

Supplementary Materials: Solid Lipid Nanoparticles for Duodenum Targeted Oral Delivery of Tilmicosin

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Table S1. Papp and Ka of various concentration TIL-SLNs in duodenum (Mean \pm SD, n = 3).

Concentration (mg/mL)	Papp ($\times 10^{-3}$ cm/min)	Ka ($\times 10^{-3}$ /min)
0.06	0.63 \pm 0.05	2.13 \pm 0.18
0.125	0.77 \pm 0.05	1.97 \pm 0.20
0.5	0.70 \pm 0.14	1.84 \pm 0.36

Table S2. Papp and Ka of TIL-SLNs and solution in various intestine sections (Mean \pm SD, n = 3).

Preparations	Intestine section	Papp ($\times 10^{-3}$ cm/min)	Ka ($\times 10^{-2}$ min ⁻¹)
TIL-SLNs	Duodenum	0.77 \pm 0.05	1.97 \pm 0.20
	Jejunum	0.09 \pm 0.04 ^a	0.25 \pm 0.05
	Ileum	0.60 \pm 0.16 ^b	1.73 \pm 0.08
Solution	Duodenum	0.37 \pm 0.09 ^{abc}	1.18 \pm 0.22
	Jejunum	0.09 \pm 0.02 ^{acd}	0.20 \pm 0.09
	Ileum	0.67 \pm 0.09 ^{bde}	1.90 \pm 0.07

Note: ^a: Statistically significances from TIL-SLNs duodenum; ^b: Statistically significances form TIL-SLNs jejunum; ^c: Statistically significances from TIL-SLNs ileum; ^d: Statistically significances from solution duodenum; ^e: Statistically significances from solution jejunum. The statistical difference was analyzed by one-way analysis of variance at $p < 0.05$.

Table S3. The influence of various inhibitors to Papp and Ka of TIL-SLNs (Mean \pm SD, n = 3).

Inhibitors	Papp ($\times 10^{-3}$ cm/min)	Ka ($\times 10^{-2}$ /min)
Pure TIL-SLNs (0.125 mg/mL)	0.77 \pm 0.05	1.97 \pm 0.20
Verapamil	4.20 \pm 0.06 ^a	8.05 \pm 0.33
Indomethacin	1.03 \pm 0.19 ^{ab}	2.60 \pm 0.42
EDTA-2Na	2.89 \pm 0.25 ^{abc}	6.18 \pm 0.41
0.5% Tween 80	1.27 \pm 0.05 ^{abd}	3.25 \pm 0.44
1% Tween 80	1.79 \pm 0.25 ^{abcde}	4.20 \pm 0.51

Note: ^a: Statistically significances from pure TIL-SLNs (0.125 mg/mL); ^b: Statistically significances form verapamil; ^c: Statistically significances from indomethacin; ^d: Statistically significances from EDTA-2Na; ^e: Statistically significances from 0.5% T-80. The statistical difference was analyzed by one-way analysis of variance at $p < 0.05$.

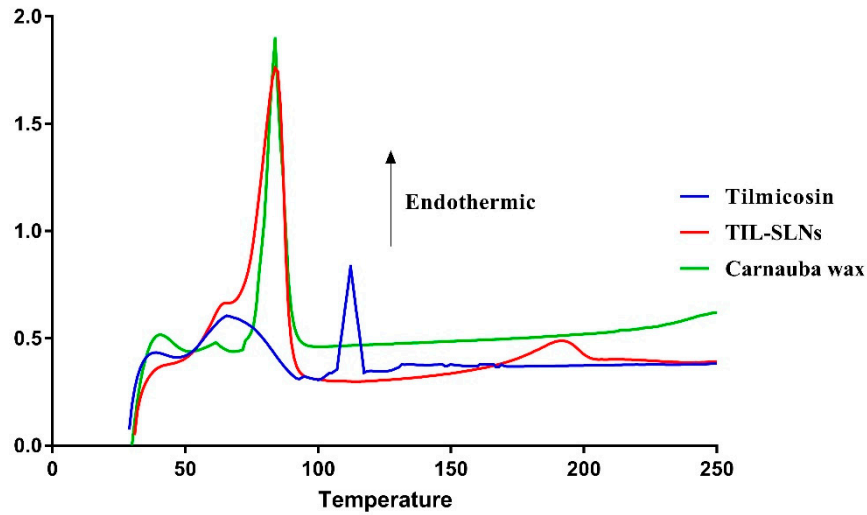


Figure S1. The DSC thermograms of pure tilmicosin, carnauba wax and TIL-SLNs.



Figure S2. The in vitro release imaging of 2h SGF (a) and SIF (b) medium.

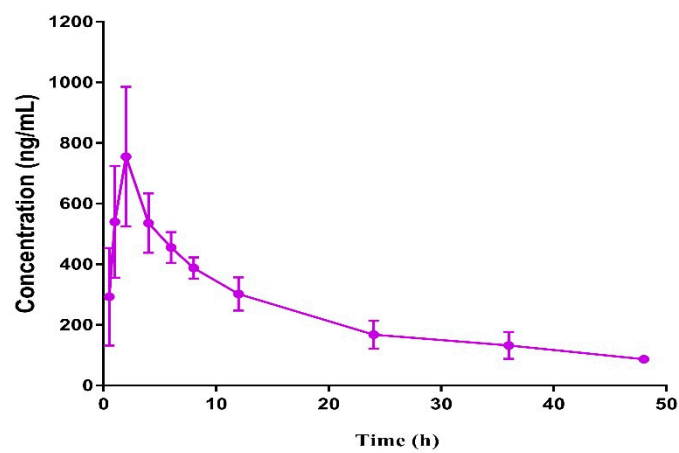


Figure S3. The plasma tilmicosin concentration-time profiles of the TIL-SLNs. Note: Key parameters: area under the curve (AUC): $11.31 \mu\text{g}\cdot\text{h}\cdot\text{mL}^{-1}$, peak concentration (C_{max}): $755 \pm 55 \text{ ng/mL}$, time reach to the peak concentration (T_{max}): 2 h.