

A Combined Isolation and Formulation Approach to Convert Nanomilled Suspensions into High Drug-Loaded Composite Particles That Readily Reconstitute

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Table S1. Particle sizes of the nanosuspensions and the nanocomposites prepared via drying (with feed and bleed) followed by mortar-pestle milling.

Suspension Formulation ¹	Particle Sizes in the Nanosuspensions			Nanocomposite Particle Sizes		
	$D_{50} \pm SD$ (μm)	$D_{90} \pm SD$ (μm)	$Q (1 \mu\text{m}) \pm SD$ (%)	$D_{50} \pm SD$ (μm)	$D_{90} \pm SD$ (μm)	$D_{vm} \pm SD$ (μm)
2.5%HPC-SL	0.135 \pm 0.00	0.345 \pm 0.00	99.93 \pm 0.00	66.5 \pm 4.7	186.9 \pm 18.6	85.6 \pm 8.0
5%HPC-SL	0.143 \pm 0.00	0.379 \pm 0.01	98.65 \pm 0.02	222.4 \pm 22.8	608.0 \pm 73.2	279.0 \pm 30.9
7.5%HPC-SL	0.148 \pm 0.00	0.405 \pm 0.01	99.06 \pm 0.03	122.0 \pm 4.1	329.0 \pm 8.2	151.9 \pm 4.1
10%HPC-SL	0.152 \pm 0.00	0.414 \pm 0.02	99.63 \pm 0.53	287.7 \pm 57.2	679.8 \pm 49.0	335.2 \pm 43.9
2.5%HPC-SL/ 2.5%PVP K30	0.133 \pm 0.01	0.328 \pm 0.02	100 \pm 0.00	122.3 \pm 6.5	355.9 \pm 9.4	157.8 \pm 5.5
2.5%HPC-SL/ 5%PVP K30	0.139 \pm 0.00	0.346 \pm 0.00	100 \pm 0.00	109.6 \pm 12.9	354.3 \pm 30.2	146.5 \pm 10.6
2.5%HPC-SL/ 7.5%PVP K30	0.145 \pm 0.01	0.383 \pm 0.03	99.16 \pm 0.49	108.7 \pm 2.9	395.0 \pm 9.9	161.3 \pm 1.3
2.5%HPC-SL/ 2.5%PEG 3350	0.130 \pm 0.00	0.322 \pm 0.01	100 \pm 0.00	127.4 \pm 5.7	349.5 \pm 3.7	160.1 \pm 4.1
2.5%HPC-SL/ 5%PEG 3350	0.133 \pm 0.00	0.336 \pm 0.00	100 \pm 0.00	157.1 \pm 10.6	386.8 \pm 30.2	185.4 \pm 13.6
2.5%HPC-SL/ 7.5%PEG 3350	0.146 \pm 0.01	0.379 \pm 0.03	99.29 \pm 0.62	133.1 \pm 10.5	417.2 \pm 30.6	181.7 \pm 13.6
2.5%HPC-SL/ 2.5%VA 64	0.138 \pm 0.01	0.385 \pm 0.08	98.01 \pm 2.19	100.4 \pm 14.1	302.2 \pm 20.6	133.1 \pm 12.0
2.5%HPC-SL/ 5%VA 64	0.134 \pm 0.00	0.334 \pm 0.00	100 \pm 0.00	134 \pm 6.6	339 \pm 24.9	167 \pm 5.5
2.5%HPC-SL/ 7.5%VA 64	0.137 \pm 0.00	0.351 \pm 0.00	99.98 \pm 0.03	87.5 \pm 3.0	304.9 \pm 7.9	126.5 \pm 3.1
2.5%HPC-SL/ 0.7%F-127	0.137 \pm 0.00	0.342 \pm 0.01	100 \pm 0.00	62.0 \pm 8.9	213.9 \pm 28.7	92.0 \pm 12.7
2.5%HPC-SL/ 2.5%F-127	0.132 \pm 0.01	0.325 \pm 0.02	100 \pm 0.00	136.4 \pm 9.0	375.7 \pm 5.7	172.9 \pm 4.5
2.5%HPC-SL/ 5%F-127	0.136 \pm 0.00	0.337 \pm 0.00	100 \pm 0.00	108.1 \pm 10.4	341.4 \pm 21.7	149.8 \pm 11.4

¹All suspensions have 10% ITZ and 0.2% SDS. % w/w is with respect to the weight of deionized water (300 g).

Table S2. Particle sizes of the nanocomposites prepared via drying (with feed and bleed) followed by mortar–pestle milling and particle sizes upon aqueous redispersion.

Formulation ¹	Nanocomposite Particle Sizes		Redispersed Particle Sizes ²		
	D ₅₀ ±SD (µm)	D ₉₀ ±SD (µm)	D ₅₀ ±SD (µm)	D ₉₀ ±SD (µm)	Q (1 µm)±SD (%)
2.5%HPC-SL	66.5± 4.7	187±18.6	5.62±0.67	32±1.03	22.9±3.01
5%HPC-SL	222±22.8	608±73.2	0.367±0.00	26.5±1.15	66±0.44
7.5%HPC-SL	122±4.1	329±8.2	0.326±0.01	15.32±0.80	68.4±1.34
10%HPC-SL	288±57.2	680±49.0	0.238±0.01	6.54±0.51	85.92±0.35
2.5%HPC-SL/ 2.5%PVP K30	122±6.5	356±9.4	0.474±0.06	19.07±1.39	58.11±3.15
2.5%HPC-SL/ 5%PVP K30	110±12.9	354±30.2	0.374±0.02	15.27±0.84	63.24±1.84
2.5%HPC-SL/ 7.5%PVP K30	109±2.9	395±9.9	0.323±0.00	14.90±0.45	69.89±0.42
2.5%HPC-SL/ 2.5%PEG 3350	127±5.7	350±3.7	0.812±0.15	17.87±1.34	51.88±1.72
2.5%HPC-SL/ 5%PEG 3350	157±10.6	387±30.2	0.386±0.01	6.31±0.73	74.35±1.53
2.5%HPC-SL/ 7.5%PEG 3350	133±10.5	417±30.6	0.306±0.00	4.33±0.05	81.66±0.14
2.5%HPC-SL/ 2.5%VA 64	100±14.1	302±20.6	2.58±0.09	23.30±4.06	43.05±0.94
2.5%HPC-SL/ 5%VA 64	134±6.6	339±24.9	2.637±0.16	21.10±2.21	40.62±1.52
2.5%HPC-SL/ 7.5%VA 64	87.5±3.0	305±7.9	3.06±0.04	15.73±0.63	33.42±0.50
2.5%HPC-SL/ 0.7%F-127	62.0±8.9	214±28.7	0.259±0.00	4.74±0.13	83.16±0.43
2.5%HPC-SL/ 2.5%F-127	136±9.0	376±5.7	0.141±0.00	0.394±0.02	98.76±0.54
2.5%HPC-SL/ 5%F-127	108±10.4	341±21.7	0.145±0.00	0.393±0.01	98.48±0.07

¹All precursor suspensions of the nanocomposites have 10% ITZ and 0.2% SDS. % w/w is with respect to the weight of deionized water (300 g).

²Particle size was measured at the end of 30 min aq. redispersion.