R3.45 peptides linked to polyethyleneimine(PEI-r3.45) as efficient gene vectors

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An attractive strategy which obtains new non-viral vectors with high gene delivery efficiency is to link peptides to polyethylenimine (PEI).The traditional PEI non-viral vector has limits such as relatively low gene delivery efficiency compared with viral vectors and disability of specific cell targeting.To overcome these limitations, the peptides CGGTQVGQKT (where GG are linker residues),Cys-r3.45 which have been obtained by direct evolution toward rat neural stem cells were conjugated to PEIs to enhance gene delivery efficiency comparing with traditional PEI vectors and cell target capability.PEI-r3.45 vector has been a useful tool to enhance gene delivery ability toward stem cell because of r3.45 peptide in adeno-associated virus r3.45 enhanced gene delivery efficiency in neural stem cells. we figured out successfully that PEI-r3.45 condense plasmids using the agarose gel electrophoresis assay, the hydrodynamic size analysis, the zeta potential analysis.Moreover this novel material has a potential to transfect to target cells by receptor-mediated gene delivery.This study shows that r3.45 peptides will have a significant impact on increasing transfection efficiency of PEI.