Title: **Influence of material acquisition method and culture medium on ADSCs expression of neuroregenerative and neuroprotective factors**

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Abstract:

Adipose-derived Stromal Cells (ADSC) possess various properties which make them a good candidate for cell-based therapies in regenerative medicine or chronic inflammation diseases treatment. Through their ability to undergo adipogenic, osteogenic, chondrogenic and even neurogenic differentiation they are a promising treatment product. Additionally upon contact with inflammatory environment ADSCs show immunomodulative properties which may shut down hosts inflammatory processes or shift them towards proregenerative inflammation e.g. activation of Treg phenotype in lymphocytes T. Here we assess the influence the acquisition method and post-isolation culture medium may inflict on ADSCs transcriptome, especially in context of neuroregenerative and neuroprotective genes. Fat tissue was acquired through two different liposuction methods then ADSC isolation was performed. ADSCs from both batches were split again into two groups each and cultured in either standard culture medium – DMEM supplemented with 10% FBS and 1% antibiotic-antimycotic solution or commercially available culture medium dedicated to stem cells` expansion – NutriStem. After culturing RNA was isolated from all cells and processed to assemble NGS library which was then sequenced. Our results show that liposuction method - of the two used in this particular observation - was of no relevance regarding gene expression. However, the culturing environment inflicted changes in ADSCs transcriptomic profile. A number of tissue regeneration and nervous system-related growth factors including *GDNF*, *BDNF* or *VEGF* were expressed on different levels in relation to which medium was used for ADSCs expansion.

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