

Supporting Information

1. Degree of Substitution

The degree of substitution (DS) of the Quaternized Starch was calculated according to equation S1:

$$DS = \frac{162 \cdot \%N}{14 \cdot 100\% - 151.5 \cdot \%N}$$

Where 162 is the molecular weight of anhydrous glucose unit (AGU) of starch, N is the amount of nitrogen measured through elemental analysis (nitrogen weight percentage), 151.5 is the molecular weight of the quaternization reagent and 14 is the molecular weight of nitrogen.

The degree of substitution indicates the average number of hydroxyl groups on each anhydrous glucose unit which are derivatized by substituent groups. In theory, the maximum obtainable value for starch is 3.

2. Figures

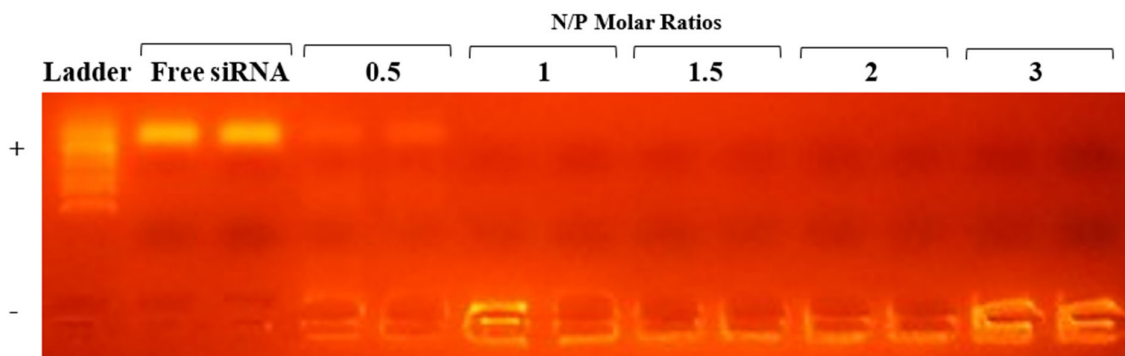


Figure S1. Q-Starch_(0.05)/siRNA complex formation evaluated by agarose gel electrophoresis at increasing N/P molar ratios. Band intensity is lower as significantly more Q-Starch is required to complex the same amount of siRNA, resulting in a masking effect.

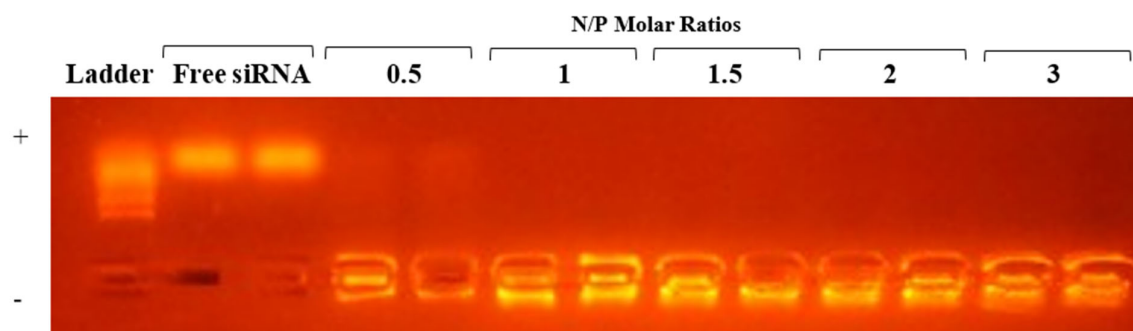


Figure S2. Q-Starch_(0.08)/siRNA complex formation evaluated by agarose gel electrophoresis at increasing N/P molar ratios.

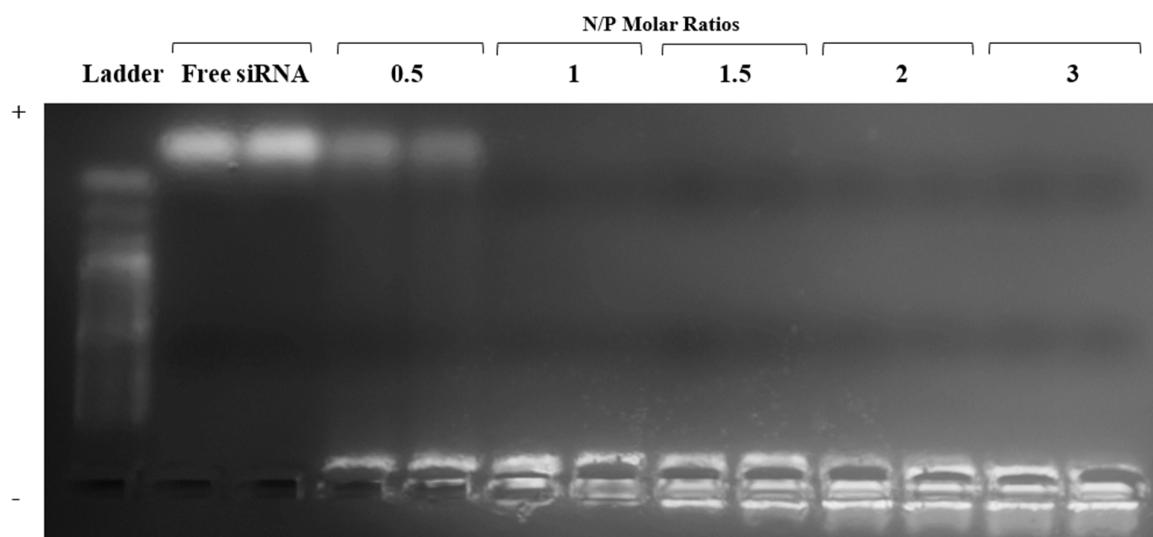


Figure S3. Q-Starch_(0.30)/siRNA complex formation evaluated by agarose gel electrophoresis at increasing N/P molar ratios.

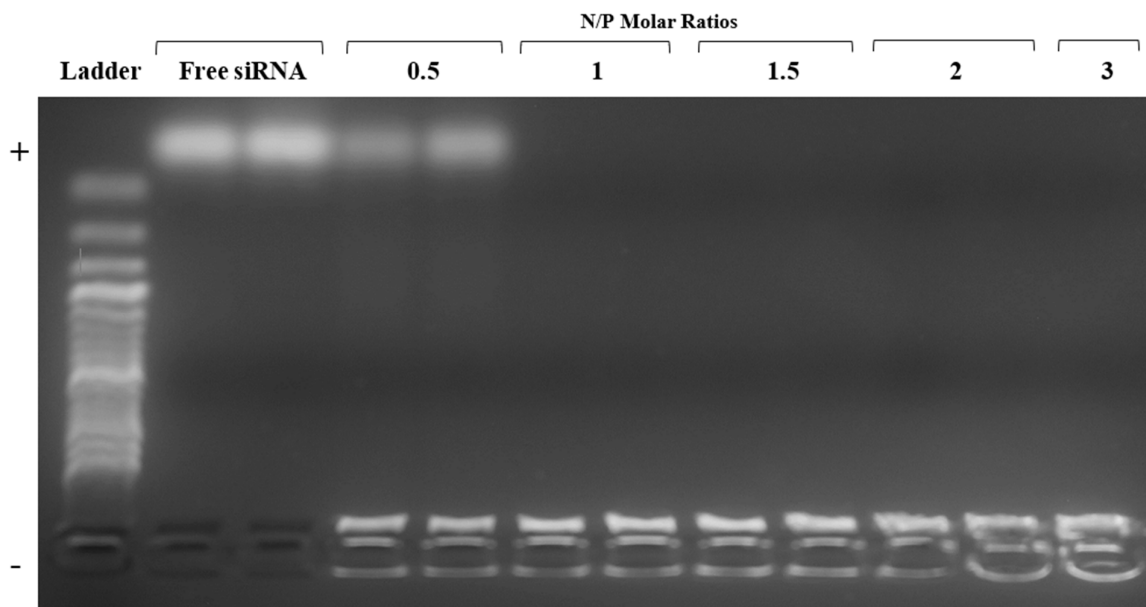


Figure S4. Q-Starch_(0.44)/siRNA complex formation evaluated by agarose gel electrophoresis at increasing N/P molar ratios.

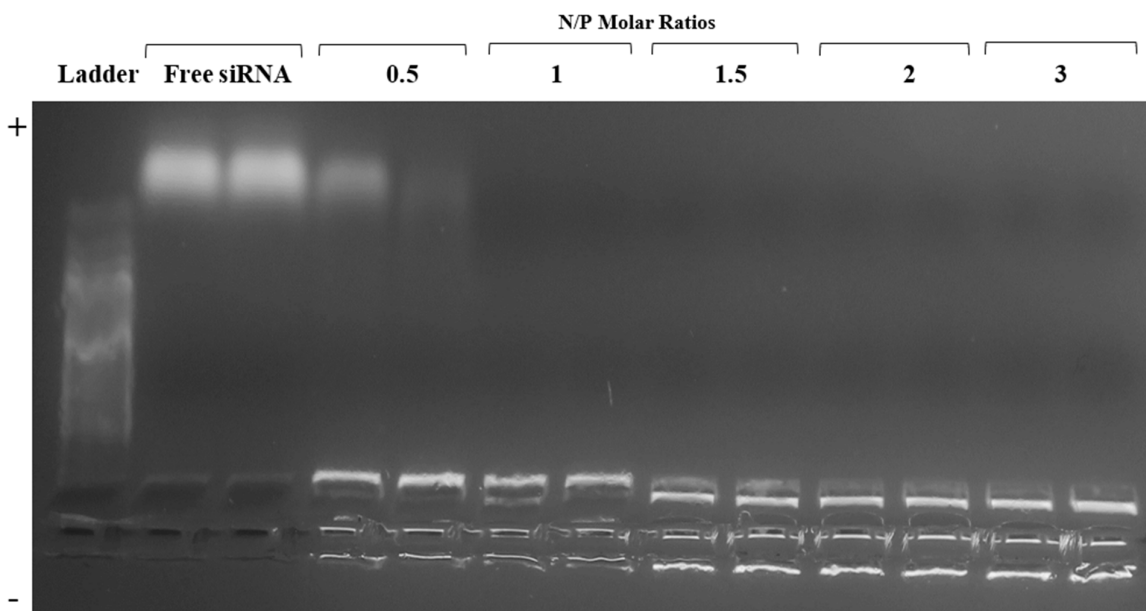


Figure S5. Q-Starch_(0.59)/siRNA complex formation evaluated by agarose gel electrophoresis at increasing N/P molar ratios.

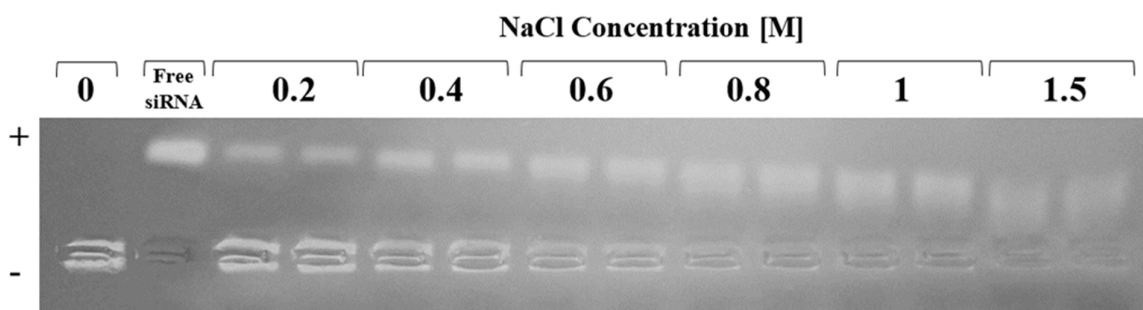


Figure S6. Agarose gel electrophoresis of Q-Starch_(0.05)/siRNA complexes formed at an N/P molar ratio of 2 at increasing ionic strengths.

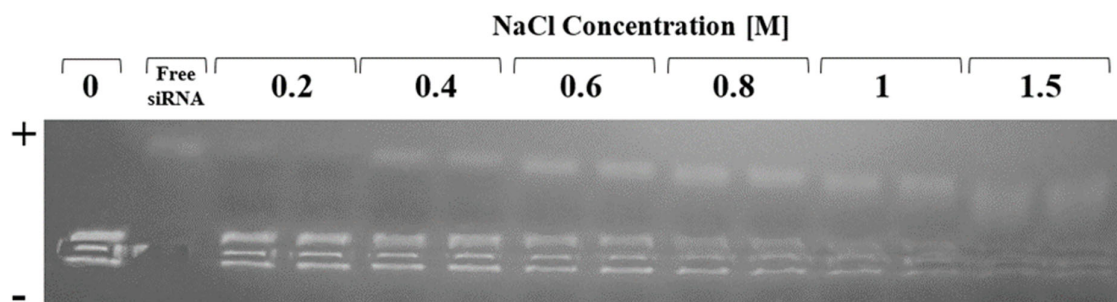


Figure S7. Agarose gel electrophoresis of Q-Starch_(0.08)/siRNA complexes formed at an N/P molar ratio of 2 at increasing ionic strengths.

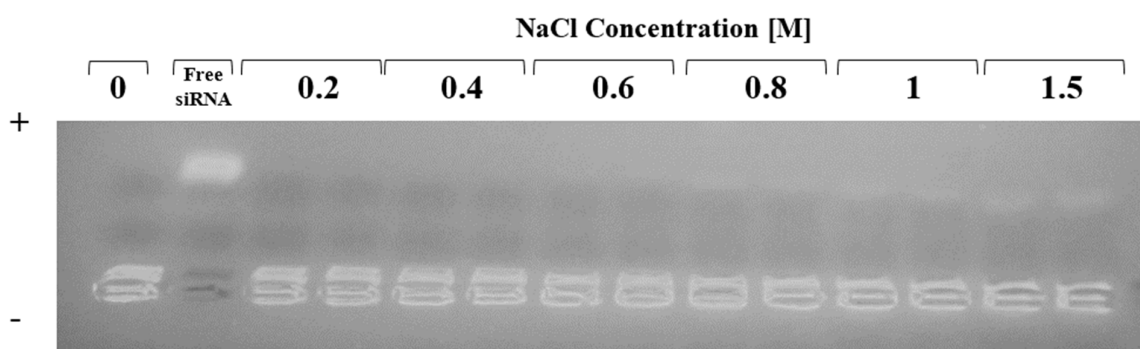


Figure S8. Agarose gel electrophoresis of Q-Starch_(0.30)/siRNA complexes formed at an N/P molar ratio of 2 at increasing ionic strengths.

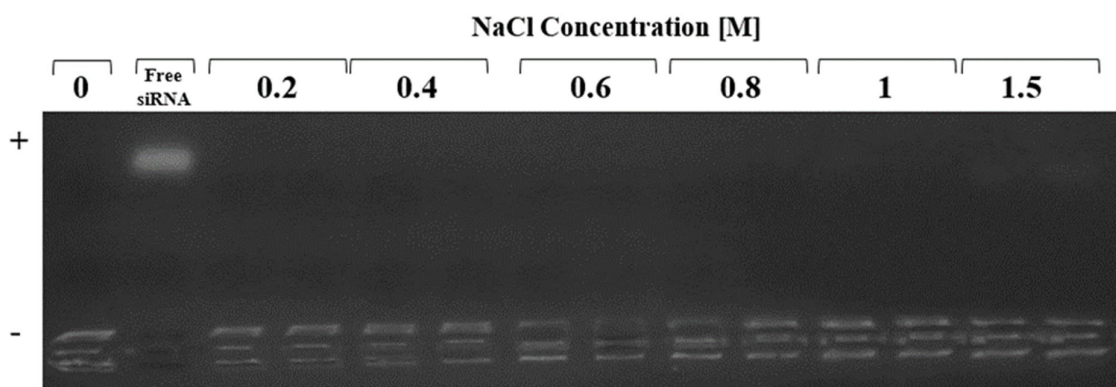


Figure S9. Agarose gel electrophoresis of Q-Starch_(0.59)/siRNA complexes formed at an N/P molar ratio of 2 at increasing ionic strengths.

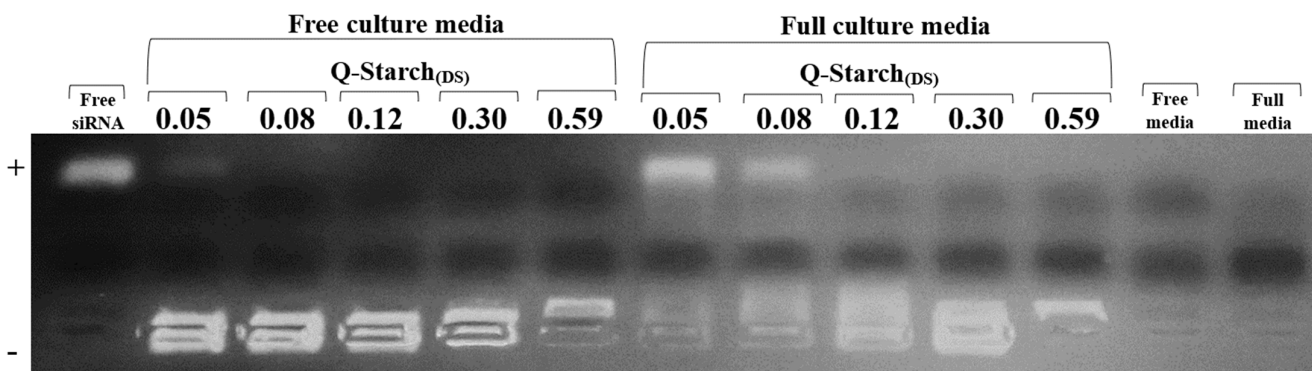


Figure S10. Agarose gel electrophoresis with free and full culture media for different Q-Starch_(DS)/siRNA complexes formed at an N/P molar ratio of 2

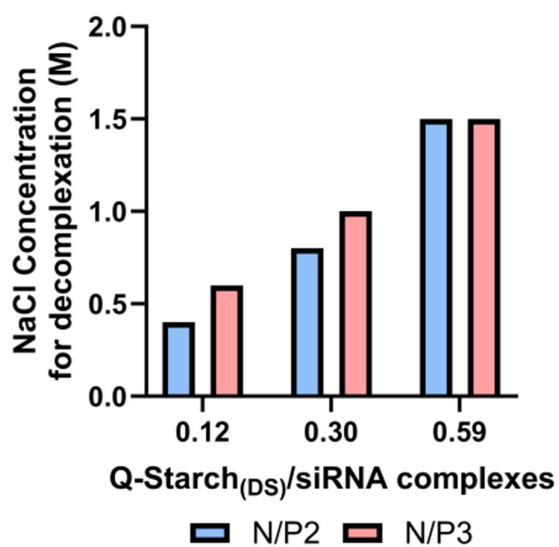


Figure S11. NaCl concentration in which decomplexation (free siRNA) was first observed in each Q-Starch.