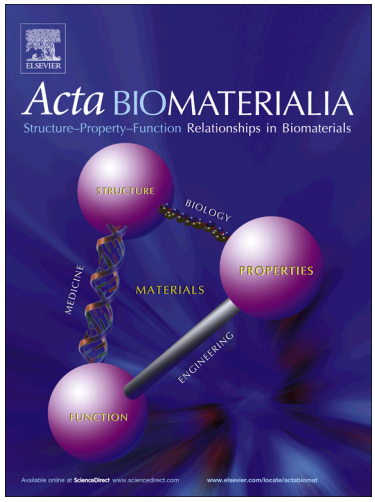

Full length article

Protective Therapeutic Effects of Peptide Nanofiber and Hyaluronic Acid Hybrid Membrane in *in vivo* Osteoarthritis Model

Elif Arslan, Melis Sardan Ekiz, Cagla Eren Cimenci, Nuray Can, M. Hanifi Gemci, Huseyin Ozkan, Mustafa O. Guler, Ayse B. Tekinay

PII: S1742-7061(18)30214-9
DOI: https://doi.org/10.1016/j.actbio.2018.04.015
Reference: ACTBIO 5415

To appear in: *Acta Biomaterialia*

Received Date: 7 October 2017
Revised Date: 2 April 2018
Accepted Date: 5 April 2018

Please cite this article as: Arslan, E., Ekiz, M.S., Cimenci, C.E., Can, N., Gemci, M.H., Ozkan, H., Guler, M.O., Tekinay, A.B., Protective Therapeutic Effects of Peptide Nanofiber and Hyaluronic Acid Hybrid Membrane in *in vivo* Osteoarthritis Model, *Acta Biomaterialia* (2018), doi: https://doi.org/10.1016/j.actbio.2018.04.015

Protective Therapeutic Effects of Peptide Nanofiber and Hyaluronic Acid Hybrid Membrane in *in vivo* Osteoarthritis Model

Elif Arslan[1], Melis Sardan Ekiz[1], Cagla Eren Cimenci[1], Nuray Can[2], M. Hanifi Gemci[2], Huseyin Ozkan[2,], Mustafa O. Guler[3,]*, Ayse B. Tekinay[1, #,]**

[1]*Institute of Materials Science and Nanotechnology, Nanotechnology Research Center (UNAM),* [#]*Neuroscience Graduate Program, Bilkent University, Ankara 06800, Turkey*

[2]*Department of Orthopedics and Traumatology, Gulhane Military Medical Academy, Ankara 06010, Turkey*

[3]*Institute for Molecular Engineering, University of Chicago, Chicago, IL 60637, USA*

*Corresponding authors' e-mail addresses: heorto@yahoo.com (H.O.); mguler@uchicago.edu (M.O.G.); atekinay@bilkent.edu.tr (A.B.T)

Abstract

Osteoarthritis (OA) is a condition where tissue function is lost through a combination of secondary inflammation and deterioration in articular cartilage. One of the most common causes of OA is age-related tissue impairment because of wear and tear due to mechanical erosion. Hyaluronic acid-based viscoelastic supplements have been widely used for the treatment of knee injuries. However, the current formulations of hyaluronic acid are unable to provide efficient healing and recovery. Here, a nanofiber-hyaluronic acid membrane system that was prepared by using a quarter of the concentration of commercially available hyaluronic acid supplement, Hyalgan®, was used for the treatment of an osteoarthritis model, and Synvisc®, which is another commercially available hyaluronic acid containing viscoelastic supplement, was used as a control. The results show that this system provides