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
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## The effects of KGM, mannose and co-supplementation of KGM and mannose on mammalian cells cultured at inside and outside incubator conditions

(Conference Paper)

Marzuke, A.B.<sup>a</sup>, Wan Kamarul Zaman, W.S.<sup>a</sup> ✉, Shahbuddin, M.<sup>b</sup>, Aung, S.W.<sup>c</sup> <sup>a</sup>Department of Biomedical Engineering, University of Malaya, Kuala Lumpur, Malaysia<sup>b</sup>Department of Biotechnology Engineering, Kulliyah of Engineering, International Islamic University Malaysia, Gombak, Selangor, Malaysia<sup>c</sup>Department of Restorative Dentistry, University of Malaya, Kuala Lumpur, Malaysia

### Abstract

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Mammalian cells including cancer cells, stem cells and cell lines are important in the application of cells for therapies and research activities. They require the cells to be transported from the laboratory or surgery theater to the bedside, making it a challenge to be exposed at outside, shear stress condition and differences especially in the tropical climate countries. In this research, Konjac Glucomannan (KGM) and D-mannose were examined for their potential use in the delivery of cells when subjected to differences in and outside incubator conditions. The objective of this work was to examine the risk and effects of different type of sugar supplementation in the transportation of cells. In this study, we used mammalian cells; stem cells from human extracted deciduous tooth (SHED), human keratinocyte cell lines (HaCaT) and human breast cancer (MCF-7). We hypothesized that the supplementations of KGM and D-mannose in the culture medium will act as protective agents to the cells due to their unique biological properties interacting via carbohydrate-protein interactions. Experiments were conducted in laboratory conditions to compare the effect of these sugars on the viability of different type of cells when placed at inside and outside incubator condition for 24, 48 and 72 hours. Evaluation of cellular viability and proliferation showed that co-supplementation of KGM and D-mannose inhibited the viability of MCF-7 at both inside and outside incubator conditions while supplementation of these sugars to other cells cultured at outside incubator condition did improve cellular viability and morphology compared to the cells cultured at inside the incubator, elucidating the potential benefit of sugar glycobiology in cellular transportation.

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- 1 Watz, E., Remberger, M., Ringden, O., Ljungman, P., Sundin, M., Mattsson, J., Uhlin, M.  
Quality of the hematopoietic stem cell graft affects the clinical outcome of allogeneic stem cell transplantation

(2015) *Transfusion*, 55 (10), pp. 2339-2350. Cited 6 times.

<http://www.blackwellpublishing.com/journals/TRF>

doi: 10.1111/trf.13143

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- 2 Chen, B., Wright, B., Sahoo, R., Connon, C.J.  
A Novel Alternative to cryo-preserve for the short term storage of stem cells for use in cell therapy using alginate encapsulation  
(2012) *Tissue Engineering Part C: Methods*

- 3 Colucci, G., Moore, J.G., Feldman, M., Chrispeels, M.J.  
cDNA cloning of FRIL, a lectin from Dolichos lablab, that preserves hematopoietic progenitors in suspension culture

(1999) *Proceedings of the National Academy of Sciences of the United States of America*, 96 (2), pp. 646-650. Cited 31 times.

doi: 10.1073/pnas.96.2.646

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- 4 Xie, X.Y., Xie, C., Shi, W., Li, J., Li, Y.H., Wang, D.M., Bai, C.X., (...), Pei, X.T.  
The maintenance of cord blood CD34+ progenitor cells with plant lectin FRIL in vitro and the expression of related cell cycle modulator HTm4 and HTm4S

(2004) *Sheng li xue bao : [Acta physiologica Sinica]*, 56 (3), pp. 306-312. Cited 3 times.

- 5 Shahbuddin, M., MacNeil, S., Rimmer, S.  
The potential use of konjac glucomannan for wound healing and cell transportation

(2011) *European Cells and Materials*, 22 (SUPPL.3), p. 43. Cited 4 times.

<http://www.ecmjournal.org/journal/supplements/vol022supp03/pdf/Vol22supp03a43.pdf>

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