

Document details



< Back to results | 1 of 2 Next >

Export Download Print E-mail Save to PDF Add to List More... >

[Full Text](#) View at Publisher

Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS 13 September 2017, Article number 8037259, Pages 2064-2067
39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2017; International Convention Center (ICC)Jeju Island; South Korea; 11 July 2017 through 15 July 2017; Category numberCFP17EMB-ART; Code 130871

Evaluation of histological and biomechanical properties on engineered meniscus tissues using sonication decellularization (Conference Paper)

Mardhiyah, A.^a, Sha'Ban, M.^b, Azhim, A.^a  

^aDepartment of Biotechnology, Kulliyah of Sciences, International Islamic University Malaysia (IIUM), Kuantan, Malaysia

^bKulliyah of Allied Health Sciences, IIUM, Kuantan, Malaysia

Abstract

[View references \(17\)](#)

Sonication decellularization treatment requires proper evaluations on its ability to decellularize meniscus tissue efficiently. This study was done to evaluate the histological and biomechanical properties within meniscus scaffolds. Van Gieson staining was done to evaluate the efficiency of cell removal in meniscus tissues. The consequences of treatment on viscoelastic properties are vital for scaffolds quality and were properly investigated. Picrosirius red and Safranin-O/Fast green staining was carried out to detect extracellular matrix materials (ECM). Sonication decellularization treatment has the ability to demonstrated complete nuclei removal compare to control samples as well as maintaining viscoelastic properties, namely stiffness, compression and residual force. Thus, sonication decellularization treatment had successfully produced and prepared a meniscus bioscaffold candidate in which its biomechanical strength is sustained through protection of ECM properties. © 2017 IEEE.

Author keywords

Biomechanical Decellularization Extracellular matrix Menisci Scaffolds Sonication

Funding details

Funding number	Funding sponsor	Acronym
	Ministry of Higher Education, Malaysia	MOHE
25200	International Islamic University Malaysia	IIUM
FRGS15-204-0445	Ministry of Higher Education	MOHE

Funding text #1

*Research supported by Ministry of Higher Education Malaysia. A. Mardhiyah, A. Azhim are with the Department of Biotechnology, Kulliyah of Sciences, International Islamic University Malaysia (IIUM), 25200 Kuantan Malaysia (corresponding author's phone: +609-570 5042; fax: +609-571 6781; e-mail: azranazhim@iium.edu.my). M. Sha'ban, is with the Kulliyah of Allied Health Sciences, IIUM, 25200 Kuantan, Malaysia.

Funding text #2

ACKNOWLEDGMENT The authors are grateful to the Ministry of Higher Education for partly support through Fundamental Research Grant Scheme (FRGS15-204-0445), Prototype Research Grant Scheme (PRGS16-002-0033) and Transdisciplinary Research Grant Scheme (TRGS16-02-001-0001).

ISSN: 1557170X

ISBN: 978-150902809-2

Source Type: Conference Proceeding

Original language: English

DOI: 10.1109/EMBC.2017.8037259

Document Type: Conference Paper

Sponsors:

Publisher: Institute of Electrical and Electronics Engineers Inc.

Metrics

0 Citations in Scopus

0 Field-Weighted

Citation Impact



PlumX Metrics

Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

Cited by 0 documents

Inform me when this document is cited in Scopus:

[Set citation alert >](#)

[Set citation feed >](#)

Related documents

Evaluation of recellularization on decellularized aorta scaffolds engineered by ultrasonication treatment

Fitriatul, N. , Sha'Ban, M. , Azhim, A. (2017) *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*

Characterization based on biomechanical properties for meniscus scaffolds by sonication decellularization treatment

Norzarini, A. , Kitajima, T. , Feng, Z. (2017) *Journal of Biomaterials and Tissue Engineering*

In vitro recellularization of aorta scaffolds prepared by sonication treatment

Syazwani, N. , Ushida, T. , Azhim, A. (2015) *2015 10th Asian Control Conference: Emerging Control Techniques for a Sustainable World, ASCC 2015*

All Export Print E-mail Save to PDF Create bibliography

Find more related documents in Scopus based on:

Authors > Keywords >

- 1 Fu, R.-H., Wang, Y.-C., Liu, S.-P., Shih, T.-R., Lin, H.-L., Chen, Y.-M., Sung, J.-H., (...), Lin, S.-Z.
Decellularization and recellularization technologies in tissue engineering

(2014) *Cell Transplantation*, 23 (4-5), pp. 621-630. Cited 25 times.

[http://docserver.ingentaconnect.com/deliver/connect/cog/09636897/v23n4/s21.pdf?](http://docserver.ingentaconnect.com/deliver/connect/cog/09636897/v23n4/s21.pdf?expires=1400081284&id=78158548&titleid=5476&accname=Elsevier+BV&checksum=DCDB407F47C8D2BE4FCB6E1C18FAE6E7)

[expires=1400081284&id=78158548&titleid=5476&accname=Elsevier+BV&checksum=DCDB407F47C8D2BE4FCB6E1C18FAE6E7](http://docserver.ingentaconnect.com/deliver/connect/cog/09636897/v23n4/s21.pdf?expires=1400081284&id=78158548&titleid=5476&accname=Elsevier+BV&checksum=DCDB407F47C8D2BE4FCB6E1C18FAE6E7)

doi: 10.3727/096368914X678382

[View at Publisher](#)

- 2 Azhim, A., Yamagami, K., Muramatsu, K., Morimoto, Y., Tanaka, M.

The use of sonication treatment to completely decellularize blood arteries: A pilot study

(2011) *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, art. no. 6090685, pp. 2468-2471. Cited 7 times.

ISBN: 978-142444121-1

doi: 10.1109/IEMBS.2011.6090685

[View at Publisher](#)

- 3 Azhim, A., Syazwani, N., Morimoto, Y., Furukawa, K.S., Ushida, T.

The use of sonication treatment to decellularize aortic tissues for preparation of bioscaffolds

(2014) *Journal of Biomaterials Applications*, 29 (1), pp. 130-141. Cited 11 times.

<http://jba.sagepub.com/>

doi: 10.1177/0885328213517579

[View at Publisher](#)

- 4 Norzarini, A., Azhim, A., Ushida, T.

Decellularized bovine meniscus in morphological assessment prior to bioscaffold preparation

(2015) *2015 10th Asian Control Conference: Emerging Control Techniques for a Sustainable World, ASCC 2015*, art. no. 7244681. Cited 2 times.

ISBN: 978-147997862-5

doi: 10.1109/ASCC.2015.7244681

[View at Publisher](#)

- 5 Ingram, J.H., Korossis, S., Howling, G., Fisher, J., Ingham, E.

The use of ultrasonication to aid recellularization of acellular natural tissue scaffolds for use in anterior cruciate ligament reconstruction

(2007) *Tissue Engineering*, 13 (7), pp. 1561-1572. Cited 60 times.

doi: 10.1089/ten.2006.0362

[View at Publisher](#)

- 6 Norzarini, A., Kitajima, T., Feng, Z., Sha'ban, M., Azhim, A.

Characterization based on biomechanical properties for meniscus scaffolds by sonication decellularization treatment

(2017) *Journal of Biomaterials and Tissue Engineering*, 7 (3), pp. 223-232. Cited 2 times.

<http://www.ingentaconnect.com/contentone/asp/jbte/2017/00000007/00000003/art00005>

doi: 10.1166/jbt.2017.1565

[View at Publisher](#)

- 7 Azhim, A., Shafiq, M., Rasyada, R., Furukawa, K., Ushida, T.
The impact of acoustic intensity on solution parameters and decellularization using sonication treatment
(2015) *Journal of Biomaterials and Tissue Engineering*, 5 (3), pp. 195-203. Cited 4 times.
<http://docserver.ingentaconnect.com/deliver/connect/asp/21579083/v5n3/s3.pdf?expires=1433913349&id=82021568&titleid=72010047&accname=Elsevier+BV&checksum=548AA91B53AEA489606954F06AFD2E4F>
doi: 10.1166/jbt.2015.1300
View at Publisher
-
- 8 Azhim, A., Ono, T., Fukui, Y., Morimoto, Y., Furukawa, K., Ushida, T.
Preparation of decellularized meniscal scaffolds using sonication treatment for tissue engineering
(2013) *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, art. no. 6611157, pp. 6953-6956. Cited 11 times.
ISBN: 978-145770216-7
doi: 10.1109/EMBC.2013.6611157
View at Publisher
-
- 9 Azhim, A., Yamagami, K., Muramatsu, K., Morimoto, Y., Furukawa, K.S., Tanaka, M., Fukui, Y., (...), Ushida, T.
The use of sonication treatment to completely decellularize aorta tissue
(2013) *IFMBE Proceedings*, 39 IFMBE, pp. 1987-1990. Cited 6 times.
ISBN: 978-364229304-7
doi: 10.1007/978-3-642-29305-4_522
View at Publisher
-
- 10 Syazwani, N., Azhim, A., Morimoto, Y., Furukawa, K.S., Ushida, T.
Decellularization of aorta tissue using sonication treatment as potential scaffold for vascular tissue engineering
(2015) *Journal of Medical and Biological Engineering*, 35 (2), pp. 258-269. Cited 5 times.
<http://link.springer.com/journal/40846>
doi: 10.1007/s40846-015-0028-5
View at Publisher
-
- 11 Fox, A.J.S., Bedi, A., Rodeo, S.A.
The Basic Science of Human Knee Menisci: Structure, Composition, and Function
(2012) *Sports Health*, 4 (4), pp. 340-351. Cited 57 times.
doi: 10.1177/1941738111429419
View at Publisher
-
- 12 Chen, G., Zhang, H., Bai, L., Jiang, C., Zhang, X., Huang, W., Zhang, W.
Engineering bacterial cellulose with bone marrow stem cells and meniscal fibrochondrocytes for meniscal repair
(2015) *Journal of Biomaterials and Tissue Engineering*, 5 (2), pp. 92-98. Cited 3 times.
<http://docserver.ingentaconnect.com/deliver/connect/asp/21579083/v5n2/s2.pdf?expires=1433912126&id=82021498&titleid=72010047&accname=Elsevier+BV&checksum=E93E9FAEBC80F159444AFF0FFFAFE4E1>
doi: 10.1166/jbt.2015.1293
View at Publisher
-
- 13 Guo, W.-J., Han, L.-J., Xia, R.-M., Cui, F.-Z., Chen, S., Ma, J., Pan, J.
Repair of mandibular critical-sized defect of minipig using in situ periosteal ossification combined with mineralized collagen scaffolds
(2015) *Journal of Biomaterials and Tissue Engineering*, 5 (6), pp. 439-444. Cited 3 times.
<http://www.ingentaconnect.com/content/asp/jbte/2015/00000005/00000006/art00002>
doi: 10.1166/jbt.2015.1274
View at Publisher

- 14 Wang, B., Borazjani, A., Tahai, M., De Jongh Curry, A.L., Simionescu, D.T., Guan, J., To, F., (...), Liao, J.
Fabrication of cardiac patch with decellularized porcine myocardial scaffold and bone marrow mononuclear cells

(2010) *Journal of Biomedical Materials Research - Part A*, 94 (4), pp. 1100-1110. Cited 67 times.
<http://onlinelibrary.wiley.com/doi/10.1002/jbm.a.32781/pdf>
doi: 10.1002/jbm.a.32781

[View at Publisher](#)

- 15 Makris, E.A., Hadidi, P., Athanasiou, K.A.
The knee meniscus: Structure-function, pathophysiology, current repair techniques, and prospects for regeneration

(2011) *Biomaterials*, 32 (30), pp. 7411-7431. Cited 228 times.
doi: 10.1016/j.biomaterials.2011.06.037

[View at Publisher](#)

- 16 Ghosh, P., Taylor, T.K.F.
The knee joint meniscus. A fibrocartilage of some distinction

(1987) *Clinical Orthopaedics and Related Research*, (224), pp. 52-63. Cited 118 times.

[View at Publisher](#)

- 17 Azhim, A., Narita, Y., Muramatsu, K., Morimoto, Y., Tanaka, M.
Decellularization of living tissue using microwave chemical process for tissue-engineered scaffold applications

(2010) *IFMBE Proceedings*, 31 IFMBE, pp. 934-937. Cited 4 times.
ISBN: 978-354079038-9
doi: 10.1007/978-3-642-14515-5_238

[View at Publisher](#)

🔍 Azhim, A.; Department of Biotechnology, Kulliyah of Sciences, International Islamic University Malaysia (IIUM),
Kuantan, Malaysia; email: azranazhim@iium.edu.my

© Copyright 2017 Elsevier B.V., All rights reserved.

[< Back to results](#) | 1 of 2 [Next >](#)

[^ Top of page](#)

About Scopus

[What is Scopus](#)
[Content coverage](#)
[Scopus blog](#)
[Scopus API](#)
[Privacy matters](#)

Language

[日本語に切り替える](#)
[切换到简体中文](#)
[切换到繁體中文](#)
[Русский язык](#)

Customer Service

[Help](#)
[Contact us](#)

ELSEVIER

[Terms and conditions](#) [Privacy policy](#)

Copyright © 2018 Elsevier B.V. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

Cookies are set by this site. To decline them or learn more, visit our [Cookies page](#).

 RELX Group™