Supplementary Information for

Original Article

Selenium-layered nanoparticles serving for oral delivery of phytomedicines with hypoglycemic activity to synergistically potentiate the antidiabetic effect

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1. Dose compatibility between mulberry leaf extracts and *Pueraria Lobata* extracts

MPE-NPs were prepared by the solvent diffusion method using a 1: 1 ratio of mulberry leaf extracts to *Pueraria Lobata* extracts (M/P). For the preparation of MPE-SeNPs, the ratio of M/P changed from 1:3 to 3:1, and the preparative method followed the same procedure described in the main text. To confirm the optimal dose compatibility, we investigated the hypoglycemic effect of MPE-SeNPs with different ratios of M/P. SD rats were intragastrically administrated with saline, MPE, MPE-NPs or MPE-SeNPs. An appropriate amount of blood was sampled from the tail vein of the rats and prepared into plasma. The glucose concentration in the plasma was determined by the glucose assay kit. The blood glucose level *vs.* time curves are shown in **Fig. S1.**

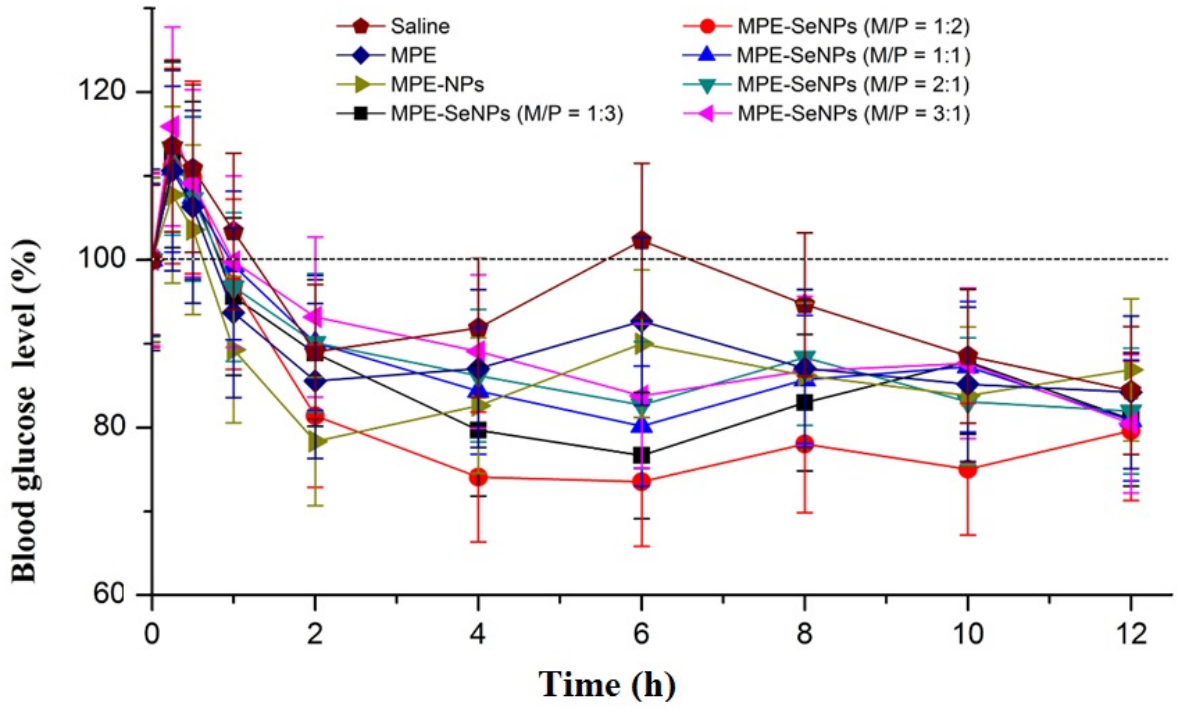

Figure S1 The hypoglycemic effect of various dose ratio of Mulberry Leaf extracts to Pueraria Lobata extracts used in the formulation of MPE-NPs (n = 3, mean ± SD).

2. Preparation and culture of adipocytes

SD rats were anaesthetized to obtain the inguinal fat tissue under the aseptic environment, and the inguinal fat tissue was excised and rinsed several times with an antibiotic PBS (pH = 7.2). The fat tissue was then cut into tiny pieces, washed with PBS, and digested with collagenases. After that, the fat stem cells were collected by centrifugation. Then, the cells were cultured in DF12 complete medium at 37 °C/5% CO_2 atmosphere. The complete medium was changed every other day until the cell growth in the density of 80%, and the cells were cultured. After that, the stem cells were seeded in 48-well plate, and the complete medium was changed every three days until the stem cells in the fusion of 100%. The cells were firstly induced with medium A for 72 h, and then treated with medium B for 24 h. In this way, the induction was performed until the formation of adipocytes (**Fig. S2**).

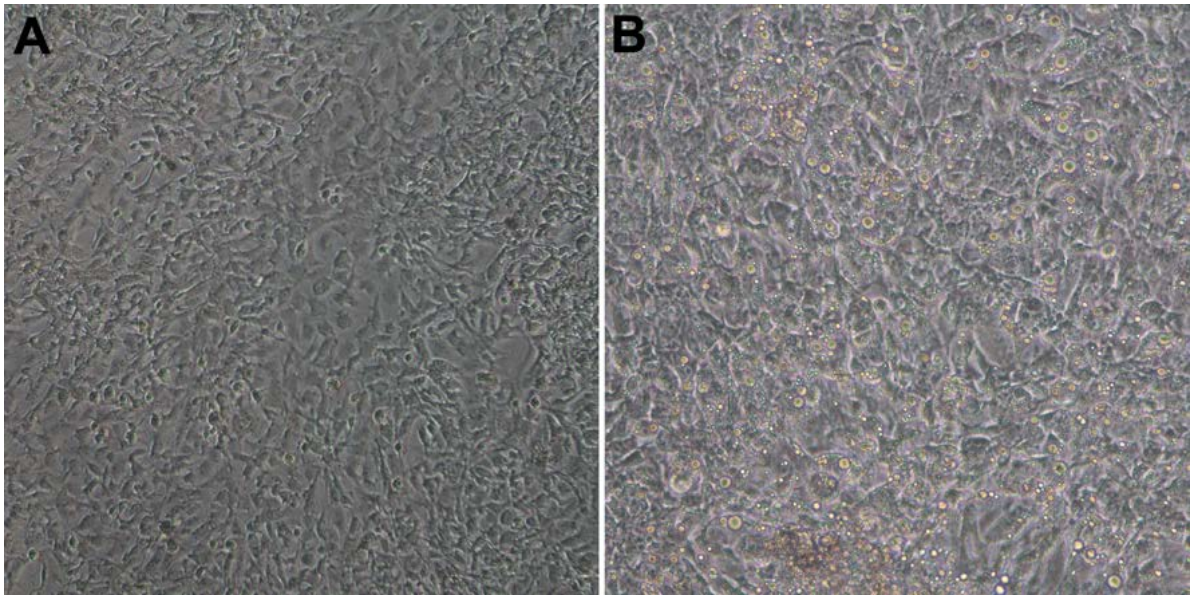

Figure S2 Induction of adipocytes from adipose-derived stem cells (ADSCs) prepared from the injuinal fat tissue of rat. The formation of fat bubbles in the cells indicates the success of adipocyte induction.