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Silvia Greses, Elia Tomás-Pejó, Cristina González-Fernández

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# **Agroindustrial waste as a resource for volatile fatty acids production via anaerobic fermentation**

Silvia Greses<sup>1\*</sup>, Elia Tomás-Pejó<sup>1</sup>, Cristina González-Fernández<sup>1</sup>.

<sup>1</sup>Biotechnological Processes Unit, IMDEA Energy, Madrid, Spain (e-mail: silvia.greses@imdea.org, elia.tomas@imdea.org, cristina.gonzalez@imdea.org)

\*Corresponding author: silvia.greses@imdea.org

## **Abstract**

This study evaluated the feasibility of the anaerobic digestion as a sustainable valorisation strategy for volatile fatty acids production from agroindustrial waste (cucumber, tomato and lettuce). High bioconversion efficiencies were reached by operating the reactors at 25°C, 3 g VS·d<sup>-1</sup>·L<sup>-1</sup> with pH adjustment. Cucumber fermentation achieved the highest bioconversion (52.6%), whereas tomato degradation was the least efficient bioprocess (40.1%) due to the low pH (5.6) that partially inhibited the hydrolytic and acidogenic activities. In all cases, carboxylic acid profiles were mainly composed of volatile fatty acids with even carbon number. The developed microbial community exhibited high hydrolytic and acidogenic activities associated to carbohydrates degradation. This microbial population was dominated by Firmicutes phylum and showed a lack of acetogenic bacteria related with CH<sub>4</sub> production, resulting in a remarkably high VFAs accumulation.

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