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Comment on "A compilation and bioenergetic evaluation of syntrophic microbial growth yields in anaerobic digestion" by Patón, M. and Rodríguez, J. [Water Research 162 (2019), 516–517]

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Abstract

Recent efforts have focused on providing a systematic analysis of syntrophic microbial growth yields. These biokinetic parameters are key to developing an accurate mathematical description of the anaerobic digestion process. The agreement between experimentally determined growth yields and those obtained from bioenergetic estimations is therefore of great interest. Considering five important syntrophic groups, including acetoclastic and hydrogenotrophic methanogens, as well as propionate, butyrate and lactate oxidizers, previous findings suggest that measured and estimated growth yields were consistent only for acetoclastic methanogens. A re-analysis revealed that data are also consistent for lactate oxidizers and hydrogenotrophic methanogens, whereas the limited data available for propionate and butyrate oxidizers is unsupportive of firm conclusions. These results highlight pertinent challenges in the analysis of microbial syntrophy and encourage more accurate measurements of syntrophic microbial growth yields in the future.

Keywords

Microbial growth yield; Bioenergetics; Syntrophy; Anaerobic digestion; Individual biomass quantification