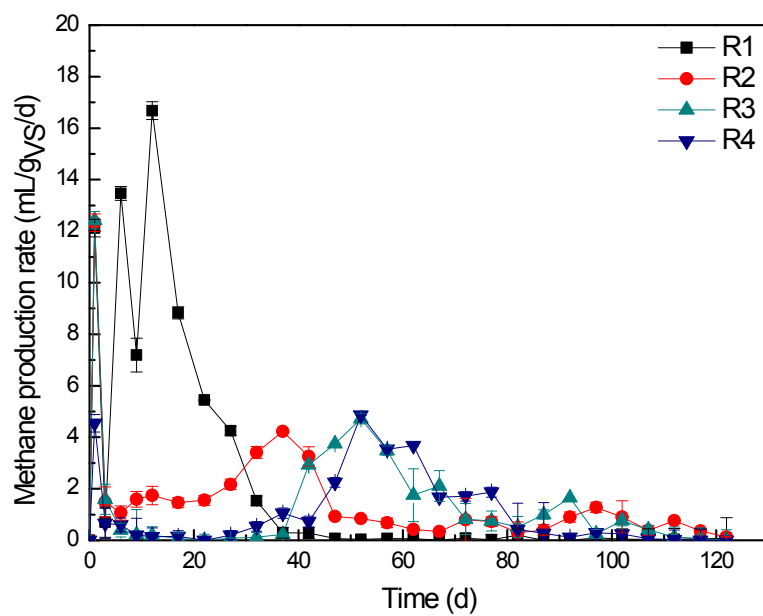


**Fig.S1.** Methane production rate of the reactors at different TS contents.



**Table S1**

Concentrations of soluble organic matters at different periods of the anaerobic digestion. Acetate, propionate, butyrate and valerate were summed as VFAs. Mean values were in triplicate.

Sample		VFAs (mg <sub>COD</sub> /g <sub>VS</sub> )	Protein (mg <sub>COD</sub> /g <sub>VS</sub> )	Polysaccharide (mg <sub>COD</sub> /g <sub>VS</sub> )	Unknown (mg <sub>COD</sub> /g <sub>VS</sub> )
6 d	R1	270.7	9.6	15.0	29.7
	R2	287.7	6.9	13.7	87.5
	R3	331.0	13.1	16.6	85.1
	R4	346.2	7.8	18.8	230.3
37 d	R1	28.4	10.7	25.6	194.3
	R2	403.8	5.3	21.9	295.9
	R3	402.4	7.6	21.3	310.5
	R4	386.7	6.8	20.5	395.1
87 d	R1	41.5	23.4	30.7	175.9
	R2	315.0	13.7	24.3	185.0
	R3	275.9	11.1	24.7	271.9
	R4	285.8	9.3	25.1	369.0
122 d	R1	51.7	19.7	31.3	195.3
	R2	187.2	15.0	30.1	198.8
	R3	246.0	14.3	32.3	284.0
	R4	294.1	11.8	32.9	298.7

**Table S2**

Relative abundance of major bacterial communities at genus level at different TS contents. Each represented by more than 0.5% total sequences in at least one sample and the rest was defined as “Unclassified”.

Taxonomy assignment	R1	R2	R3	R4
<i>Coprothermobacter</i>	25.0	20.8	5.5	2.1
<i>Allochromatium</i>	9.8	7.3	4.9	4.1
<i>Anaerobaculum</i>	2.4	2.7	2.6	0.5
<i>VadinCA02</i>	1.4	0.2	0.4	1.1
<i>Rhodobacter</i>	1.2	1.1	2.4	3.5
<i>Caldicoprobacter</i>	0.9	0.7	1.5	2.0
<i>Bacillus</i>	0.7	0.8	0.2	0.5
<i>Dechloromonas</i>	0.7	0.2	0.2	0.5
<i>KDI-23</i>	0.5	0.2	0.6	0.3
<i>Clostridium</i>	0.4	1.2	1.1	0.2
<i>Nevskia</i>	0.3	1.0	3.5	5.4
<i>Tepidimicrobium</i>	0.2	1.7	1.9	2.6
<i>Syntrophomonas</i>	0.1	1.2	1.0	0.1
<i>Thermacetogenium</i>	-	0.4	2.1	1.9
Unclassified	56.4	60.5	72.1	75.2

‘-’ indicates the presence of OTU is less than 0.1 % in the sample.

**Table S3**

Relative abundance of major archaea communities at genus level at different TS contents. Each represented by more than 0.5% total sequences in at least one sample and the rest was defined as “Unclassified”.

Taxonomy assignment	R1	R2	R3	R4
<i>Methanosarcina</i>	34.5	15.5	6.3	3.6
<i>Methanosaeta</i>	19.0	22.9	22.5	21.4
<i>Methanothermobacter</i>	36.7	42.0	21.8	2.1
<i>Methanobacterium</i>	2.2	1.2	1.4	3.0
<i>Methanospirillum</i>	2.2	0.4	1.1	2.0
<i>Methanomassiliicoccus</i>	0.7	0.6	0.1	0.3
<i>Methanoculleus</i>	0.2	11.6	39.9	43.2
<i>Methanobrevibacter</i>	0.1	0.1	0.5	1.5
Unclassified	4.4	5.7	6.4	22.9