

P011 Lipidic peptide dendrons for delivery of macromolecules
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In the past decade several cell-penetrating peptides have been demonstrated to translocate across the plasma membrane and used successfully for the intracellular delivery of macromolecules. We have reported dendrons with lipid chains as vectors for gene and protein delivery. For targeting we have now modified the lipidic dendron $[(C_{18})_3(L)_7(NH_2)_8]$ by coupling receptor specific peptides such as RGD to one amino terminal keeping the remaining functional groups to condense the DNA and form dendriplexes.

Dendrons with or without peptides are synthesised adopting solid phase peptide synthesis and characterised. The Z- average diameter of dendriplexes formed with plasmid DNA and modified dendrons were ~80 nm and the zeta potential showed that the dendrons were incorporated into particles as the values became positive. Agarose gel electrophoresis revealed that the mobility of free DNA decreased as the charge ratio of dendron to DNA increased. The difference in the transfection efficiency was 2-3 times greater than that of the original lipidic dendron $(C18)_3(L)_7(NH_2)_8$ without the RGD peptide. Studies using different endocytic pathway inhibitors showed that inhibitors such as methyl beta-cyclodextrin and nordihydro guaiaretic acid but not nystatin have an effect on inhibiting transfection. Further studies on receptor specificity are ongoing.