

Table S1 Primers used for PCR and qPCR in this study

Primer name	Sequence of primer (5' to 3') <sup>a</sup>
<b>Primers for PCR</b>	
<i>pgsC</i> -AF	<u>TCTTTTCTACGAGCTCCATCATCTTTCAGGAAGAATG</u>
<i>pgsC</i> -AR	<u>AAAGTACGGCTTCACATATCGGCTGATCCGTAGGA</u>
<i>pgsC</i> -BF	<u>TCCTACGGATCAGCCGATATGTGAAGCCGTACTTT</u>
<i>pgsC</i> -BR	<u>ATCCACTAGTTCTAGAGCCTGTCTGTCGTTCCGGTTC</u>
T2-F	ATGTGATAACTCGGCGTA
T2-R	TCTGCTGAAGCCAGTTAC
<i>pgsC</i> -KYF	GAATATCGGAGAGCAGAAGGAG
<i>pgsC</i> -KYR	TTGCCGAGGCTGTAGAAAATCA
<b>Primers for qPCR</b>	
16s rRNA-F	ACCTAACCAGAAAGCCACGG
16s rRNA-R	GTTTACGGCGTGGACTACCA
<i>citZ</i> -F	TGACGATTTCTCAGTCCGC
<i>citZ</i> -R	TCACAGCCAGAGTATGCGTC
<i>pfkA</i> -F	TTTTCCGAATTCAACGCCGC
<i>pfkA</i> -R	CGACAATGACATCCCAGGCA
<i>pyk</i> -F	CCGCTTCTTGTGCGTTTTGA
<i>pyk</i> -R	ACTTGTGTTTCGGCGTTTTCG
<i>pgk</i> -F	GTCCGTTCCAAACGACAAGC
<i>pgk</i> -R	TCGGCCATGAAGTGGGAAAA
<i>icd</i> -F	CACAACGTCAAACCTCGGCAG
<i>icd</i> -R	AACTGGGGCTATGAAGTGCC
<i>odhA</i> -F	GCTCTTCAACCCGTGCAATG
<i>odhA</i> -R	AACAACCTGGACTGTCGCCAA
<i>rocG</i> -F	CGGTCCGAATAGAACTCCCG
<i>rocG</i> -R	AGTATGTCAGCGAGCATCCG
<i>gltA</i> -F	GCTGCTTTTGAGCTTTCGGT
<i>gltA</i> -R	GTCAGCGTTGTCGTTGAAGG
<i>pgsC</i> -F	TCAAACGGCATCACCGGATA
<i>pgsC</i> -R	AATTGTACCAGCCGGCCTC
<i>aprN</i> -F	CCGGCTCTTCACTCTCAAGG
<i>aprN</i> -R	CTACGCCCAGAACACCGATT

<sup>a</sup> The underlines indicate an overlap region for splicing overlap extension PCR (SOE- PCR); Generated restriction site in bold.

Table S2 The concentrations of amino acids in the acid hydrolysate of soybean meal

<b>Amino acid</b>	<b>Content in the acid hydrolysate (mg/L)</b>
Glutamic acid	2718.3
Alanine	2087.0
Aspartic acid	1828.1
Phenylalanine	1104.5
Lysine	1045.7
Leucine	1017.4
Glycine	676.9
Serine	609.1
Valine	593.0
Threonine	540.0
Tyrosine	526.2
Isoleucine	469.8
Methionine	215.3
Total <sup>a</sup>	13431.3

<sup>a</sup> The concentration of soybean meal in the acid hydrolysate is 30 g/L, and the protein content in soybean meal is 46%, so the protein content in the acid hydrolysate is 13.8 g/L.