

BIOCHEMICAL COMPOSITION AND CONVERSION OF METHYL ESTERS VIA DIRECT MICROALGAE BIOMASS TRANSESTERIFICATION

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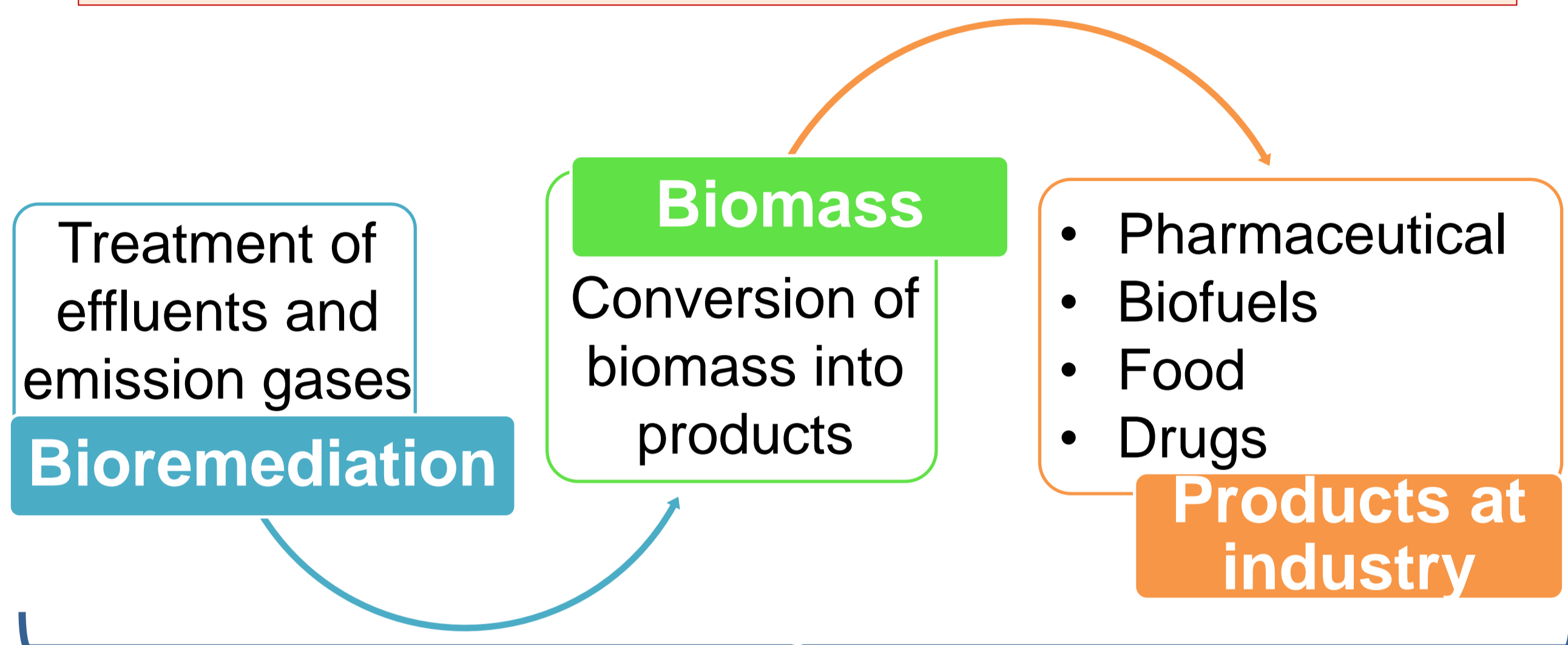
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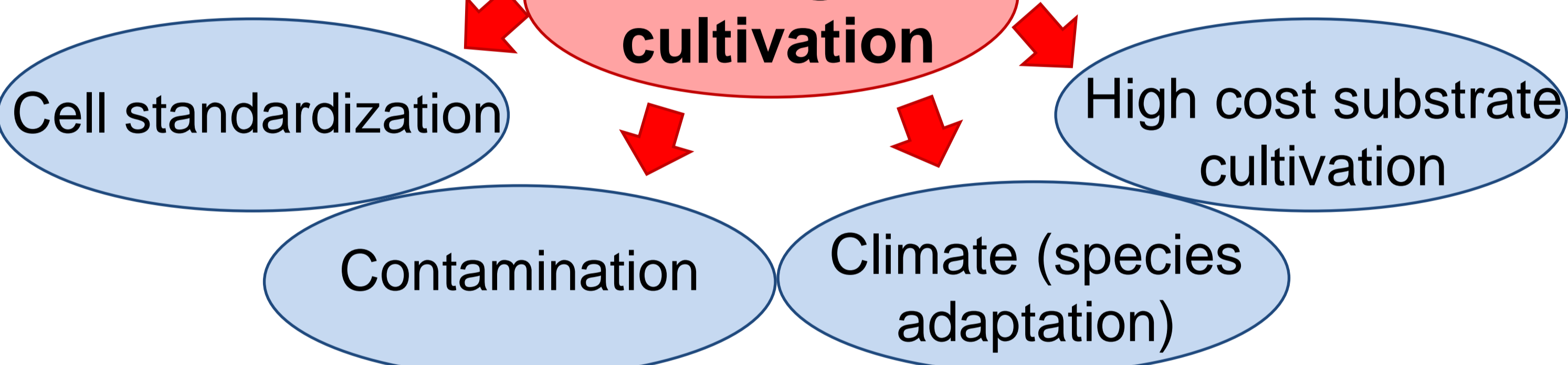
INTRODUCTION



How microalgae can contribute to a more sustainable future?



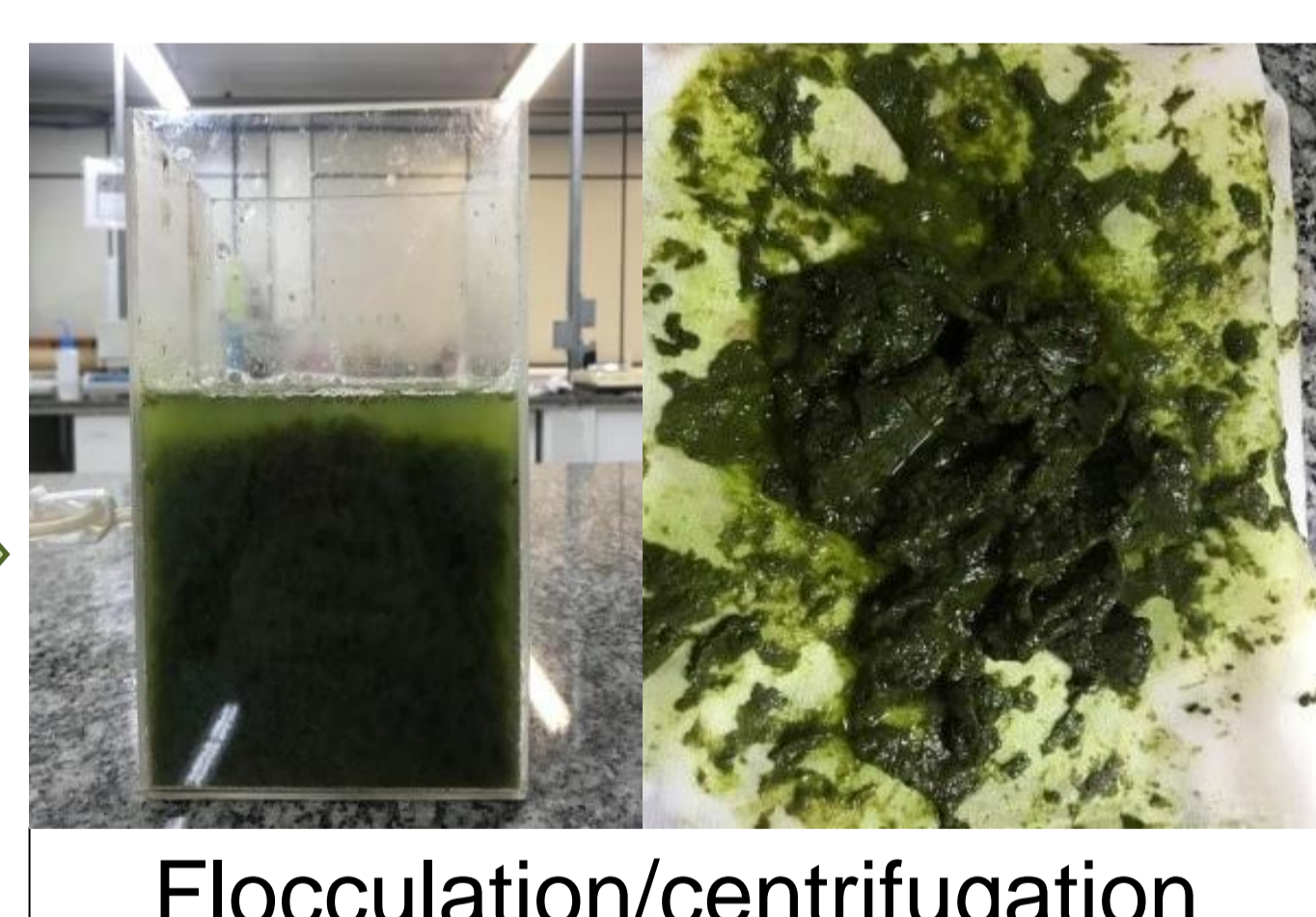
Challenges in cultivation



MATERIALS AND METHODS

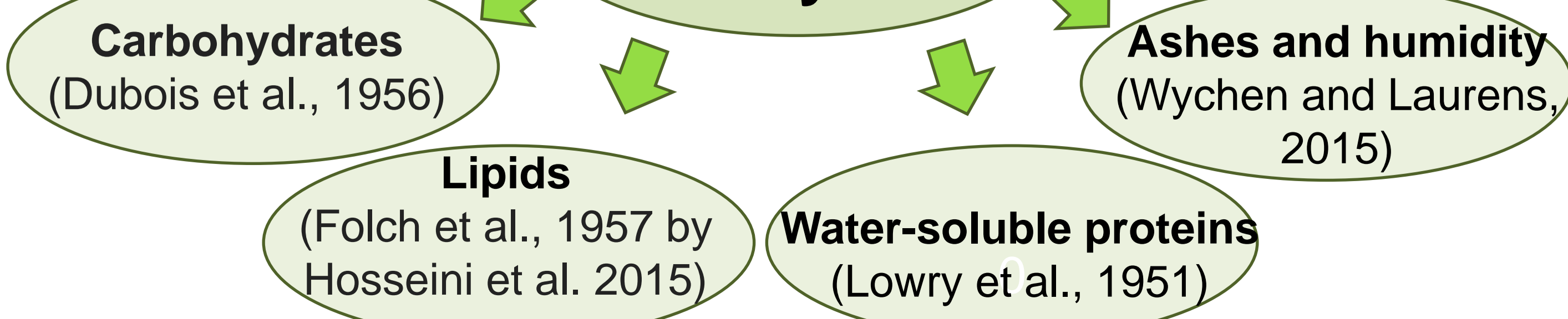
1. BIOMASS PRODUCTION

- Native microalgae from Curitiba – PR, Brazil;
- Genus *Tetradismus* and *Scenedesmus*



2. BIOMASS CHARACTERIZATION

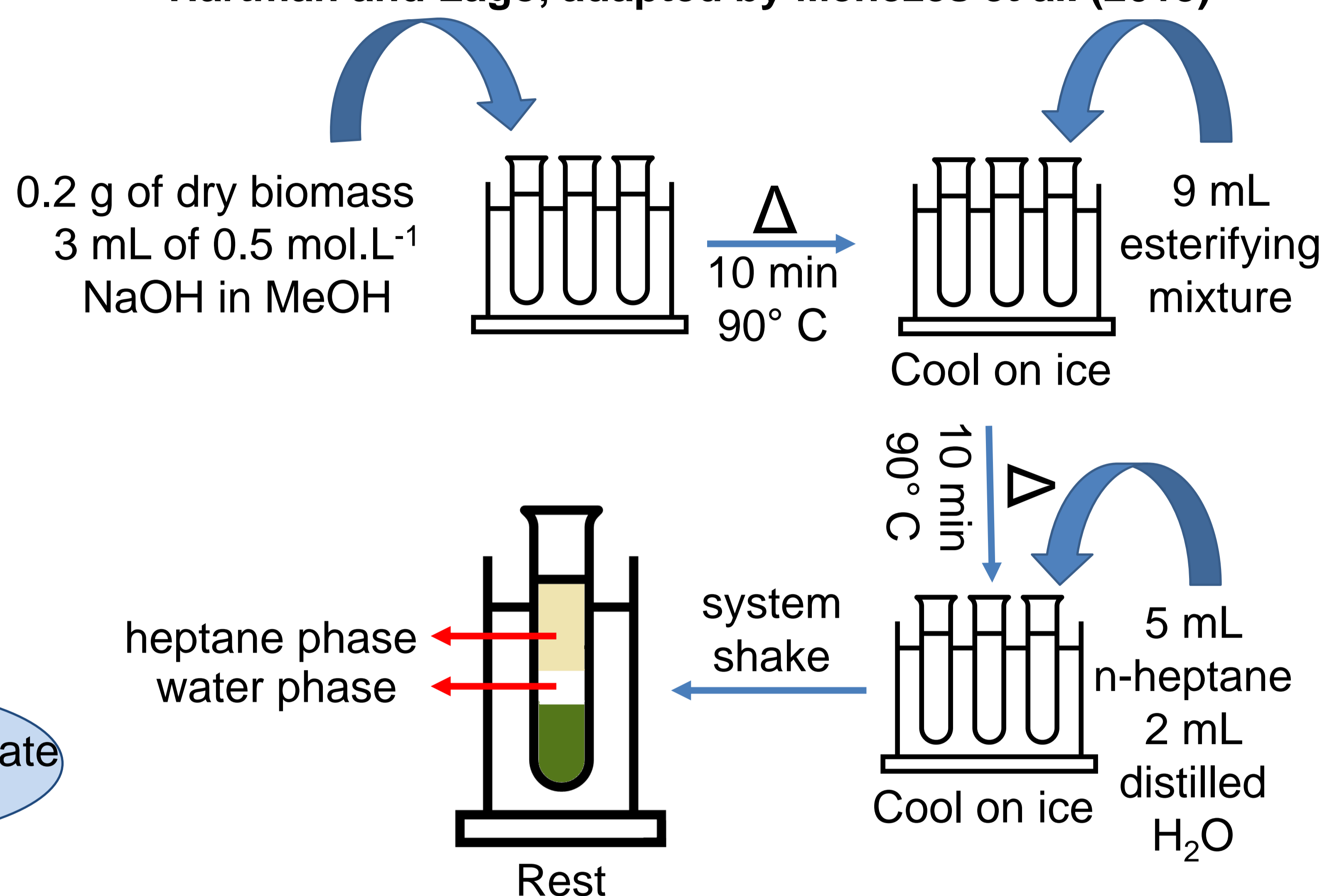
Biomass analysis



MATERIALS AND METHODS

3. DIRECT BIOMASS TRANSESTERIFICATION

Hartman and Lago, adapted by Menezes et al. (2013)



4. ESTER YIELD

- 1 mL of the heptane phase deposited in a previously weighed tube
- After complete evaporation of the solvent, weigh the tube again
- Equation 1 was used to calculate the esters yield

$$Y_{ester} = \left(\frac{X_{tubefinal} - X_{tubeinicial}}{X_{biomass} - X_{waterweight}} \right) * 100 \quad \text{Equation 1}$$

RESULTS

1. BIOMASS CHARACTERIZATION

COMPOSITION	%
Carbohydrates	4.42 ± 0.96
Lipids	7.1 ± 0.77
Water-soluble proteins	19.66 ± 2.19
Ashes	7.79 ± 0.25
Humidity	5.44 ± 0.55

2. ESTER YIELD

- Ester yield after the first direct transesterification (DT)

6.6 ± 0.29 %

CONCLUSION

- Biomass production using a more sustainable process;
- The biomass has potential as a source of protein, using biodigested swine manure for cultivation;
- From the DT, 92.96% of the lipids were converted, indicating that they belong to the storage class.