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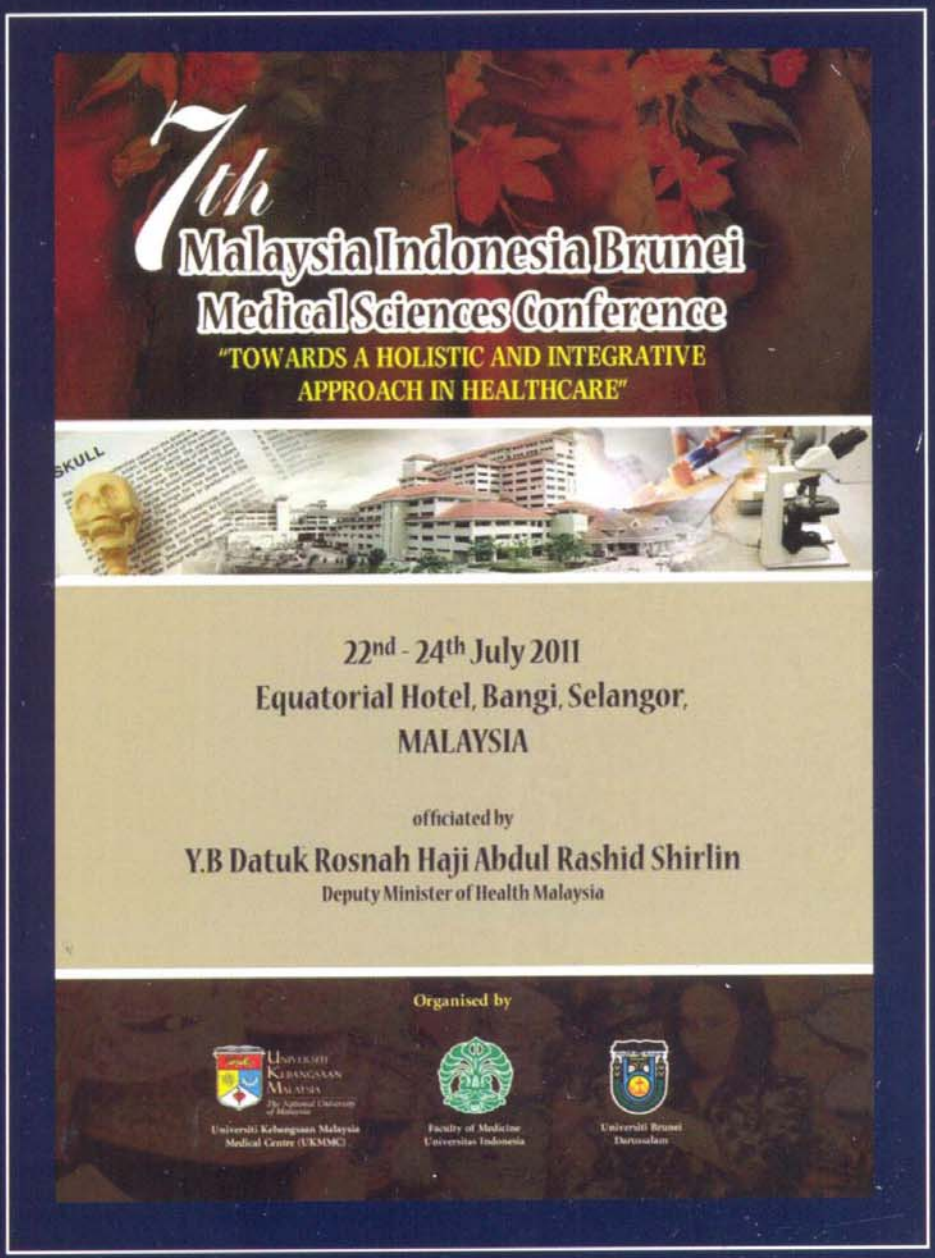

# *hTERT* TRANSPECTED HUMAN ADIPOSE-DERIVED MESENCHYMAL STEM CELLS MAINTAINS ADIPOGENIC DIFFERENTIATION POTENTIAL AND EXPRESSED MSC MARKERS

Lee HC[1], Ng MH[1], Ruszymah BHI[1,2], Hazla MH[3], Aminuddin BS[4], Suryami D[5]

[1]*Tissue Engineering Centre, Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia*
*Department of* [2]*Physiology and* [3]*Orthopaedics & Traumatology, Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia*
[4]*Ear, Nose and Throat Consultant Clinic, Ampang Puteri Specialist Hospital, Kuala Lumpur, Malaysia*
[5]*Department of Orthopaedics & Traumatology, Temerloh Hospital, Malaysia*

**Background:**
Human mesenchymal stem cells can be isolated from adipose tissue and expanded in culture while maintaining their multipotency. It is a potential cell source for tissue engineering and regenerative medicine. However, telomeres shorten with each cell division eventually leading to cell senescence during long-term *in vitro* culture. It was reported that cellular life span can be extended by the transfection of human telomerase reverse transcriptase (*hTERT*) gene. In this study, we aim to compare the adipogenesis capacity and CD markers expression of adipose derived-mesenchymal stem cells (AD-MSC) before and after transfection with the *hTERT* gene.

**Material and methods:**
AD-MSC isolated from aged patients (>55 years old) was transfected by plasmid containing the gene *hTERT* at passage 3. Flow cytometric analysis was performed using CD34, CD45, CD73, CD90 and CD105 on non-transfected and transfected AD-MSC. To investigate the adipogenic differentiation potential, both non-transfected and transfected AD-MSC at passage 5 was induced for adipogenesis followed by Oil Red O staining.

**Results:**
Transfection efficiency of 30% was achieved by nucleofection. Flow cytometric analysis showed that the transfected AD-MSC expressed CD73, CD90 and CD105 which is similar to that of non-transfected AD-MSC. Both showed no expression of haematopoietic markers CD45. The transfected AD-MSC still maintained the adipogenic differentiation potential *in vitro* based on Oil Red O staining.

**Conclusion:**
These results demonstrated that *hTERT* transfected AD-MSC maintains its mesenchymal properties.

**Keywords:**
Adipose-derived mesenchymal stem Cells, transfection, *hTERT*, tissue engineering