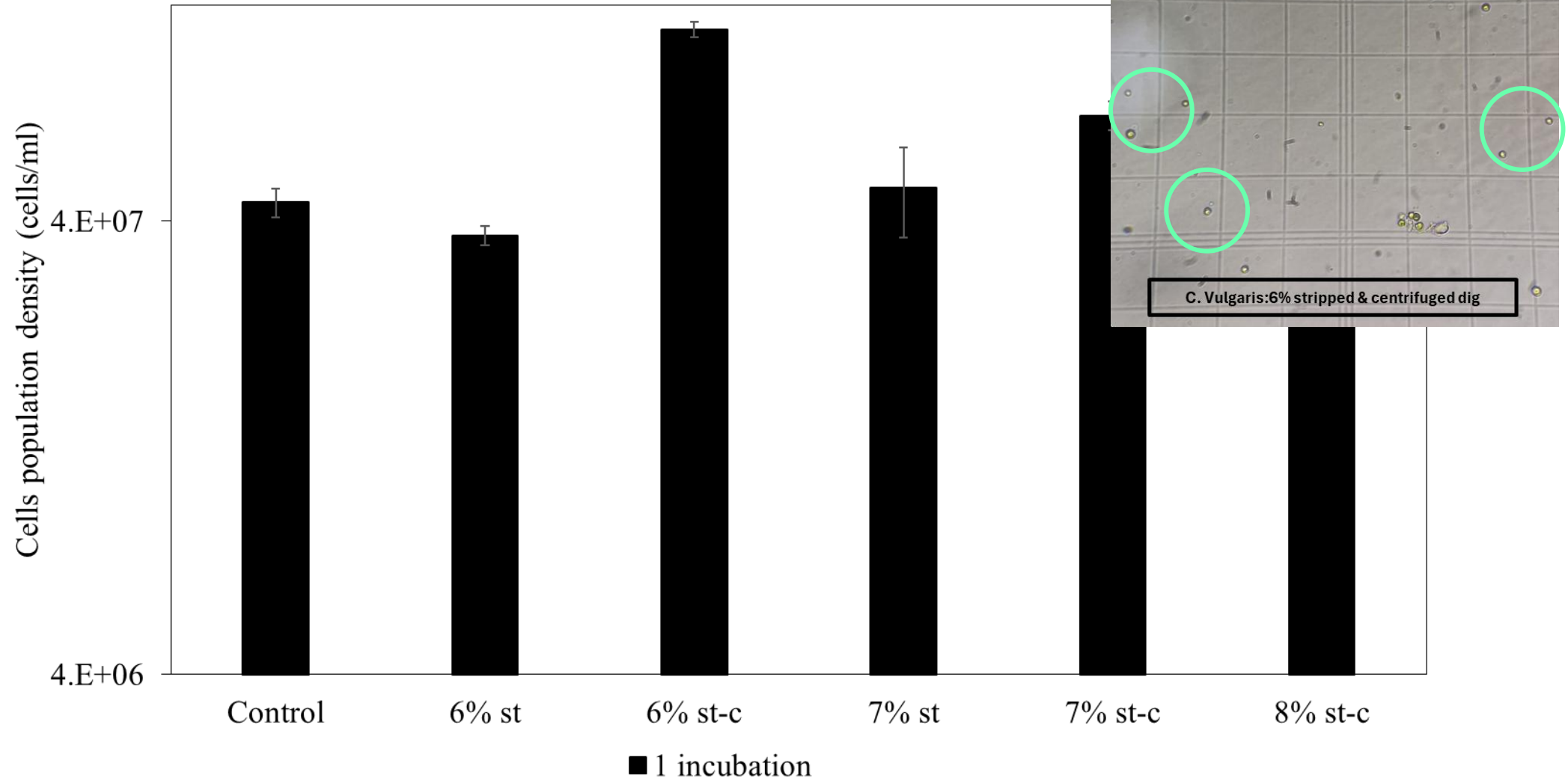
Nitrogen removed: $55.6 \pm 3.5 \%$

Effect of stripping

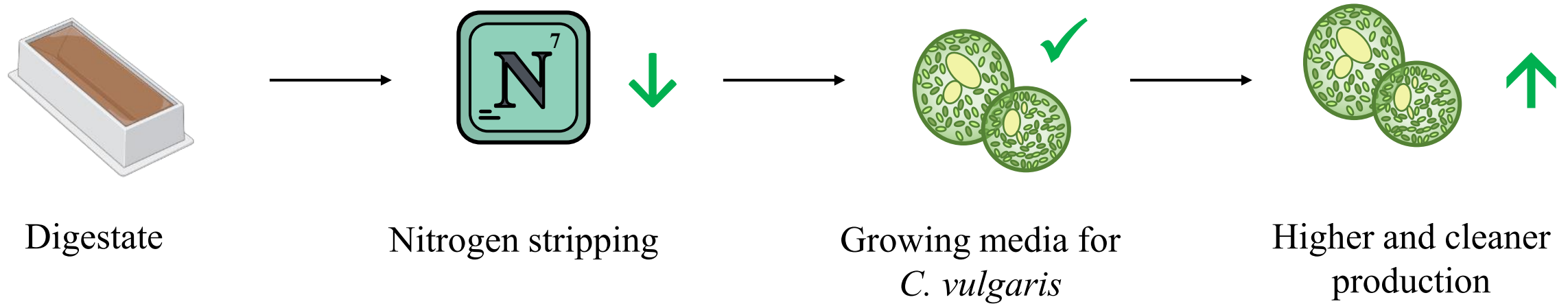


Control: BBM synthetic medium; %: % v/v Digestate; st: stripped digestate

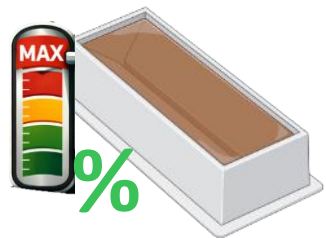
Effect of centrifuge



Conclusion



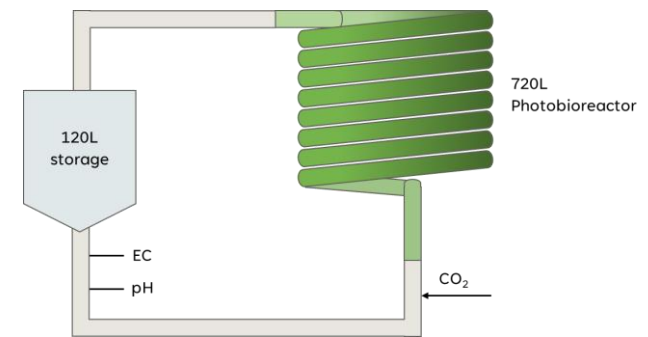
What next?



Max digestate conc.



Effect of colour removal



Scalability

Acknowledgements

This study was financially supported by the European Union's HORIZON-CL5-2021-D3-03-16 program under Grant Agreement No 101084297.



<https://sempre-bio.com/>



<https://www.linkedin.com/in/re-source-lab-b7223929b>

Appendix