

Supplemental Information for

Effect of Humin and Chemical Factors on CO₂-Fixing Acetogenesis and Methanogenesis

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Table S1. The elemental composition of extracted humin.

Elemental composition (%)					Ash (%)	C/N	H/C	O/C
C	H	N	O	S				
1.3	0.4	0.2	4.3	Under detection limit	93.9	10.6	3.2	2.4

Data represented as the mean of triplicates.

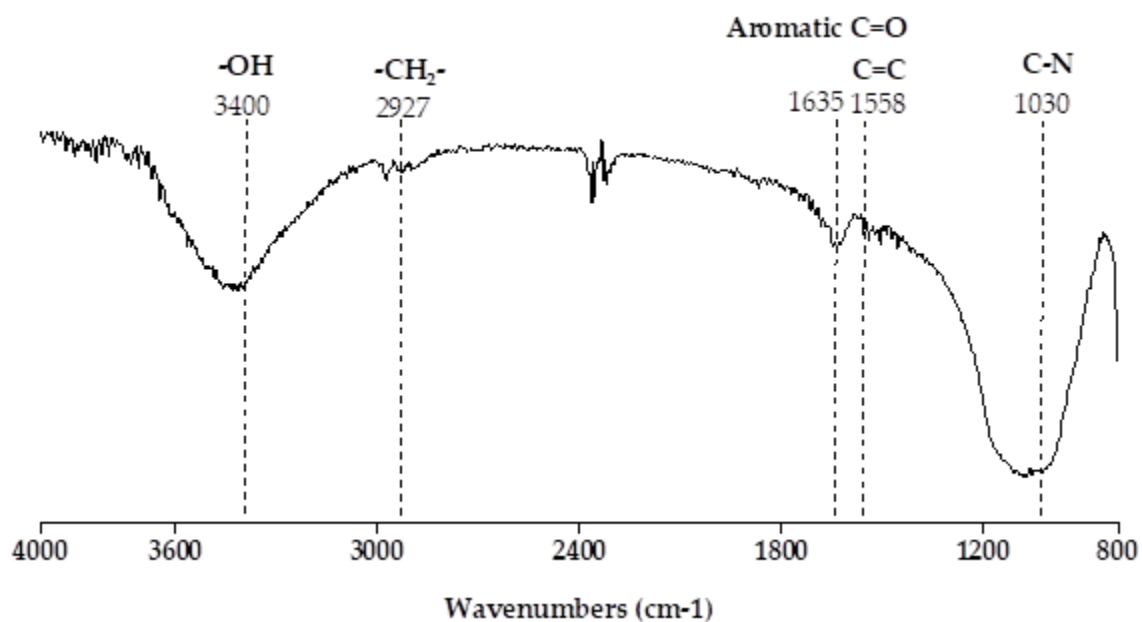


Figure S1. Fourier transform infrared (FTIR) spectra of extracted humin. Assignment of the peaks for the functional groups was referred from the studies of [1,2].

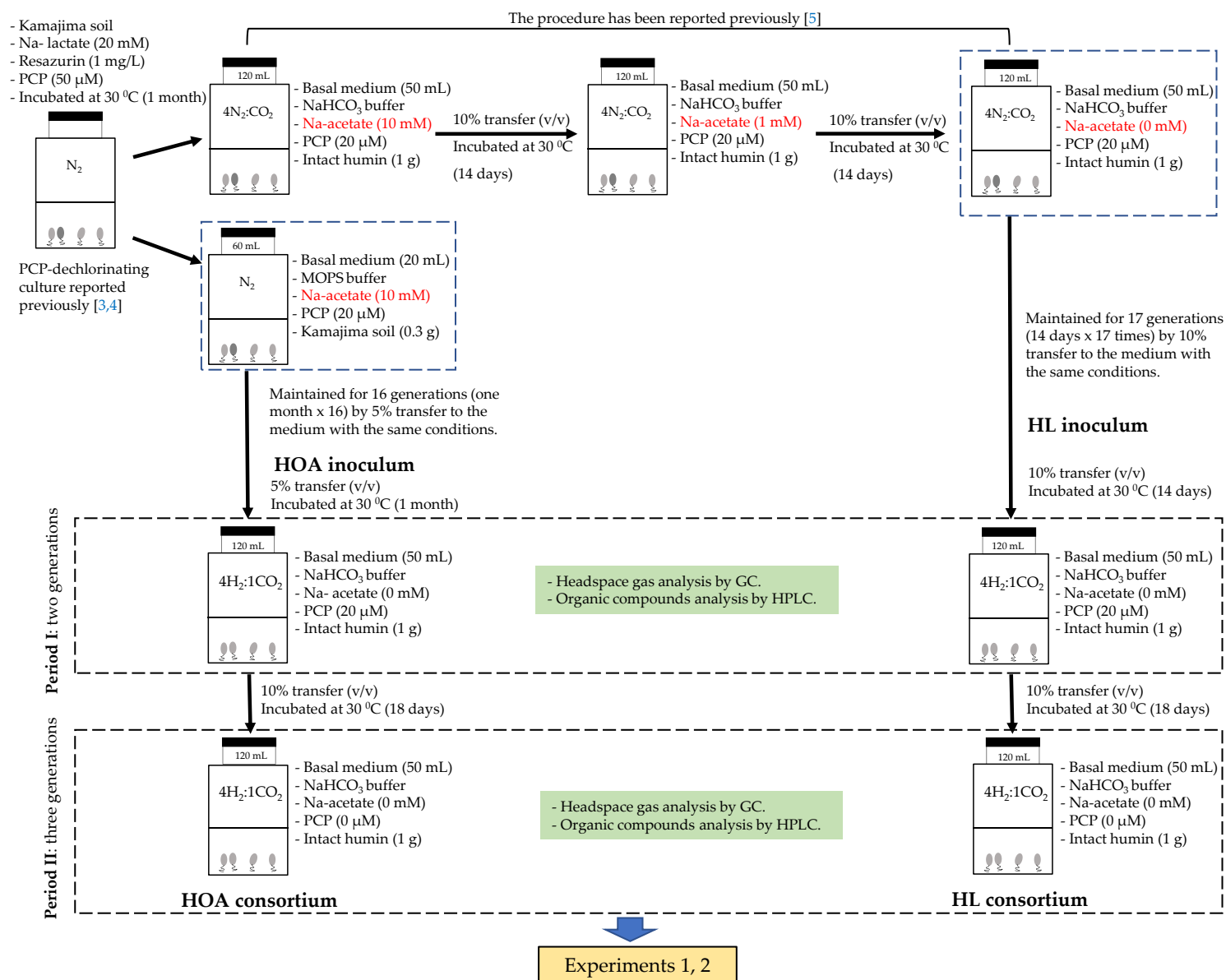


Figure S2. Schematic diagram of preparation of HL and HOA consortia. Soil and humin were autoclaved (121 $^{\circ}$ C, 15 min) prior to use.

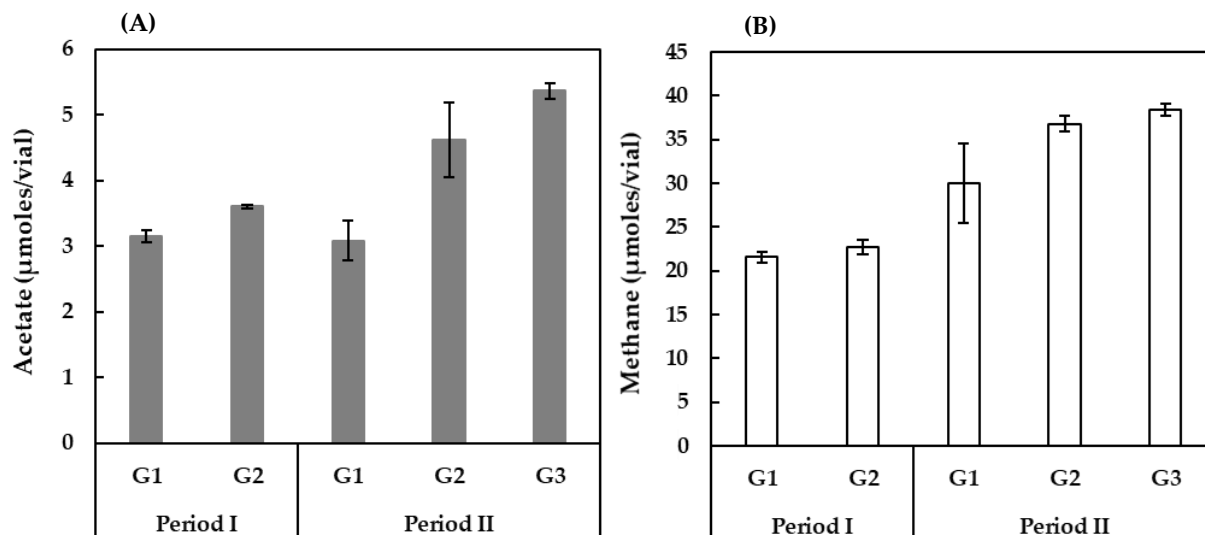


Figure S3. Changes in the produced amounts of acetate (A) and methane (B) during development of HL consortium. G1, G2, and G3 shows generation 1, 2, and 3, respectively. Periods I and II are shown in Figure S2.

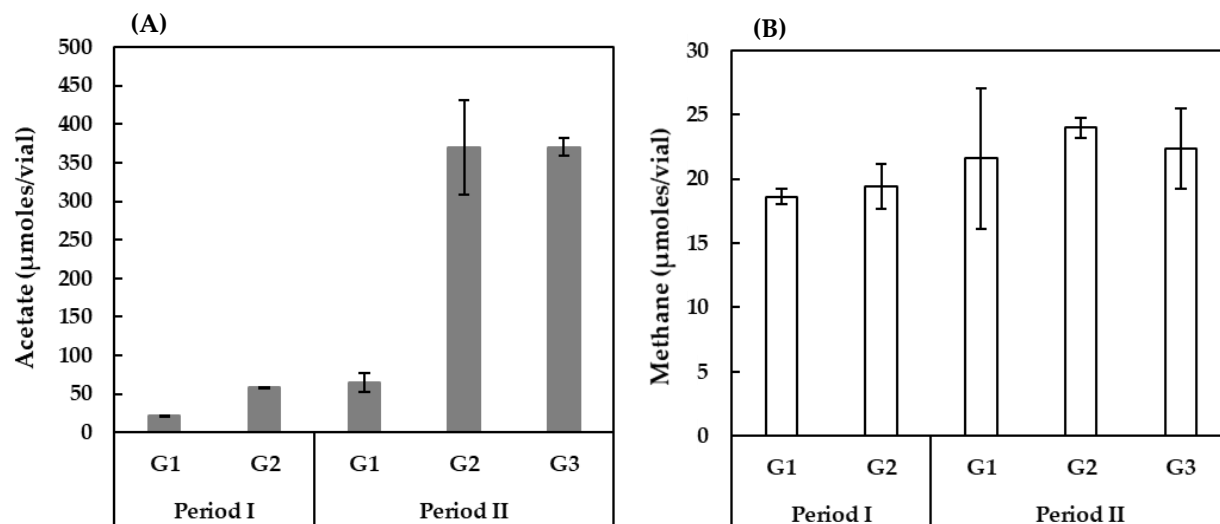


Figure S4. Changes in the produced amounts of acetate (A) and methane (B) during development of HOA consortium. G1, G2, and G3 shows generation 1, 2, and 3, respectively. Periods I and II are shown in Figure S2.

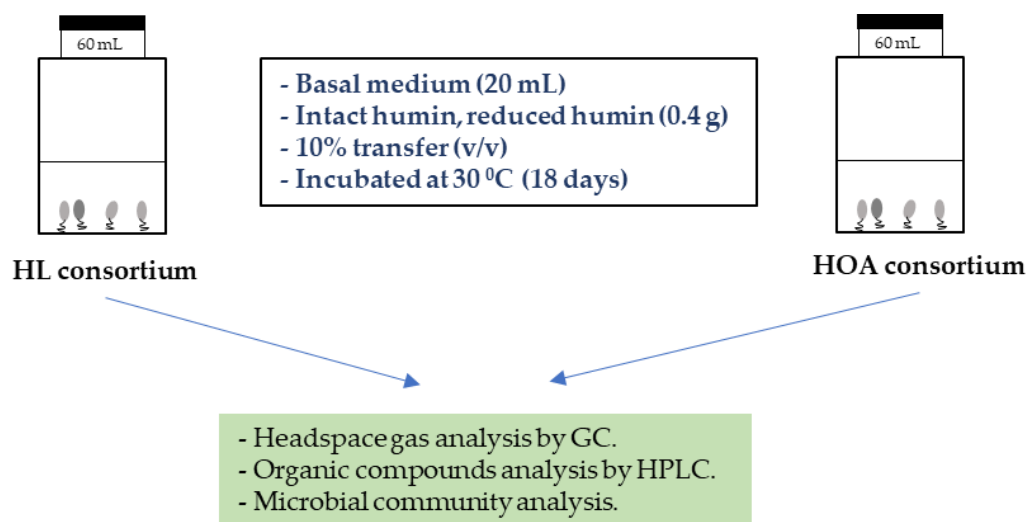


Figure S5. Schematic diagram of experiment 1.

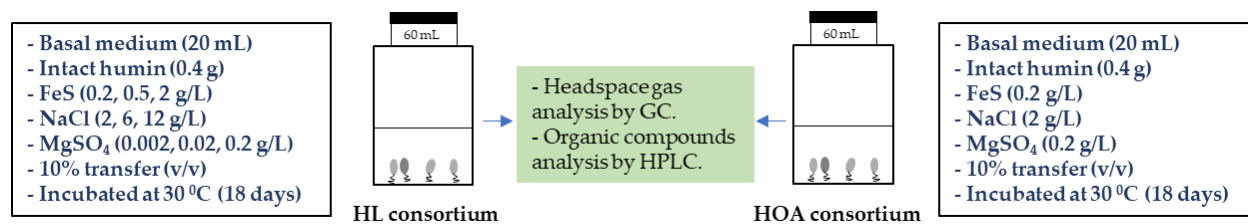


Figure S6. Schematic diagram of experiment 2.

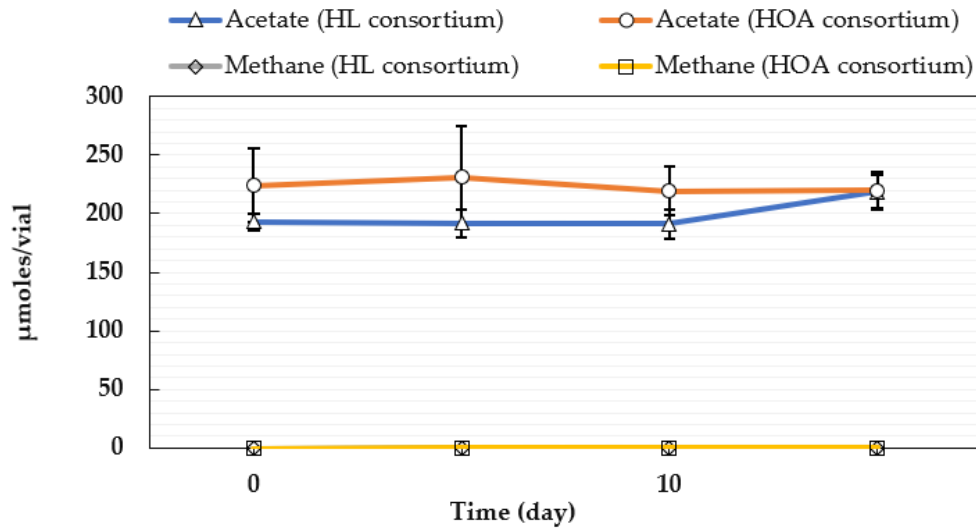


Figure S7. Changes in the amount of acetate and methane during incubation with acetate (220 $\mu\text{moles/vial}$, 10 mM as initial concentration) and without another electron donor (hydrogen or humin) in two consortia (HL and HOA). No decrease in acetate and no increase in methane suggested no acetoclastic methanogenesis in the HOA culture. Vertical bars represent the standard deviation.

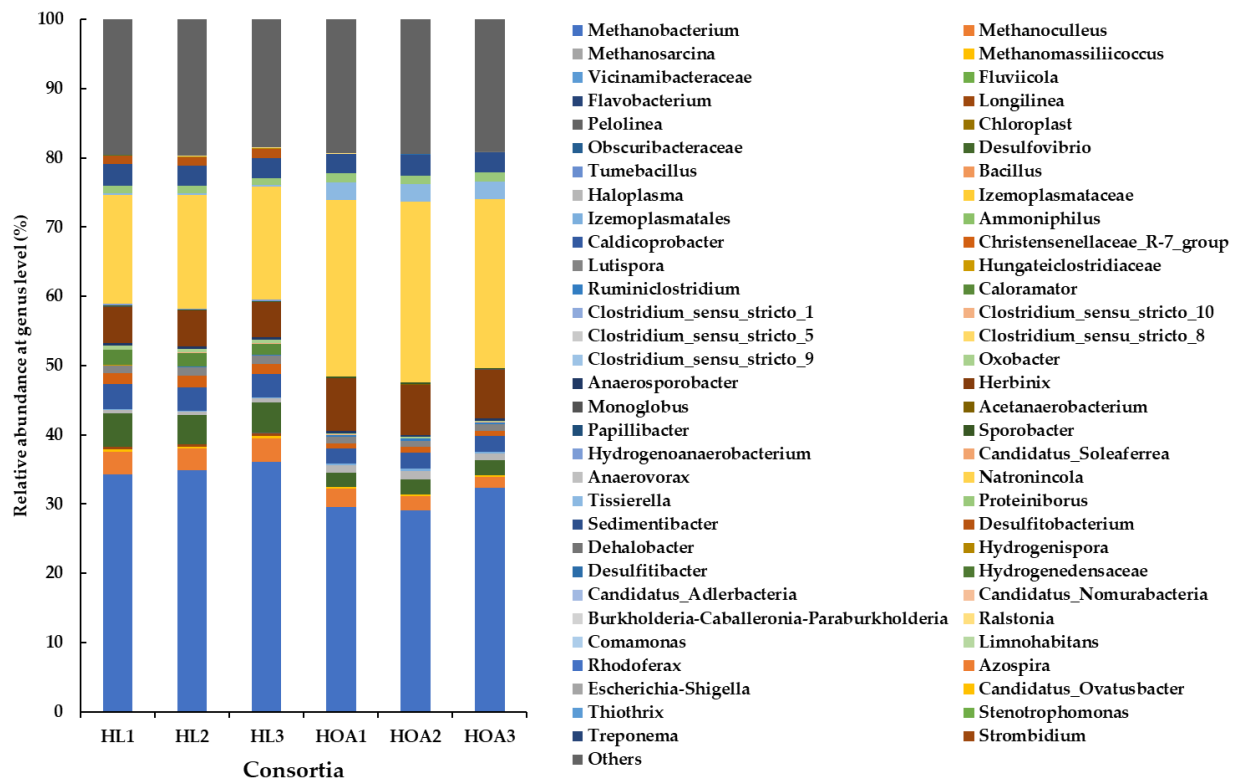


Figure S8. Microbial composition of the HL and HOA consortia at genus level. The others composed of uncultured, unidentified microbes.

References

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