

Table S1. The pH value of dairy cow, fattening pig, and sow slurry, and pH value after acidification with lactic or sulfuric acid during storage period of 48 days (means \pm SD, $n = 3$).

Day after Acidification	0	3	6	9	13	16	20	27	34	41	48
<i>Dairy Cow</i> No acidification	7.06 \pm 0.015 ^b	7.09 \pm 0.103 ^c	7.30 \pm 0.069 ^d	7.45 \pm 0.090 ^c	7.85 \pm 0.231 ^c	8.10 \pm 0.274 ^{de}	8.13 \pm 0.085 ^c	8.44 \pm 0.150 ^{cd}	8.73 \pm 0.096 ^{de}	8.65 \pm 0.326 ^{bc}	8.52 \pm 0.307 ^b
<i>Dairy Cow</i> Lactic acid	5.50 \pm 0.015 ^a	6.08 \pm 0.015 ^b	6.69 \pm 0.131 ^c	7.02 \pm 0.042 ^b	7.42 \pm 0.089 ^{bc}	7.78 \pm 0.006 ^{cd}	7.94 \pm 0.148 ^c	8.01 \pm 0.278 ^{bc}	8.20 \pm 0.362 ^{bcd}	8.24 \pm 0.095 ^b	8.28 \pm 0.172 ^b
<i>Dairy Cow</i> Sulfuric acid	5.48 \pm 0.056 ^a	6.31 \pm 0.079 ^b	6.80 \pm 0.036 ^c	6.96 \pm 0.117 ^b	7.17 \pm 0.119 ^b	7.26 \pm 0.137 ^{bc}	7.44 \pm 0.078 ^b	7.83 \pm 0.240 ^b	8.06 \pm 0.051 ^{bc}	8.18 \pm 0.060 ^b	8.24 \pm 0.152 ^b
<i>Fattening Pig</i> No acidification	7.13 \pm 0.070 ^b	7.42 \pm 0.190 ^d	7.62 \pm 0.074 ^e	8.12 \pm 0.166 ^d	8.42 \pm 0.121 ^d	8.54 \pm 0.006 ^{ef}	8.71 \pm 0.081 ^d	8.80 \pm 0.174 ^{de}	8.85 \pm 0.215 ^e	8.97 \pm 0.015 ^c	8.96 \pm 0.101 ^b
<i>Fattening Pig</i> Lactic acid	5.51 \pm 0.010 ^a	6.20 \pm 0.070 ^b	6.68 \pm 0.031 ^c	7.42 \pm 0.056 ^c	7.67 \pm 0.098 ^c	7.76 \pm 0.194 ^{cd}	8.12 \pm 0.055 ^c	8.44 \pm 0.132 ^{cd}	8.60 \pm 0.211 ^{cde}	8.52 \pm 0.463 ^{bc}	8.50 \pm 0.417 ^b
<i>Fattening Pig</i> Sulfuric acid	5.51 \pm 0.017 ^a	5.81 \pm 0.030 ^a	6.44 \pm 0.021 ^b	6.90 \pm 0.050 ^b	7.38 \pm 0.251 ^{bc}	7.55 \pm 0.372 ^{cd}	7.78 \pm 0.245 ^{bc}	7.66 \pm 0.176 ^b	7.87 \pm 0.061 ^b	7.99 \pm 0.047 ^b	8.27 \pm 0.035 ^b
<i>Sow</i> No acidification	8.18 \pm 0.015 ^c	8.64 \pm 0.049 ^e	8.87 \pm 0.023 ^f	8.99 \pm 0.023 ^e	9.10 \pm 0.000 ^e	9.06 \pm 0.125 ^f	9.08 \pm 0.084 ^d	9.14 \pm 0.064 ^e	9.12 \pm 0.053 ^e	9.00 \pm 0.235 ^c	8.56 \pm 0.724 ^b
<i>Sow</i> Lactic acid	5.51 \pm 0.000 ^a	5.80 \pm 0.078 ^a	6.21 \pm 0.084 ^a	6.27 \pm 0.012 ^a	6.41 \pm 0.262 ^a	6.88 \pm 0.397 ^{ab}	7.38 \pm 0.281 ^b	7.59 \pm 0.285 ^b	8.10 \pm 0.348 ^{bc}	8.50 \pm 0.190 ^{bc}	8.61 \pm 0.081 ^b
<i>Sow</i> Sulfuric acid	5.52 \pm 0.017 ^a	6.12 \pm 0.090 ^b	6.36 \pm 0.116 ^{ab}	6.50 \pm 0.152 ^a	6.58 \pm 0.143 ^a	6.51 \pm 0.085 ^a	6.43 \pm 0.115 ^a	6.56 \pm 0.051 ^a	6.57 \pm 0.245 ^a	6.72 \pm 0.314 ^a	6.79 \pm 0.457 ^a

a,b,c,d,e,f different letters indicate significant differences among the variants within the day after acidification.

Table S2. The pH value of dairy cow slurry after acidification with different organic or mineral acids during storage period of 48 days (means \pm SD, $n = 3$).

Day after Acidification	0	3	6	9	13	16	20	27	34	41	48
Lactic acid	5.50 \pm 0.015 ^a	6.08 \pm 0.015 ^{ab}	6.69 \pm 0.131 ^a	7.02 \pm 0.042 ^b	7.42 \pm 0.089 ^{bc}	7.78 \pm 0.006 ^b	7.94 \pm 0.148 ^{ab}	8.01 \pm 0.278 ^{ab}	8.20 \pm 0.362 ^a	8.24 \pm 0.095 ^a	8.28 \pm 0.172 ^a
Acetic acid	5.51 \pm 0.012 ^a	5.97 \pm 0.076 ^a	7.15 \pm 0.528 ^a	7.32 \pm 0.168 ^{abc}	7.73 \pm 0.231 ^{cd}	8.04 \pm 0.089 ^c	8.21 \pm 0.180 ^b	8.16 \pm 0.244 ^{ab}	8.07 \pm 0.172 ^a	8.37 \pm 0.282 ^a	8.21 \pm 0.051 ^a
Citric acid	5.50 \pm 0.017 ^a	6.36 \pm 0.055 ^d	7.00 \pm 0.100 ^a	7.46 \pm 0.051 ^c	7.82 \pm 0.145 ^d	8.10 \pm 0.072 ^c	8.10 \pm 0.471 ^{ab}	8.31 \pm 0.146 ^b	8.35 \pm 0.246 ^a	8.41 \pm 0.170 ^a	8.25 \pm 0.286 ^a
Sulfuric acid	5.48 \pm 0.056 ^a	6.31 \pm 0.079 ^{cd}	6.80 \pm 0.036 ^a	6.96 \pm 0.117 ^{ab}	7.17 \pm 0.119 ^{ab}	7.26 \pm 0.137 ^a	7.44 \pm 0.078 ^a	7.83 \pm 0.240 ^{ab}	8.06 \pm 0.051 ^a	8.18 \pm 0.060 ^a	8.24 \pm 0.152 ^a
Hydrochloric acid	5.52 \pm 0.006 ^a	6.19 \pm 0.040 ^{bc}	6.67 \pm 0.040 ^a	6.80 \pm 0.015 ^a	6.94 \pm 0.066 ^a	7.16 \pm 0.049 ^a	7.33 \pm 0.035 ^a	7.68 \pm 0.060 ^a	7.97 \pm 0.091 ^a	8.21 \pm 0.066 ^a	8.28 \pm 0.075 ^a

^{a,b,c,d} different letters indicate significant differences among the variants within the day after acidification.

Table S3. The pH value of dairy cow slurry after acidification with sulfuric or lactic acid under aerobic or anaerobic storing conditions during storage period of 48 days (means \pm SD, $n = 3$).

Day after Acidification	0	3	6	9	13	16	20	27	34	41	48
<i>Aerobic</i> Lactic acid	5.50 \pm 0.015 ^a	6.08 \pm 0.015 ^b	6.69 \pm 0.131 ^b	7.02 \pm 0.042 ^c	7.42 \pm 0.089 ^c	7.78 \pm 0.006 ^d	7.94 \pm 0.148 ^d	8.01 \pm 0.278 ^b	8.20 \pm 0.362 ^b	8.24 \pm 0.095 ^b	8.28 \pm 0.172 ^b
<i>Anaerobic</i> Lactic acid	5.50 \pm 0.006 ^a	5.70 \pm 0.029 ^a	6.53 \pm 0.133 ^b	6.59 \pm 0.150 ^b	6.73 \pm 0.140 ^b	6.67 \pm 0.064 ^b	6.50 \pm 0.083 ^b	6.36 \pm 0.137 ^a	6.38 \pm 0.087 ^a	6.32 \pm 0.100 ^a	6.31 \pm 0.100 ^a
<i>Aerobic</i> Sulfuric acid	5.48 \pm 0.056 ^a	6.31 \pm 0.079 ^c	6.80 \pm 0.036 ^b	6.96 \pm 0.117 ^c	7.17 \pm 0.119 ^c	7.26 \pm 0.137 ^c	7.44 \pm 0.078 ^c	7.83 \pm 0.240 ^b	8.06 \pm 0.051 ^b	8.18 \pm 0.060 ^b	8.24 \pm 0.152 ^b
<i>Anaerobic</i> Sulfuric acid	5.49 \pm 0.020 ^a	5.83 \pm 0.079 ^a	5.96 \pm 0.108 ^a	6.02 \pm 0.117 ^a	6.04 \pm 0.093 ^a	6.08 \pm 0.096 ^a	6.13 \pm 0.089 ^a	6.18 \pm 0.035 ^a	6.29 \pm 0.105 ^a	6.27 \pm 0.136 ^a	6.32 \pm 0.171 ^a

^{a,b,c,d} different letters indicate significant differences among the variants within the day after acidification.

Table S4. The pH value of dairy cow, fattening pig, and sow slurry after acidification with sulfuric acid or in combination with glucose addition (0.01 mol glucose kg⁻¹ slurry) during storage period of 48 days (means \pm SD, $n = 3$).

Day after Acidification	0	3	6	9	13	16	20	27	34	41	48
<i>Dairy Cow</i> Sulfuric acid	5.48 \pm 0.056 ^a	6.31 \pm 0.079 ^c	6.80 \pm 0.036 ^b	6.96 \pm 0.117 ^b	7.17 \pm 0.119 ^b	7.26 \pm 0.137 ^c	7.44 \pm 0.078 ^b	7.83 \pm 0.240 ^b	8.06 \pm 0.051 ^b	8.18 \pm 0.060 ^b	8.24 \pm 0.152 ^b
<i>Dairy Cow</i> Sulfuric acid and glucose	5.52 \pm 0.017 ^a	6.12 \pm 0.155 ^{bc}	6.73 \pm 0.117 ^b	6.94 \pm 0.107 ^b	7.17 \pm 0.221 ^b	7.29 \pm 0.121 ^c	7.50 \pm 0.125 ^b	7.73 \pm 0.111 ^b	7.90 \pm 0.102 ^b	8.20 \pm 0.006 ^b	8.24 \pm 0.061 ^b
<i>Fattening Pig</i> Sulfuric acid	5.51 \pm 0.017 ^a	5.81 \pm 0.030 ^a	6.44 \pm 0.021 ^a	6.90 \pm 0.050 ^b	7.38 \pm 0.251 ^b	7.55 \pm 0.372 ^{acd}	7.78 \pm 0.245 ^{bc}	7.66 \pm 0.176 ^b	7.87 \pm 0.061 ^b	7.99 \pm 0.047 ^b	8.27 \pm 0.035 ^b
<i>Fattening Pig</i> Sulfuric acid and glucose	5.51 \pm 0.010 ^a	5.71 \pm 0.036 ^a	6.30 \pm 0.047 ^a	6.76 \pm 0.017 ^{ab}	7.27 \pm 0.036 ^b	7.67 \pm 0.244 ^{bcd}	7.89 \pm 0.072 ^c	8.02 \pm 0.258 ^b	8.00 \pm 0.462 ^{ab}	8.11 \pm 0.119 ^b	8.04 \pm 0.215 ^b
<i>Sow</i> Sulfuric acid	5.52 \pm 0.017 ^a	6.12 \pm 0.090 ^{bc}	6.36 \pm 0.116 ^a	6.50 \pm 0.152 ^a	6.58 \pm 0.143 ^a	6.51 \pm 0.085 ^a	6.43 \pm 0.115 ^a	6.56 \pm 0.051 ^a	6.57 \pm 0.245 ^a	6.72 \pm 0.314 ^a	6.79 \pm 0.457 ^a
<i>Sow</i> Sulfuric acid and glucose	5.52 \pm 0.012 ^a	5.88 \pm 0.118 ^{ab}	6.31 \pm 0.087 ^a	6.51 \pm 0.068 ^a	6.63 \pm 0.045 ^a	6.61 \pm 0.057 ^{ab}	6.64 \pm 0.130 ^a	6.70 \pm 0.117 ^a	6.77 \pm 0.056 ^a	6.81 \pm 0.047 ^a	6.94 \pm 0.080 ^a

^{a,b,c,d} different letters indicate significant differences among the variants within the day after acidification.

Table S5. The pH value of dairy cow and fattening slurry (raw and separated slurry) after acidification with sulfuric acid during storage period of 48 days (means \pm SD, $n = 3$).

Day after Acidification	0	3	6	9	13	16	20	27	34	41	48
<i>Dairy cow</i> Raw	5.48 \pm 0.056 ^a	6.31 \pm 0.079 ^c	6.80 \pm 0.036 ^c	6.96 \pm 0.117 ^a	7.17 \pm 0.119 ^a	7.26 \pm 0.137 ^a	7.44 \pm 0.078 ^a	7.83 \pm 0.240 ^a	8.06 \pm 0.051 ^b	8.18 \pm 0.060 ^b	8.24 \pm 0.152 ^a
<i>Dairy cow</i> Separated	5.51 \pm 0.017 ^a	6.11 \pm 0.433 ^{abc}	7.38 \pm 0.168 ^c	8.02 \pm 0.108 ^b	8.27 \pm 0.032 ^b	8.39 \pm 0.036 ^b	8.36 \pm 0.144 ^b	8.56 \pm 0.067 ^b	8.64 \pm 0.051 ^c	8.74 \pm 0.017 ^c	8.69 \pm 0.053 ^b
<i>Fattening pig</i> Raw	5.51 \pm 0.017 ^a	5.81 \pm 0.030 ^b	6.44 \pm 0.021 ^b	6.90 \pm 0.050 ^a	7.38 \pm 0.251 ^a	7.55 \pm 0.372 ^{ab}	7.78 \pm 0.245 ^a	7.66 \pm 0.176 ^a	7.87 \pm 0.061 ^a	7.99 \pm 0.047 ^a	8.27 \pm 0.035 ^b
<i>Fattening pig</i> Separated	5.51 \pm 0.010 ^a	5.64 \pm 0.032 ^a	5.70 \pm 0.052 ^a	7.59 \pm 0.677 ^b	8.28 \pm 0.091 ^b	8.46 \pm 0.021 ^b	8.55 \pm 0.055 ^b	8.51 \pm 0.031 ^b	8.65 \pm 0.060 ^c	8.56 \pm 0.179 ^{abc}	8.42 \pm 0.183 ^{ab}

^{a,b,c} different letters indicate significant differences among the variants within the day after acidification.

Table S6. The pH value of dairy cow slurry after acidification with sulfuric acid to pH 5.5, 4.5 and 3 during storage period of 48 days (means \pm SD, $n = 3$).

Day after Acidification	0	3	6	9	13	16	20	27	34	41	48
pH 5.5	5.48 \pm 0.056	6.31 \pm 0.079	6.80 \pm 0.036	6.96 \pm 0.117	7.17 \pm 0.119	7.26 \pm 0.137	7.44 \pm 0.078	7.83 \pm 0.240	8.06 \pm 0.051	8.18 \pm 0.060	8.24 \pm 0.152
pH 4.5	4.51 \pm 0.015	4.89 \pm 0.017	4.93 \pm 0.029	5.20 \pm 0.089	5.93 \pm 0.124	6.43 \pm 0.067	6.78 \pm 0.076	7.01 \pm 0.191	6.82 \pm 0.080	7.06 \pm 0.044	7.34 \pm 0.096
pH 3.0	3.02 \pm 0.015	3.34 \pm 0.010	3.35 \pm 0.015	3.34 \pm 0.020	3.34 \pm 0.015	3.33 \pm 0.010	3.33 \pm 0.012	3.34 \pm 0.015	3.34 \pm 0.015	3.34 \pm 0.015	3.36 \pm 0.017