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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

By: Marzuke, AB (Marzuke, A. B.)<sup>[1]</sup>; Zaman, WSWK (Zaman, W. S. Wan Kamarul)<sup>[1]</sup>; Shahbuddin, M (Shahbuddin, M.)<sup>[2]</sup>; Aung, SW (Aung, S. W.)<sup>[3]</sup>

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### Abstract

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.

### Keywords


**Author Keywords:** Mammalian cells; stem cells from human extracted deciduous tooth (SHED); breast cancer cells (MCF-7); keratinocyte cell line (HaCaT); Konjac Glucomannan; D-mannose; cellular viability and proliferation

### Author Information

**Reprint Address:** Zaman, WSWK (reprint author)

 Univ Malaya, Fac Engn, Dept Biomed Engn, Kuala Lumpur, Malaysia.

#### Addresses:

 [ 1 ] Univ Malaya, Fac Engn, Dept Biomed Engn, Kuala Lumpur, Malaysia

 [ 2 ] Int Islamic Univ Malaysia, Kulliyyah Engn, Dept Biotechnol Engn, Gombak, Selangor, Malaysia

 [ 3 ] Univ Malaya, Fac Dent, Dept Restorat Dent, Kuala Lumpur, Malaysia

**E-mail Addresses:** [wansafwani@um.edu.my](mailto:wansafwani@um.edu.my)

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