

**Table S1. Factor level table for stability test of milk tea**

Levels	Factors		
	X <sub>1</sub> (%)	X <sub>2</sub> (%)	X <sub>3</sub> (%)
-1	0.02	0.02	0.02
0	0.03	0.03	0.03
1	0.04	0.04	0.04

**Table S2. Box - Behnken design milk tea stabilizer combination formula and results**

Run	Arabic gum (%)	$\beta$ -CD (%)	AGAR (%)	Stability coefficient (R)
1	0.02	0.03	0.02	0.71577
2	0.03	0.03	0.03	0.75798
3	0.04	0.02	0.03	0.76393
4	0.03	0.04	0.04	0.70619
5	0.03	0.03	0.03	0.76338
6	0.02	0.03	0.04	0.68193
7	0.03	0.03	0.03	0.77188
8	0.04	0.03	0.02	0.72977
9	0.03	0.02	0.04	0.748
10	0.03	0.04	0.02	0.74308
11	0.04	0.03	0.04	0.7479
12	0.03	0.02	0.02	0.74384
13	0.03	0.03	0.03	0.76142
14	0.03	0.03	0.03	0.75689
15	0.02	0.04	0.03	0.70784
16	0.04	0.04	0.03	0.72093
17	0.02	0.02	0.03	0.71247

**Table S3. Variance analysis of response surface test results**

Source	Sum of Squares	Degree of freedom	Mean Square	F-value	p-value Prob > F	Comment
Model	0.010	9	$1.153 \times 10^{-3}$	38.27	< 0.0001	significant
X <sub>1</sub>	$2.611 \times 10^{-3}$	1	$2.611 \times 10^{-3}$	86.66	< 0.0001	
X <sub>2</sub>	$1.017 \times 10^{-3}$	1	$1.017 \times 10^{-3}$	33.75	0.0007	
X <sub>3</sub>	$2.934 \times 10^{-4}$	1	$2.934 \times 10^{-4}$	9.74	0.0168	
X <sub>1</sub> X <sub>2</sub>	$3.680 \times 10^{-4}$	1	$3.680 \times 10^{-4}$	12.21	0.0101	
X <sub>1</sub> X <sub>3</sub>	$6.753 \times 10^{-4}$	1	$6.753 \times 10^{-4}$	22.41	0.0021	
X <sub>2</sub> X <sub>3</sub>	$4.214 \times 10^{-4}$	1	$4.214 \times 10^{-4}$	13.98	0.0073	
X <sub>1</sub> <sup>2</sup>	$2.896 \times 10^{-3}$	1	$2.896 \times 10^{-3}$	96.13	< 0.0001	
X <sub>2</sub> <sup>2</sup>	$4.038 \times 10^{-4}$	1	$4.038 \times 10^{-4}$	13.40	0.0081	
X <sub>3</sub> <sup>2</sup>	$1.251 \times 10^{-3}$	1	$1.251 \times 10^{-3}$	41.54	0.0004	
Residual	$2.109 \times 10^{-4}$	7	$3.013 \times 10^{-5}$			not significant
Lack of Fit	$6.921 \times 10^{-5}$	3	$2.307 \times 10^{-5}$	0.65	0.6226	
Pure Error	$1.417 \times 10^{-4}$	4	$3.542 \times 10^{-5}$			
Cor Total	0.011	16				
R <sup>2</sup>					0.9801	
R <sup>2</sup> <sub>Adj</sub>					0.9545	