

## ***In Vitro* Study of Human Amniotic Membrane as A Chondrocyte Carrier**

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Amniotic membrane has been used in many clinical applications (e.g. biological dressings for burns, ocular reconstruction etc.) for many years now owing to its tensile strength, high biocompatibility, biodegradability and low immunogenicity. However, despite these promising features, the potential usage of amniotic membrane as a novel three - dimensional scaffold for cartilage tissue engineering has never been explored. The purpose of this study was to investigate the feasibility of processed human amniotic membrane (HAM) as a chondrocyte carrier by evaluating their seeding efficiency, cell proliferation and maintenance of phenotype *in vitro*. Fresh amniotic membranes obtained from patients undergoing routine elective caesarean sections were harvested with consent, processed and dried using freeze and air drying methods prior to sterilization by gamma irradiation. Autologous chondrocytes (ACs) which were previously isolated and characterized were then seeded on HAM and cultured for up to three weeks. Cell proliferation and phenotypic stability were examined qualitatively at specific time points. Histological analysis using hematoxylin and eosin staining under a light microscope revealed the distribution of spherical chondrocytic cells on the membranes. Safranin-0 staining was also evident in the immediate extracellular space of well established colonies on the membranes. Overall result of histochemical findings indicated that phenotypic maintenance and proliferation of chondrocytes on the amniotic scaffolds was evident throughout its *in vitro* environment. In conclusion, this study suggests that processed HAM supports the proliferation and phenotypic maintenance of chondrocytes and therefore may possibly be utilized as a viable scaffold for chondrocyte transport and delivery, during therapeutic tissue transplantation.