

Co-culture of *Lactobacillus* and *Megasphaera* species to Produce Medium-Chain Carboxylic Acids in Mimetic Microbiome System

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Natural selection leads to efficient metabolic interactions between microbial communities in relation to the consumption of carbon and energy sources. It has been known that the selection process can be used to adjust microbial communities to synthesize useful products from waste. A classic example of such is anaerobic digestion (AD), where organic matter in wastewater is converted to methane as a valuable fuel. *Lactobacillus* and *Megasphaera* genus can be cultured together to produce industrially useful medium-chain carboxylic acids (MCCAs). In this study, *Lactobacillus* and *Megasphaera* species were cultured together in food wastes to produce MCCAs under mimetic microbiome system of AD. As a result of adjusting the sodium acetate concentration with 10 g/L, hexanoic acid production (almost 9.06 g/L) was optimized in case of *L. amylovorus* and *M. elsdenii* combination. MCCAs were increased after lactate generation. This stepwise reaction was expected to be caused by changes in species abundance.