Supplementary information

Zein/gelatin/nanohydroxyapatite nanofibrous scaffolds are biocompatible and promote osteogenic differentiation of human periodontal ligament stem cells

Qianmin Ou[a,#], Yingling Miao[b,#], Fanqiao Yang[c], Xuefeng Lin[a], Li-Ming Zhang[b,*] and Yan Wang[a,*]

[a]Guanghua School of Stomatology, Sun Yat-sen University, Guangdong Provincial Key Laboratory of Stomatology, Guangzhou 510080, China.

[b]School of Materials Science and Engineering, Sun Yat-sen University, Guangzhou 510275, China.

[c]Shunde hospital of Southern Medical University, Southern Medical University, Shunde, 528300, China.

# The first two authors contributed equally to this study.

* Corresponding author: Li-Ming Zhang and Yan Wang.

* E-mail: ceszhlm@mail.sysu.edu.cn (Li-Ming Zhang), Phone: +86 2084112354

* E-mail: wang93@mail.sysu.edu.cn (Yan Wang), Phone: +86 2087330592

Supplementary methods:

1. Mechanical analyses

The different electrospun scaffolds were cut into 10×30 mm^2 in size. Tensile was examined using an electronic universal testing machine (CMT6103, Sans, Shenzhen, China). The measurement was completed with a stretching speed of 2 mm/min at 25 °C and relative humidity 46%. Three specimens of each sample were measured.

2. In vitro degradation

The in vitro degradation behaviors of the different scaffolds were studied in PBS supplemented with collagenase type I (10 mg/mL). The nanofibrous scaffolds were cut into 10×10 mm^2 and dried under vacuum. After weighing, they were immersed in buffer solution. The solution was replaced daily. At the observed time, the samples were withdrawn, rinsed and dried.[1,2] The weight loss of each samples were calculated (1).

$$\text{Weight loss (\%)} = \frac{W_0 - W_t}{W_0} \times 100\% \tag{1}$$

W_0 was the initial weight of the scaffold and W_t was the weight of the scaffold after degradation at the observed time.

Supplementary Results:
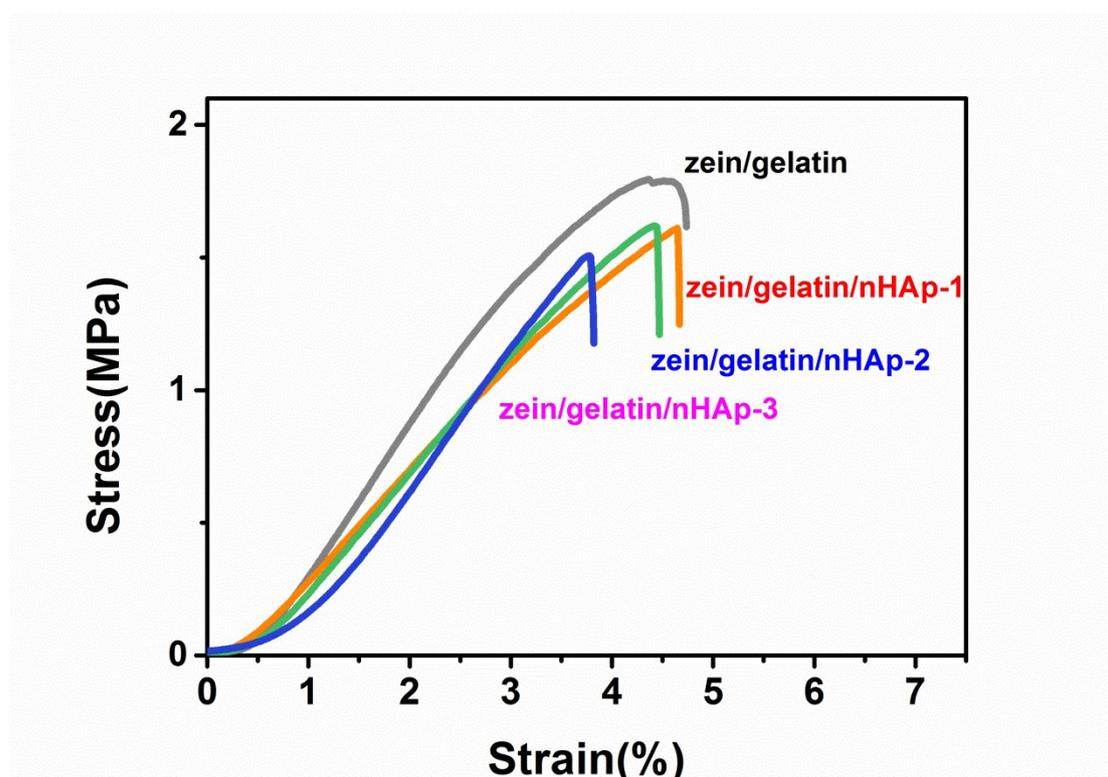
Figure.S1. Typical stress–strain curves of zein/gelatin, zein/gelatin/nHAp-1, zein/gelatin/nHAp-2, zein/gelatin/nHAp-3 electrospun membranes.

Table S1. Mechanical properties of electrospun zein/gelatin nanofibers with different compositions.

	Stress/%	Strain/MPa
zein/gelatin	4.6±0.09	1.79±0.16
zein/gelatin/nHAp-1	4.65±0.12	1.60±0.10
zein/gelatin/nHAp-2	4.43±0.11	1.62±0.11
zein/gelatin/nHAp-3	3.78±0.13	1.51±0.08
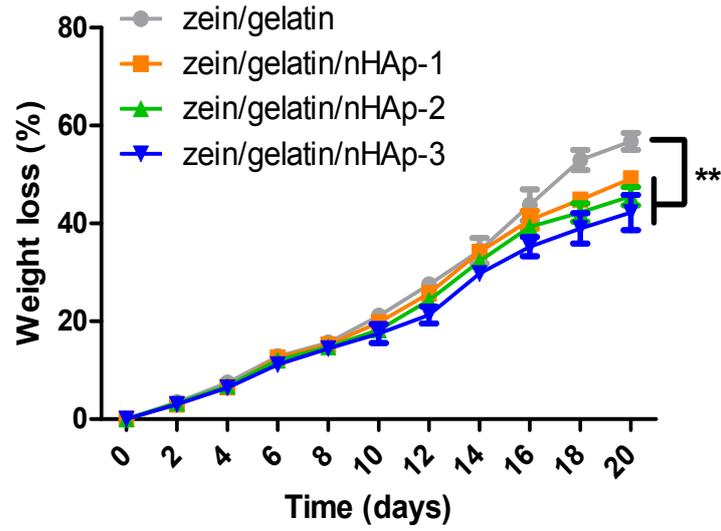
Figure. S2.

Degradation behaviors of zein/gelatin, zein/gelatin/nHAp-1, zein/gelatin/nHAp-2, zein/gelatin/nHAp-3 electrospun membranes in collagenase type I solution (**$p <$ 0.01).

References:

1   J. Li, W. Xu, D. Li, T. Liu, Y. S. Zhang, J. Ding and X. Chen, *ACS Nano*, 2018, **12**, 6685-6699.

2   J. Wei, P. Guo-Wang, Q. Han, J. Ding and X. Chen, *J Control Release*, 2015, **213**, e62-3.