



## Slowing down lipolysis significantly enhances the oral absorption of intact solid lipid nanoparticles

Received 00th January 20xx,  
Accepted 00th January 20xx

Zhou Yu,<sup>a,†</sup> Wufa Fan,<sup>a,†</sup> Luting Wang,<sup>a</sup> Haisheng He,<sup>a</sup> Yongjiu Lv,<sup>a</sup> Jianping Qi,<sup>a</sup> Yi Lu<sup>a</sup> and Wei Wu<sup>a,b,\*</sup>

DOI: 10.1039/x0xx00000x

www.rsc.org/

**Table 1S** Fluorescence Intensity of SLN, PEG-SLN and OLST-SLN (Mean  $\pm$  SD, n = 3)

|          | P2<br>( $\mu$ g) | P4<br>( $\mu$ g) | Fluorescence Intensity (Total, $\times 10^9$ ) |                 |
|----------|------------------|------------------|------------------------------------------------|-----------------|
|          |                  |                  | P2                                             | P4              |
| SLN      | 300              | 20               | 12.15 $\pm$ 0.5                                | 3.98 $\pm$ 0.08 |
| PEG-SLN  | 300              | 20               | 13.12 $\pm$ 0.7                                | 4.41 $\pm$ 0.09 |
| OLST-SLN | 300              | 20               | 11.33 $\pm$ 0.6                                | 3.54 $\pm$ 0.09 |

**Table 2S** Lymph transport (%) of SLN, PEG-SLN and OLST-SLN

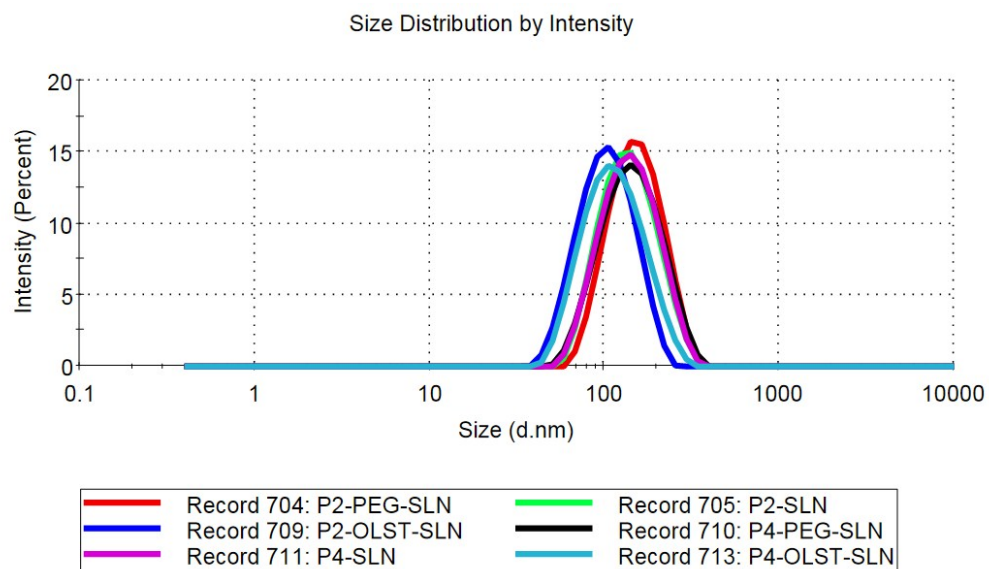
| Time (h) | SLN   | PEG-SLN | OLST-SLN |
|----------|-------|---------|----------|
| 0        | 0.000 | 0.000   | 0.000    |
| 2        | 0.128 | 0.173   | 0.062    |
| 4        | 0.414 | 0.298   | 0.124    |
| 6        | 0.441 | 0.214   | 0.641    |
| 8        | 0.190 | 0.280   | 1.629    |
| 10       | 0.101 | 0.199   | 2.074    |
| 12       | 0.000 | 0.137   | 1.833    |
| 16       | 0.000 | 0.208   | 0.700    |
| 20       | 0.000 | 0.147   | 0.493    |
| 24       | 0.000 | 0.000   | 0.008    |

<sup>a</sup> Key Laboratory of Smart Drug Delivery of MOE, School of Pharmacy, Fudan University, Shanghai, 201203, China. E-mail: wuweij@shmu.edu.cn.

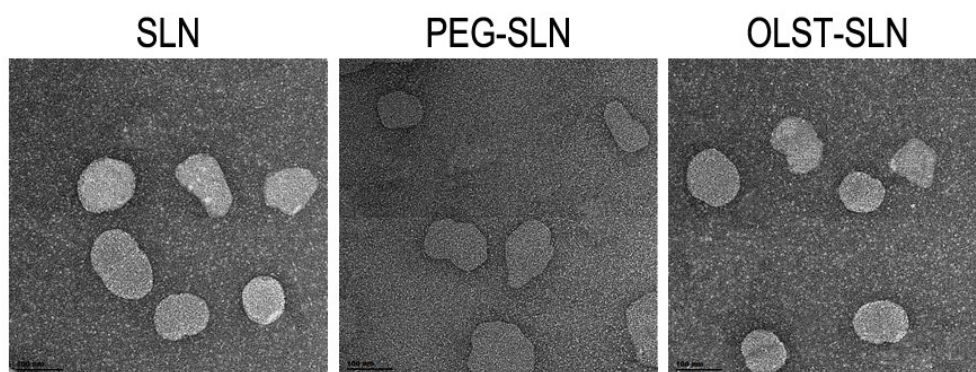
<sup>b</sup> Center for Medical Research and Innovation, Shanghai Pudong Hospital, Fudan University Pudong Medical Center, Shanghai, 201399, China.

<sup>†</sup> These authors contribute equally to this article.

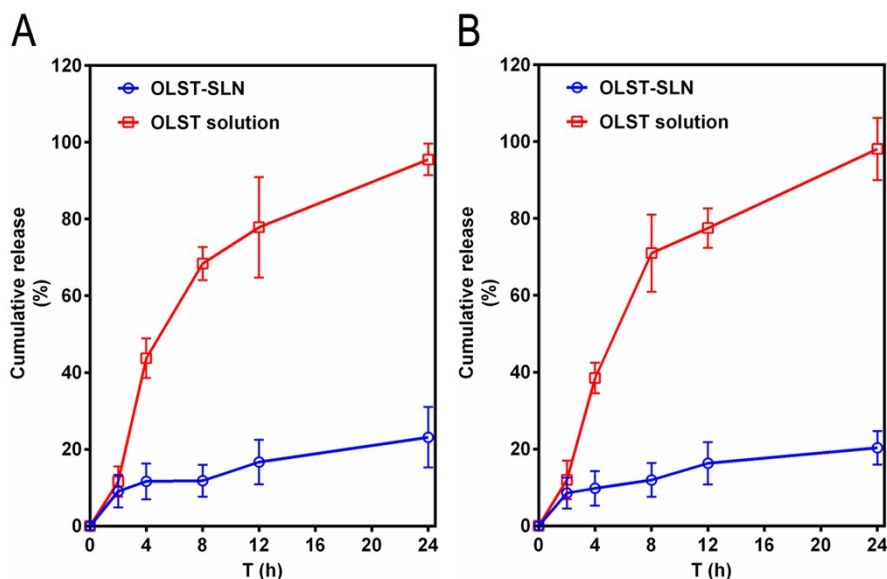
Electronic Supplementary Information (ESI) available: [details of any supplementary information available should be included here]. See DOI: 10.1039/x0xx00000x



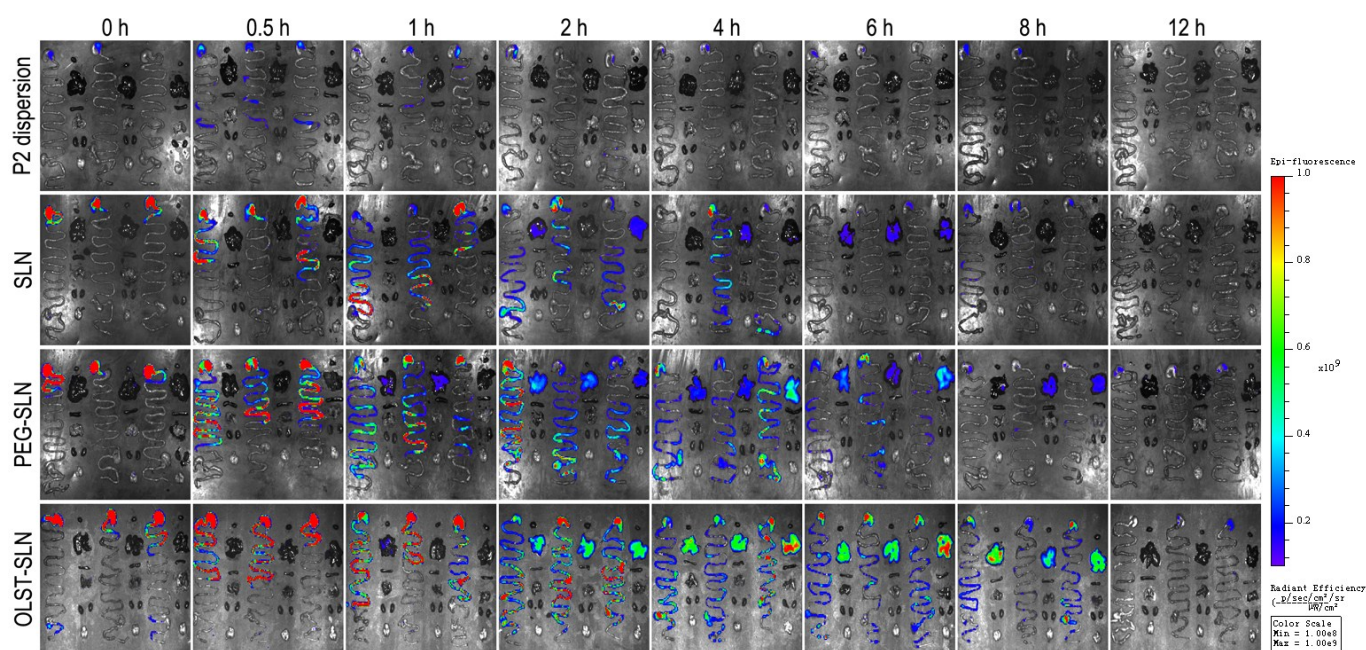
**Fig. 1S** Particle size and distribution of fluorescence-labelled SLN, PEG-SLN and OLST-SLN.



**Fig. 2S** TEM observation of SLN, PEG-SLN and OLST-SLN.



**Fig. 3S** *In vitro* release of OLST (A: cumulative OLST release in pH=1.2 HCl; B: cumulative OLST release in pH=6.8 PBS)



**Fig. 4S** Biodistribution of quenched P2 dispersion (control), SLN, PEG-SLN and OLST-SLN following oral administration. Tissues and organs were placed in the following sequence: GI tract (on the left); heart, liver, spleen, lung, kidney and brain (on the right, from top to bottom) and each image comprised three parallels.