Table 1 FAO/WHO defines the essential amino acid model

Types of Amino Acids	FAO/WHO(2013)（mg/g）
Threonine	25
Valine	40
Isoleucine	30
Leucine	61
Phenylalanine + Tyrosine	41
Lysine	48
Methionine + Cysteine	23
Tryptophan	6.6

Table 2 Essential amino acid content of soybean protein, whey protein and yeast protein (mg/g)

Amino acids	Soy protein	Whey protein	Yeast protein
Threonine	30.14 ± 0.38	82.38 ± 2.51	51.95 ± 1.61
Valine	41.44 ± 0.72	74.59 ± 2.67	65.42 ± 1.32
Isoleucine	40.23 ± 1.85	52.57 ±1.25	59.81 ± 1.13
Leucine	78.84 ± 1.18	102.86 ± 3.95	68.56 ± 2.34
Phenylalanine + Tyrosine	79.38 ± 2.66	65.54 ± 0.63	70.99 ± 1.57
Lysine	52.54 ± 1.51	93.21 ± 3.39	82.67 ± 1.68
Methionine + Cysteine	22.36 ± 0.71	46.63 ± 0.90	29.29 ± 0.41
Tryptophan	9.84 ± 0.40	14.17 ± 0.23	11.13 ± 0.36

Table 3 Grey correlation analysis of multiple proteins

Soy Protein: Whey Protein: Yeast Protein	Relevance
2:5:3	0.823
2:6:2	0.813
3:6:1	0.81
3:5:2	0.807
1:6:3	0.804
1:7:2	0.798
2:7:1	0.795
1:5:4	0.795
2:4:4	0.794
1:4:5	0.792
1:8:1	0.787
3:4:3	0.784
4:5:1	0.782
4:4:2	0.773
1:3:6	0.769
2:3:5	0.768
3:3:4	0.766
5:4:1	0.763
4:3:3	0.754
3:2:5	0.751

1:2:7	0.748
5:3:2	0.747
2:2:6	0.747
6:3:1	0.746
4:2:4	0.739
3:1:6	0.733
7:2:1	0.731
5:2:3	0.731
1:1:8	0.73
4:1:5	0.729
2:1:7	0.729
6:2:2	0.728
8:1:1	0.726
5:1:4	0.719
7:1:2	0.717
6:1:3	0.715

Table4 High score multiple protein grey correlation analysis

Soy Protein: Whey Protein: Yeast Protein	Relevance
1:6:3	0.971
2:6:2	0.744
2:5:3	0.659
3:6:1	0.611
3:5:2	0.556

Figure1 Protein content