

Table S1 Definition of three types of efficiencies. (1) simple efficiency; (2) rational efficiency; (3) utility efficiency.

EFFICIENCY	FORMULA
Simple efficiency (η_1)	$\eta_1 = \frac{Ex_{pr} + Ex_w}{Ex_{in}}$
Rational efficiency (η_2)	$\eta_2 = \frac{Ex_{pr}}{Ex_{in}}$
Utility efficiency (η_3)	$\eta_3 = \frac{Ex_{pr} - Ex_{tr}}{Ex_{in} - Ex_{tr}}$

Table S2 Summary of batch versus continuous wet granulation based tablet manufacturing resource efficiency analysis at process level (α -level) (%).

PROCESS	BATCH			CONTINUOUS		
	η_1	η_2	η_3	η_1	η_2	η_3
α -1 DISPENSING	98.8	96.1	69.8	98.8	96.1	70.0
α -2 GRANULATION	69.7	60.3	23.8	94.3	85.2	61.3
α -3 MIXING	99.3	98.6	52.9	99.8	99.0	78.4
α -4 COMPRESSION	95.3	87.9	61.1	99.4	91.8	93.2
α -5 COATING	66.4	62.4	10.6	66.8	62.9	10.6
α -6 PACKAGING	98.7	97.8	41.9	98.7	97.8	42.2
TOTAL PROCESS LEVEL	78.6	71.7	24.4	86.5	79.9	32.8

Table S3 Summary of batch versus continuous wet granulation based tablet manufacturing irreversibility generation and irreversibility reduction at process level (α -level), FU = 1 tablet.

PROCESS	BATCH IRREVERSIBILITY (kJ/tablet)	CONTINUOUS IRREVERSIBILITY (kJ/tablet)	IRREVERSIBILITY REDUCTION (%)
α -1 DISPENSING	0.2	0.1	2.6
α -2 GRANULATION	6.1	0.8	86.6
α -3 MIXING	0.1	0.0	68.3
α -4 COMPRESSION	0.6	0.1	88.6
α -5 COATING	6.4	6.3	1.8
α -6 PACKAGING	0.6	0.6	1.8
TOTAL PROCESS LEVEL	14.0	8.0	43.1