

Supplementary Materials: Enhanced Treatment Effects of Tilmicosin Against *Staphylococcus aureus* Cow Mastitis by Self-Assembly Sodium Alginate-Chitosan Nanogel

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Table S1. Factors and levels of the L9 (3⁴) orthogonal design.

Variable	Level		
	1	2	3
Type (A)	PVA	PVP	Poloxamer188
Concentration (B)	1%	2%	3%
Volume (C)	15 mL	20 mL	25 mL

Notes: PVA: Poly vinyl alcohol; PVP: Polyvinylpyrrolidone.

Table S2. The optimization of emulsifier by orthogonal experiment (L₉3⁴).

Sample	Type (A)	Concentration (B)	Volume (C)	LC (%)	Size	PDI
1	2	2	3	16.02 ± 0.85	1.339 ± 0.012	>0.5
2	3	1	3	16.52 ± 0.70	1.677 ± 0.009	>0.5
3	2	3	1	18.99 ± 1.97	5.847 ± 0.073	>0.5
4	1	3	3	20.90 ± 0.65	0.336 ± 0.005	0.368 ± 0.024
5	3	3	2	17.61 ± 0.95	5.347 ± 0.036	>0.5
6	3	2	1	17.04 ± 1.65	2.451 ± 0.013	>0.5
7	1	1	1	17.19 ± 0.98	0.481 ± 0.013	0.424 ± 0.032
8	1	2	2	15.47 ± 0.98	0.311 ± 0.005	0.306 ± 0.018
9	2	1	2	15.91 ± 1.23	1.419 ± 0.005	>0.5
k1	17.85	16.54	17.74			
k2	16.64	15.84	16.33			
k3	17.05	19.16	17.81			
R	1.21	3.32	1.48			
Optimum	A1	B3	C3			

Notes: k1, k2, and k3 are the average of grade for 3 levels in each factor; R is the different value between the max and mix of k1, k2, and k3 in each level. Abbreviations: LC: load capacity; PDI: poly dispersion index. Optimum formulation of TIL-SLNs: PVA, 3%, 25 mL.