Ternary complex as non-viral vector of plasmid DNA for the modulation of human mesenchymal stem cell

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In this study, we have developed a safe and effective non-viral vector for gene delivery into human mesenchymal stem cell (hMSC). We prepared anionic charged ternary nanocomplex of plasmid DNA using branched polyethyleneimine (PEI) and hyaluronic acid (HA). HA, as anionic polymer, is biocompatible polymer and component of extra cellular matrix throughout body and is able to bind the CD44 receptor specifically on the surface of hMSC membrane. Ternary complexes were prepared by electrostatic self-assembly and their physicochemical properties and CD44 targeting effects were investigated. These results suggest that anionic charged ternary nanocomplexes have potential for effective non-viral vector for gene delivery into hMSC.