Supplementary data

Table S1. HPLC - analytical conditions

	MSC-A
Column	Phenomenex Kinetex 2.6 µm XB-C18 100 A (50 x 4.6 mm)
Flow rate (mL/min)	1.4
Column temperature (°C)	40
Wavelength detection (nm)	227
Injection volume (µL)	90
Retention time (min)	2.1

Table S2. Gradient profile of solubility-indicating HPLC method for MSC-A.

Time (min)	**Solvent A (%)***	**Solvent B (%)****
0	0	100
3.5	0	100
3.6	85	15
5.5	85	15

*Solvent A: 5% acetonitrile, 95% water mixed with 0.1% (V/V) TFA
**Solvent B: 95% acetonitrile, 5% water mixed with 0.1% (V/V) TFA

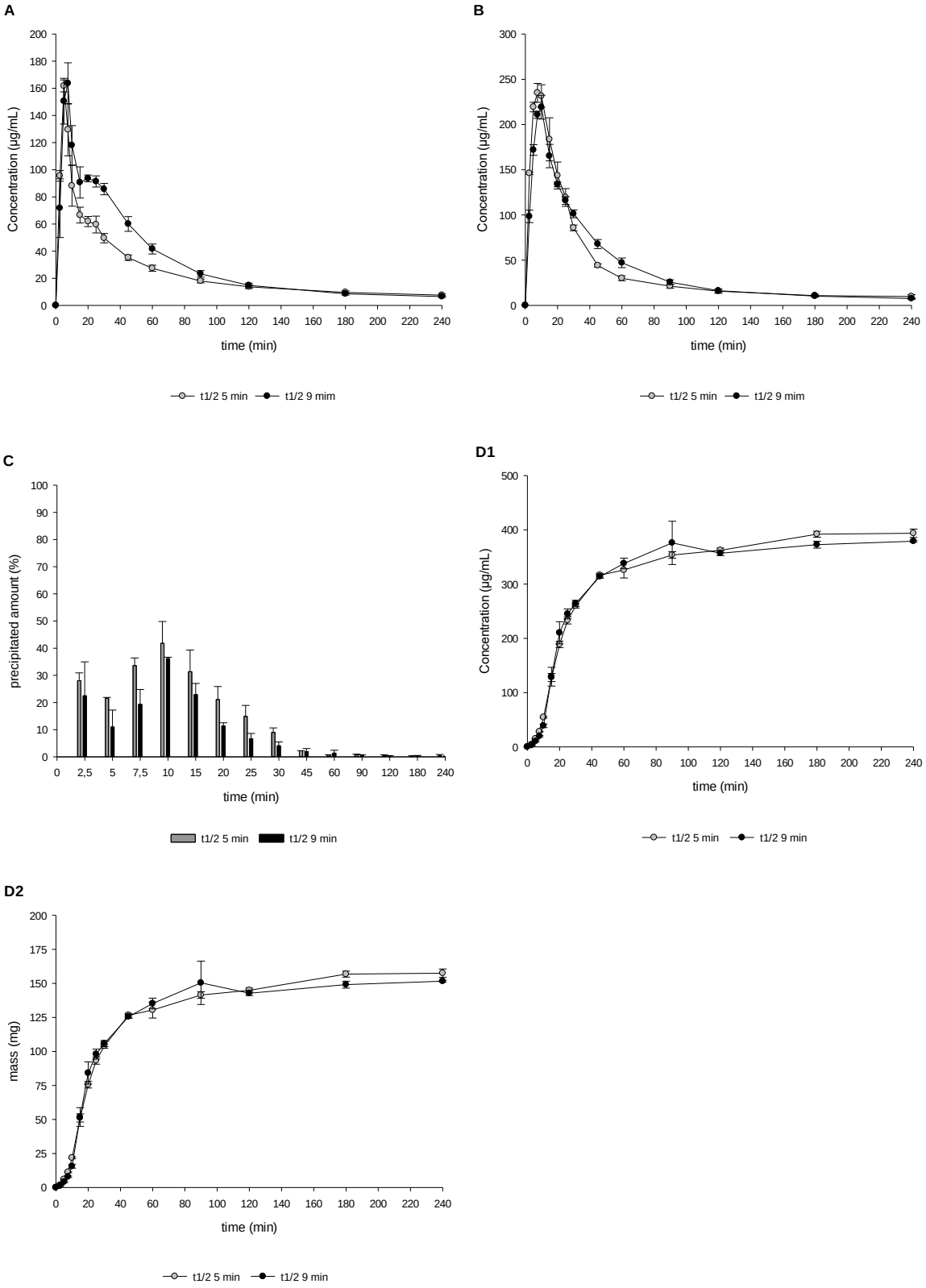


Figure S1. Aqueous phase drug concentration profiles (A), total amount profiles (aqueous phase & precipitate) (B), and precipitated amount (C) obtained from the aqueous filtered and un-filtered phase; partitioning profiles (D1 concentration/time *vs*. D2 mass/time) obtained from the organic phase during *in vitro* DTPS experiments using VR of 0.8 at simulated gastric emptying rates of 5 min half-time *vs*. 9 min half-time and 200 mg MSC-A as oral solution. Means ± SD, n = 3.

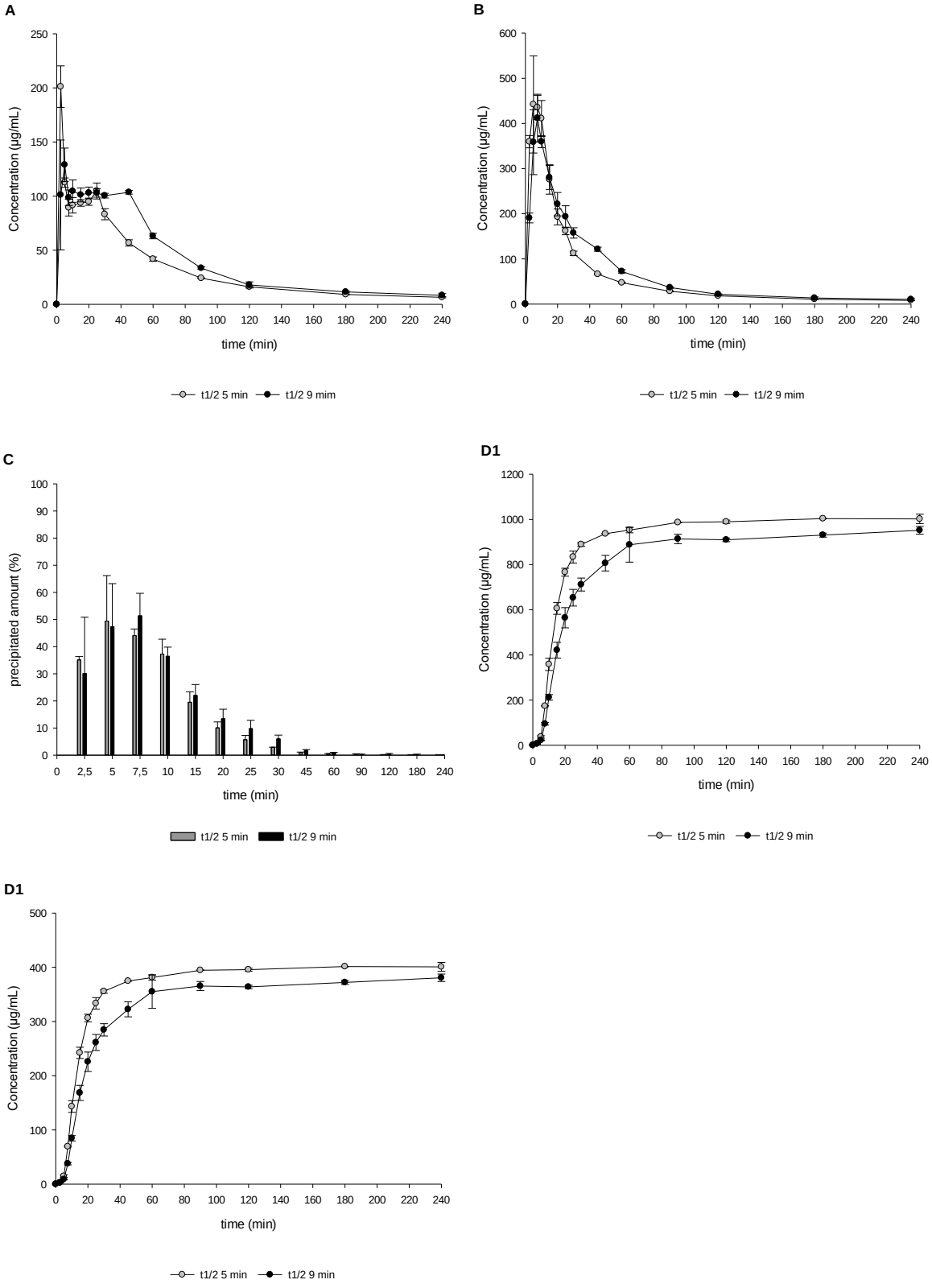


Figure S2. Aqueous phase drug concentration profiles (A), total amount profiles (aqueous phase & precipitate) (B), and precipitated amount (C) obtained from the aqueous filtered and un-filtered phase; partitioning profiles (D1 concentration/time *vs*. D2 mass/time) obtained from the organic phase during *in vitro* DTPS experiments using VR of 0.8 at simulated gastric emptying rates of 5 min half-time *vs*. 9 min half-time and 500 mg MSC-A as oral solution. Means ± SD, n = 3.

Table S3. UPLC-MS/MS method

LC System:	Waters Acquity UPLC® I-Class System (Binary Solvent Manager with Acquity UPLC® Sample Manager-FL equipped with Masslynx version 4.1)			
Column:	Waters Acquity UPLC BEH C_{18}, 1.7 µm, 2.1 x 50 mm			
Sample temperature:	4 °C			
Column temperature:	40 °C			
Mobile Phase A:	1000:10 water/1 M ammonium formate			
Mobile Phase B:	acetonitrile			
Gradient Program:	Time (min)	Mobile Phase A	Mobile Phase B	Curve
		800 µL/min total flow rate		
	0.00	65%	35%	Initial
	1.50	65%	35%	6
	1.60	5%	95%	6
	2.60	5%	95%	6
	2.70	65%	35%	6
	3.00	65%	35%	6
	3.20	Stop	Stop	NA
Seal Wash	50:50 methanol/water (5 min)			

Strong wash solvent:	1000:5 acetonitrile/formic acid
Strong wash volume:	1500 µL
Weak wash solvent:	10:90 acetonitrile/water
Weak wash volume:	2500 µL
Injection volume (standard):	10 µL
Injection mode:	Partial loop
Injection loop:	20 µL
Injection needle:	10 µL
Cycle injection valve	2.4 min, 2.9 min
Method notes:	Use 0.0025" i.d. tubing between LC column and MS source port to improve separation.
Detector:	Triple Quadrupole MS-Detector AB SCIEX API 4000
Software:	AB SCIEX Analyst, version 1.4.2
Ion source	Turbo Ion Spray
Scan Type	Selected reaction monitoring (SRM) (MS/MS)
Polarity:	Positive
Acquisition time	2.0 min
Pause time	25 ms
Minimum total cycle time	Approximately 4 min
Q1 Resolution	Unit
Q3 Resolution	Unit

Retention time MSC-A: approximately 1.05 min (± 0.21 min)

Mass range MSC-A: 430 → 279 @100 ms