

## Supporting information

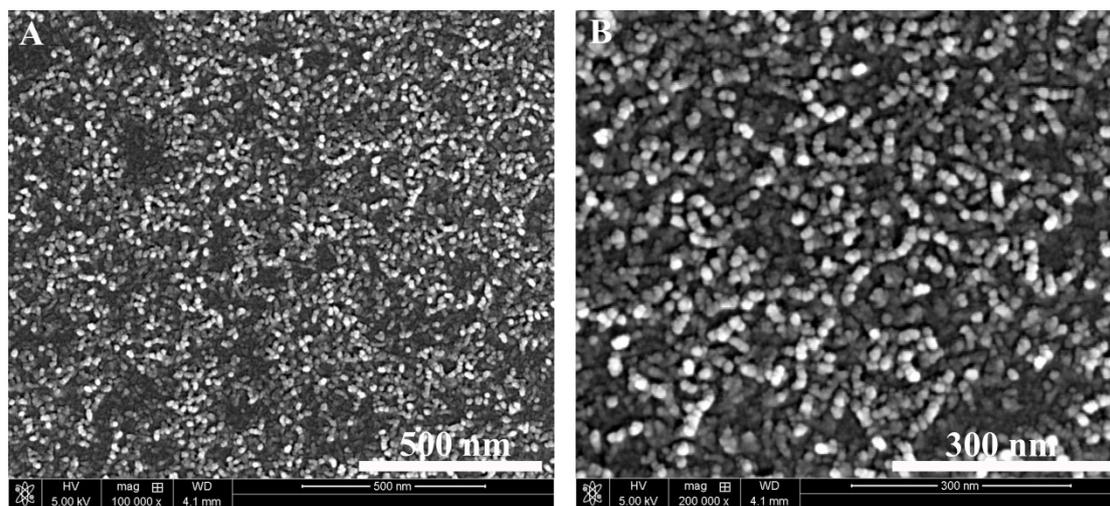


Figure.1 The SEM potography of sericin nanogel.

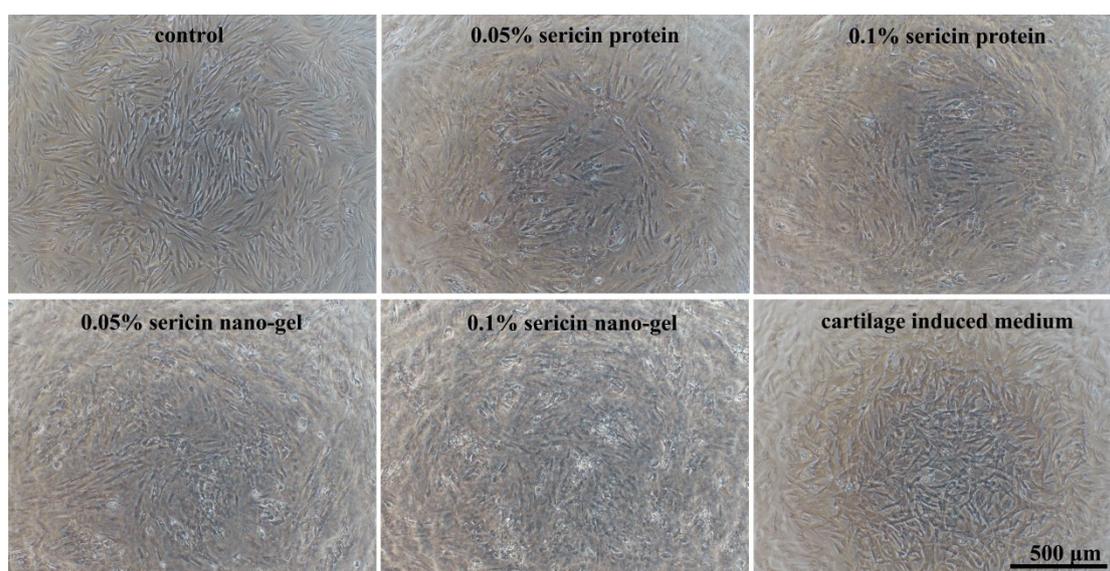


Figure.2 The Phase contrast microscope photos of MSCs cultured in various medium for 5 days. MSCs concentration began to form in 0.05% and 0.1% sericin nano-gel group. Control: normal media, 0.05% sericin protein: normal medium containing 0.05% sericin protein, 0.1% sericin protein: normal medium containing 0.1% sericin protein, 0.05% sericin nano-gel: normal medium containing 0.05% sericin nano-gel, 0.1% sericin nano-gel: normal medium containing 0.1% sericin nano-gel.

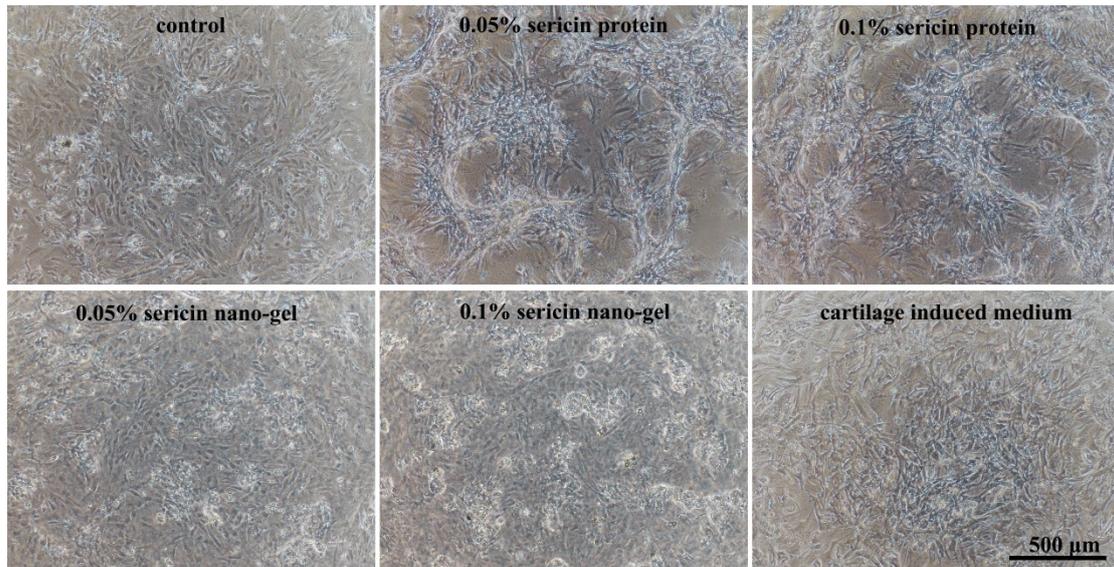


Figure.3 The Phase contrast microscope photos of MSCs cultured in various medium for 21 days. Many micro-tissues formed in 0.05% and 0.1% sericin nano-gel group. Control: normal media, 0.05% sericin protein: normal medium containing 0.05% sericin protein, 0.1% sericin protein: normal medium containing 0.1% sericin protein, 0.05% sericin nano-gel: normal medium containing 0.05% sericin nano-gel, 0.1% sericin nano-gel: normal medium containing 0.1% sericin nano-gel.

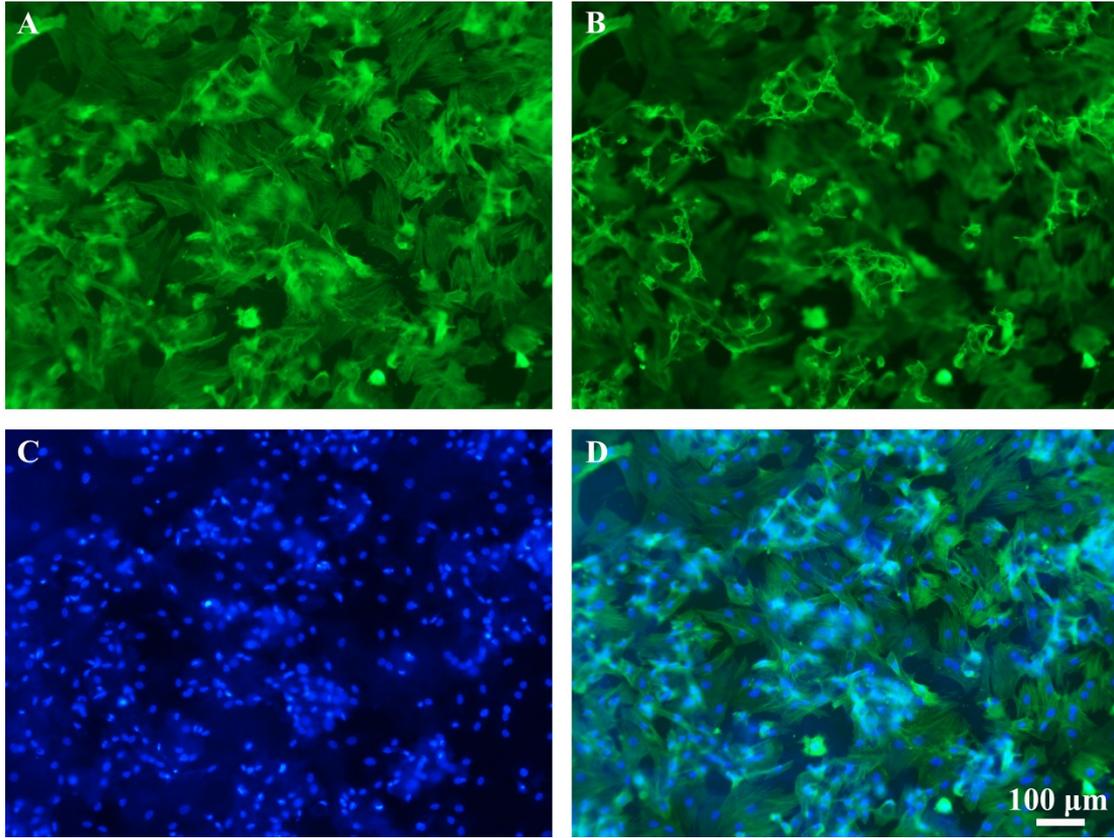


Figure.4 F-actin and nucleus fluorescence staining of MSCs cultured with 0.05% sericin nano-gel medium for 7 days. The F-actin (A and B) and the nucleus (C) stained by phalloidin-FITC and DAPI, respectively. A and B are captured at a same place with different focusing distance.

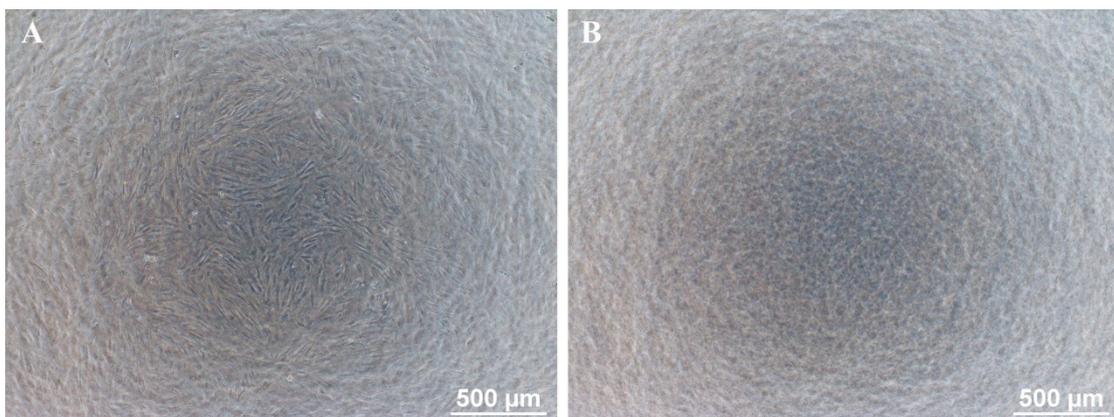


Figure.5 The Phase contrast microscope photos of MSCs cultured in 0.1% sericin nano-gel medium for 2 days (A) and sericin nano-gel soft aggregations (B) in the medium. They are captured at a same place with

different focusing distance.



Figure.6 Images of DMEM (A) and DMEM containing 0.05% sericin nano-gel (B) captured by mobile phone.