Title	Human adipose derived mesenchymal stromal cells cultured with wood derived nanofibrillar cellulose
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Abstract	In the field of regenerative medicine, different stem cell transplantations have shown great promise to promote wound healing. In the wound, stem cells could regulate inflammation and secrete supportive growth factors and thus, enhance tissue homeostasis and regeneration[1]. However, a hostile environment of the injured tissue has shown considerably to limit the survival rate of the transplanted stem cells[2]. Therefore, stem cell survival and retention are subjects to be improved towards successful cell therapy. One potential approach for that purpose is the use of biomaterials as cell carriers. The aim of this project is to study interactions between multipotent human adipose derived mesenchymal stromal cells (hASCs) and wood derived nanofibrillar cellulose (NFC) materials in order to develop cell transplantation methods for wound care. During the project, hASC characteristics will be evaluated when cultured on different NFC wound dressings or embedded in NFC hydrogel. Results show that hASCs cultured on different NFC wound dressings maintain cell survival and that NFC dressings may even improve cell characteristics. When embedded in the NFC hydrogel, hASCs are able to form cell spheroids for three dimensional (3D) cell culturing, and live and grow at least for one week. The use of mechanical strength during the cell delivery into the wound may enhance cell retention and survival. Thus, culturing of hASCs on NFC dressings or embedding in the NFC hydrogel may serve as an efficient delivery method into the wound. However, the properties of the biomaterials are able to direct stem cell fate[3], and thus, better understanding about stem cells' interactions with biomaterials are needed for future clinical applications.
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