Table S1 Orthogonal design matrix with four inert ingredients

Level	Croscarmellose sodium (A)/%	$(NH_4)_2SO_4$ (B)/%	CMC-Na (C)/%	Oxalic acid (D)/%
1	1	1	0.5	1
2	3	3	1	2
3	5	5	3	3

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Table S2 Optimization design of spray drying conditions

Level	Air-inlet temperature/℃ (A)	Air-outlet temperature/℃ (B)	Atomization pressure/Mpa (C)	Feed flow rate/mL/h (D)
1	120	50	1.5	300
2	130	60	2.0	600
3	140	70	2.5	900

Table S3 Grading criteria for disease index

Scale	Percentage of infected leaf area
0	0%
1	<5%
3	6%~10%
5	11%~25%
7	26%~50%
9	>50%

Table S4 *K*-values and ranges of optimization design of spray drying conditions

Experimental number	Factor				Ratio of viable conidia %
	A	B	C	D	
1	1	1	1	1	67.50
2	1	2	2	2	72.90
3	1	3	3	3	75.20
4	2	1	2	3	66.20
5	2	2	3	1	73.90
6	2	3	1	2	71.90
7	3	1	3	2	82.30
8	3	2	1	3	72.40
9	3	3	2	1	68.40
k1	215.60	216.00	211.80	209.80	
k2	212.00	219.20	207.50	227.10	
k3	223.10	215.50	231.40	213.80	
k11	71.87	72.00	70.60	69.93	
k22	70.67	73.07	69.17	75.70	
k33	74.37	71.83	77.13	71.27	
Range (*R*)	3.70	1.23	7.97	5.77	

Note: Ki is the sum of suspensibility values when the level of the corresponding factor is coded by i. ki = Ki/s. s means the replication number of each level in each column (here is 3). Range (*R*) =maximum value of kii - minimum value of kii. The following is the same.

Table S5 Variance analysis of optimization design for spray drying conditions

Source	SS	DF	MS	F	P
A	21.38	2	10.69	7.98	
B（error）	2.69	2	1.34		
C	108.21	2	54.10	40.37	<0.05
D	54.69	2	27.34	20.40	<0.05

Note: $F_{0.01}(2,2)=90$; $F_{0.05}(2,2)=19$.

Table S6 Factors and levels of different wetting agents and dispersants

Level	Factor			
	Morwet EFW (A)/%	K12 (B) /%	Morwet D425 (C)/%	NNO (D) /%
1	1	2	4	5
2	3	3	7	7
3	5	4	10	9

Note: Data is the mass% of different wetting agents and dispersants.

Table S7 Results of orthogonal projects for wetting agents and dispersants

Experimental number	Factor				Suspension ratio (%)
	A	B	C	D	
1	1	1	1	1	49.52
2	1	2	2	2	63.18
3	1	3	3	3	75.11
4	2	1	2	3	62.96
5	2	2	3	1	60.48
6	2	3	1	2	68.72
7	3	1	3	2	63.02
8	3	2	1	3	65.04
9	3	3	2	1	55.06
k1	187.81	175.50	183.28	165.06	
k2	192.16	188.70	181.20	194.92	
k3	183.12	198.89	198.61	203.11	
k11	62.60	58.50	61.09	55.02	
k22	64.05	62.90	60.40	64.97	
k33	61.04	66.30	66.20	67.70	
Range (*R*)	3.01	7.80	5.80	12.68	

Table S8 Factors and levels of different disintegrants and adhesives screening

Level	Factor			
	croscarmellose sodium (A)/%	$(NH_4)_2SO_4$ (B)/%	CMC-Na (C)/%	oxalic acid (D)/%
1	1	1	0.5	1
2	3	3	1	2
3	5	5	3	3

Table S9 Results of orthogonal projects

Experimental number	Factor				Disintegation time/S
	A	B	C	D	
1	1	1	1	1	57.30
2	1	2	2	2	32.80
3	1	3	3	3	36.70
4	2	1	2	3	35.00
5	2	2	3	1	37.90
6	2	3	1	2	44.90
7	3	1	3	2	35.30
8	3	2	1	3	44.40
9	3	3	2	1	43.00
k1	126.80	127.60	146.60	138.20	
k2	117.80	115.10	110.80	113.00	
k3	122.70	124.60	109.90	116.10	
k11	42.27	42.53	48.87	46.07	
k22	39.27	38.37	36.93	37.67	
k33	40.90	41.53	36.63	38.70	
Range (*R*)	3.00	3.17	12.23	8.40	

Table S10 Variance analysis of optimization design for disintegrants and adhesives screening

Source	SS	DF	MS	F	*P*
A（Error）	13.54	2	6.77		
B	28.39	2	14.19	2.10	<0.05
C	292.15	2	146.07	21.58	<0.05
D	125.90	2	62.95	9.30	<0.05

Note: $F_{0.01}(2, 2)=90$; $F_{0.05}(2, 2)=19$.