

## Figure Legends

**Figure 1.** Infographic showing the fabrication of PLGA/SKF38393 via the S/O/W method. Created with Biorender.

**Figure 2.** (A) SEM images of PLGA and PLGA/SKF38393. (B) Particle size analysis of PLGA and PLGA/SKF38393. (C) FT-IR spectra of PLGA, SKF38393, and PLGA/SKF38393. (D) Release rate of SKF38393 in PLGA/SKF38393.

**Figure 3.** (A) Fluorescent staining indicating the cell adhesion of PLGA/SKF38393. (B) The safe concentration of PLGA/SKF38393 based on a CCK-8 assay. (C) Live/dead staining.

**Figure 4.** ALP staining and relative ALP activity: Alizarin red staining and total absorbance measurements during late hBMSC osteogenic differentiation stimulated with SKF38393 and PLGA/SKF38393 ( $n = 3$  for all groups), a: CTL; b: SKF38393; c: PLGA+SKF38393. \*  $p < 0.05$ .

**Figure 5.** (A) Quantitative RT-PCR analysis of ALP and Runx2 expression during hBMSC osteogenic differentiation stimulated with SKF38393 and PLGA/SKF38393 ( $n = 3$  for all groups), \*  $p < 0.05$ . (B) Western blot analysis of ALP and Runx2 expression during hBMSC osteogenic differentiation stimulated with SKF38393 and PLGA/SKF38393.

**Figure 6.** Micro-CT images of the ROIs and changes in the BV/TV, Tb.th, Tb.Sp, and BMD of the femurs in all five groups. The parameters are expressed as the mean  $\pm$  SD,  $n = 5$  specimens per group, \*  $p < 0.05$ .

**Figure 7.** Changes in the histological test for all five groups determined via HE staining and Masson staining.

**Figure 8.** The q-PCR array results showing the mRNA expression involved in osteogenic differentiation in hBMSCs stimulated with SKF38393 and PLGA/SKF38393.

**Figure S1:** ROI of Micro-CT

**Figure S2:** Safety concentration of SKF38393 by CCK-8 assay. \* $p < 0.05$ .

**Figure S3:** Quantitative RT-PCR analysis of ALP and Runx2 expression during hBMSCs osteogenic differentiation stimulated with PLGA (n = 3 for all groups)