

## Anaerobic Digestion of pre-treated Microalgae Biomass

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### ABSTRACT

Anaerobic digestion is an appealing technology for the organic effluents valorisation as it adds value by providing biogas, a local renewable energy source, several bioactive compounds for industrial applications and nutrient-rich streams for local landscape proposals. Microalgae have been reported as attractive feedstock for biogas production but their cell membrane structure was identified as limiting the anaerobic conversion efficiency.

The aim of this work was to evaluate the importance and the effect of pre-treatments comparatively to the raw microalgae biomass. *Chlorella vulgaris* microalgae biomass was cultivated in brewery secondary effluents and used as a recalcitrant effluent to valorise by anaerobic digestion process. Microwave and autoclaving procedures were used as pre-treatments to promote the degradability of the microalgae biomass. Substrates composition, cell membrane damage and conversion efficiency of the anaerobic digestion process were comparatively evaluate in biomass with and without pre-treatment.

**Keywords:** microalgae biomass, cell disruption, microwave and autoclaving pre-treatments, anaerobic digestion

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