

UNIVERSITI TEKNOLOGI MARA

**EXPRESSION OF ADULT STEM CELL MARKERS
IN FULL-TERM
RAT C-KIT POSITIVE AMNIOTIC FLUID CELLS**

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ABSTRACT

Amniotic fluid (AF) is a promising tool for future drug discovery and regenerative medicine due to the presence of amniotic fluid stem cells (AFSCs). Previous study has reported the presence of broadly multipotent stem cells from full term AF which incorporate safer harvesting approach compared to the AF harvested from the mid-term pregnancy. However, the profiles of stem cells from full term pregnancy are not fully characterized. Therefore, this research was conducted to characterize and determine whether the AFS cells from full term pregnancy possesses similar characteristics as the AFS cells of second term pregnancy through the expression of adult stem cell markers CD34, CD45 and CD105 using flow cytometry. AF cells were successfully expanded, subcultured and harvested prior to cell staining. The cells were stained with CD34, CD45, and CD105 which then analysed with flow cytometry. Based on the result obtained, the cells has low expression of CD105 (7.42%) and no expression of CD34 and CD45. Therefore, the cell possesses more mesenchymal characteristics than hematopoietic characteristics.

CHAPTER 1

INTRODUCTION

Amniotic Fluid (AF) is the liquid in amniotic sac that plays an important role to protect the fetus in the mother's womb (Park *et al.*, 2011). AF had been used traditionally as a tool for prenatal diagnosis for decades (Pappa *et al.*, 2009). This is due to the fact that the cells in the AF are from the fetus (Liu *et al.*, 2009). Recently, researchers discovered that AF consists of highly potential therapeutic cell, that is the amniotic fluid stem (AFS) cells. The growing interests in AFS cells among researcher nowadays are due to their similarity to embryonic stem (ES) cells in terms of potency. In addition to their accessibility, they are non-controversial source of stem cell (does not involve destruction of embryo) and safe (does not form tumour upon transplantation).