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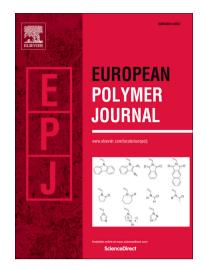
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Co-transfection of star-shaped PDMAEMAs enhance transfection efficiency of protamine/pDNA complexes in the presence of serum

Baizhu Chen^{†,*} Christopher V. Synatschke[‡], Valérie Jérôme[‡], Axel H. E. Müller^{\$}, Ruth Freitag^{‡,*}, Chi Wu^{†,§}

†Department of Chemistry, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong ‡Max Planck Institute for Polymer Research, Ackermannweg 10, 55128 Mainz, Germany #Process Biotechnology, University of Bayreuth, 95440 Bayreuth, Germany \$Institute for Organic Chemistry, Johannes Gutenberg University of Mainz, Duesbergweg 10, 55128 Mainz, Germany

§The Hefei National Laboratory of Physical Science at Microscale; Department of Chemical physics, The University of Science and Technology of China, Hefei, Anhui 230026, China

Abstract

In previous studies, we have found that un-complexed free cationic polymers greatly promote gene transfection efficiency of pDNA complexes. Dividing the gene transfection system into two parts, bound chains and free chains, we exploited mixing different biomaterials as the second component of our designed system to improve gene transfection outcome. In this study, we investigated the effectiveness of star-shaped poly(2-(dimethylamino)ethyl methacrylate) (PDMAEMA) with different arm numbers as free chains (i.e., co-transfection agent) while using natural salmon protamine as bound chains. We explored the gene transfer ability of the system in both serum free and complete cell culture medium. Our results reveal that the star-shaped PDMAEMAs enhance gene transfection efficiency of protamine/pDNA complexes, in the same range and even better than the gold standard polyethyleneimine (PEI, branched type with 25 kg/mol molar mass) in serum-free and serum containing medium conditions, respectively. From

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