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Investigation of DNA binding abilities of solid lipid nanoparticles based on p-tert-butylthiacalix[4]arene platform

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Abstract

© The Royal Society of Chemistry 2015. An amphiphilic thiacalix[4]arene derivative functionalized with guanidinium groups forms stable solid lipid nanoparticles (SLNs) with high ζ -potential in water. Applying gel electrophoresis and fluorescent spectroscopy methods shows that the SLNs have high binding affinity to double-stranded DNA, but despite this fact, we have not observed any significant transfection activity toward three different mammalian cell lines. A UV-spectroscopic study reveals that interaction between the SLNs and the polynucleotide leads to partial denaturation of the DNA located on the surface of the nanoparticles that can hinder transfection.

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