A colloidal description of intermolecular interactions driving fibril-fibril aggregation of a model amphiphilic peptide

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Transmission Electron Microscopy

Peptide samples were recorded by using a FEI Morgagni 268 microscope. Peptide solutions were diluted to a final concentration of about 0.05 g/L, loaded on a carbon grid (Quantifoil, Jena, Germany), washed and stained with a 2% uranyl acetate solution.

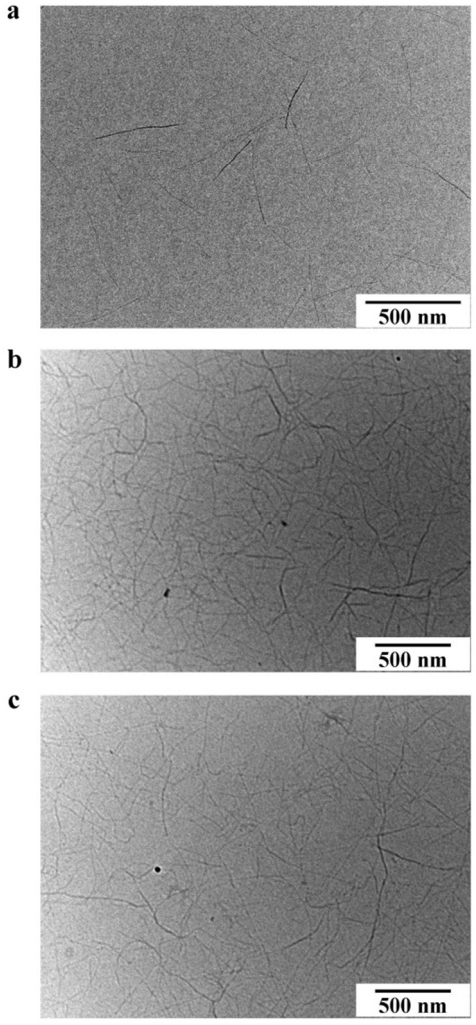

Figure S1. TEM pictures of RADA 16-I fibrils at 1 g/L in the presence of NaCl in 10 mM HCl at pH 2.0. Representative TEM pictures of freshly prepared solution of RADA 16-I peptide (a) and aggregated solution of RADA 16-I peptide in the presence of 25 mM NaCl (b) and 100 mM NaCl (c).

Size Exclusion Chromatography

Size exclusion chromatography analysis was performed using a Superdex Peptide 10/300 GL, 10 mm×300 mm size-exclusion column (GE Healthcare, Uppsala, Sweden) mounted on a Agilent 1100 series HPLC unit (Santa Clara, CA, USA) consisting of an isocratic pump with degasser, an autosampler, a column oven, and a DAD detector. Each sample was eluted for 70 min at a constant flow rate of 0.4 mL/min using 10 mM hydrochloric acid at pH 2.0 as mobile phase. The fractionated samples were detected by UV absorbance at 217 nm.

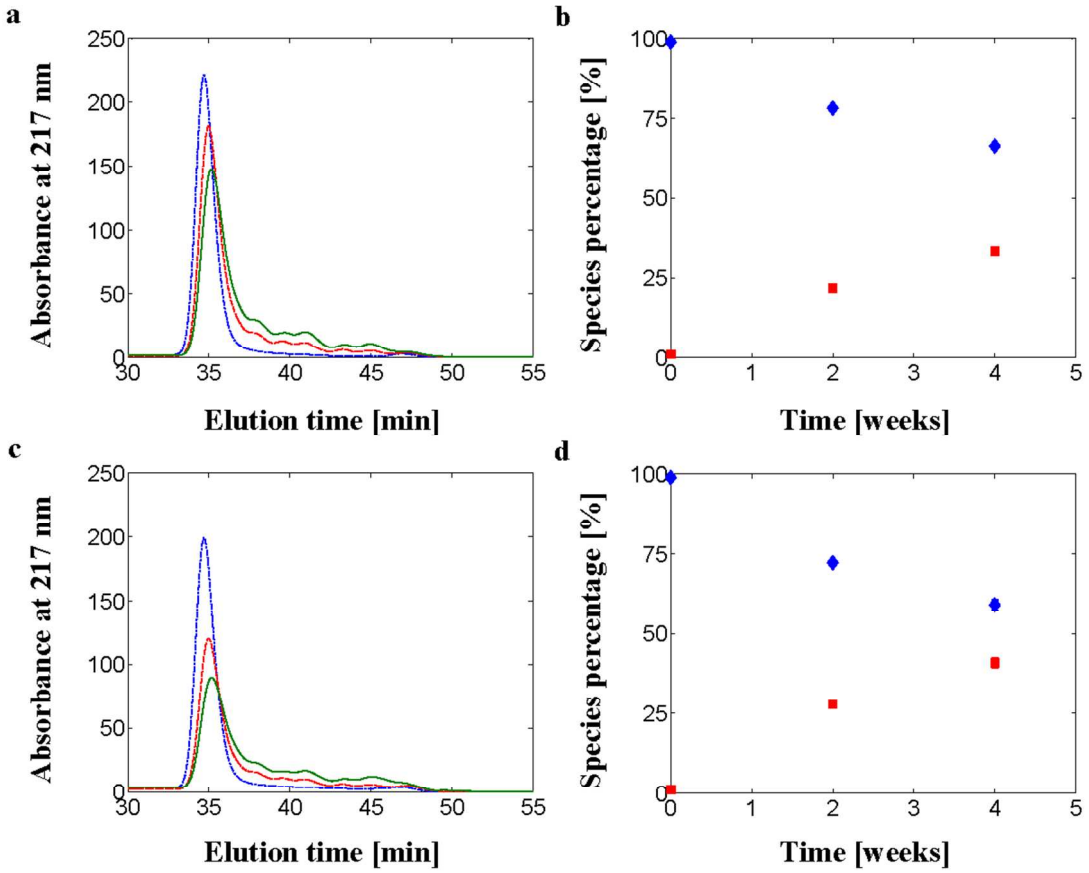

Figure S2. The time evolution of monomer conversion in the presence of NaCl in 10 mM HCl at pH 2.0. SEC chromatograms at zero time (blue, dash-dot line), after 2 weeks (red, dashed line) and 4 weeks (green, continuous line) of incubation in the presence of 25mM (a) and 75mM (c) NaCl. The time evolution of the percentage of the residual monomer (♦) and peptide fragments eluting at longer elution times (■) in the presence of 25 mM (b) and 75 mM (d) NaCl.

Dynamic Light Scattering

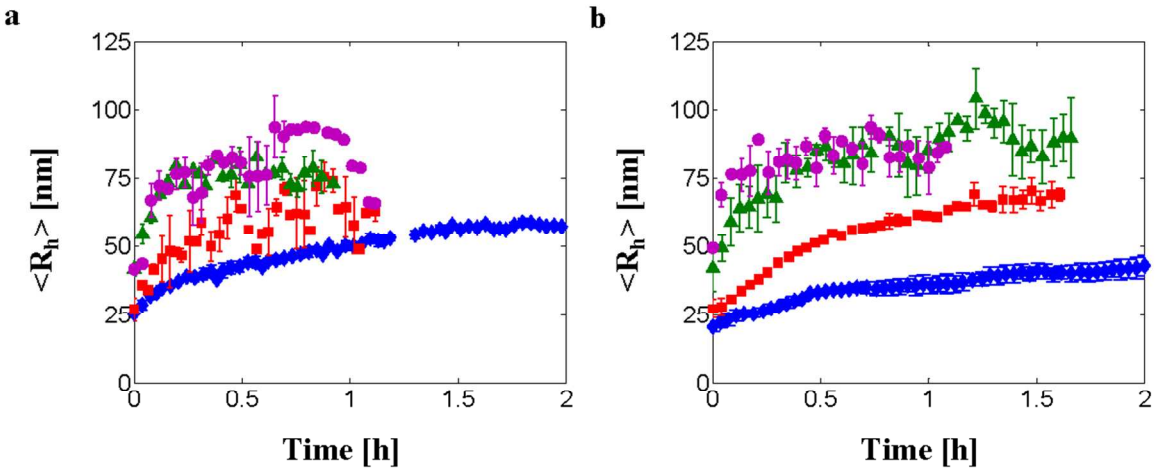

Figure S3. **The anion effect on the aggregation of RADA 16-I peptide at 1 g/L in 10 mM HCl at pH 2.0.** The time evolution of hydrodynamic radius in the presence of $NaNO_3$ (a) and NaH_2PO_4 (b) at ionic strength equal to 25 mM (♦), 50 mM (■), 75 mM (▲), 100 mM (●).

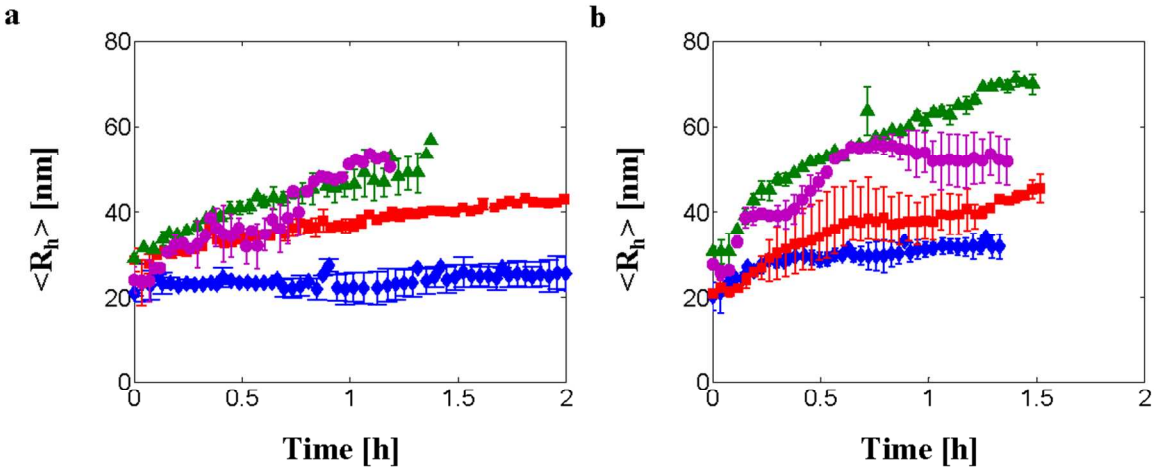

Figure S4. **The cation effect on the aggregation of RADA 16-I peptide at 1 g/L in 10 mM HCl at pH 2.0.** The time evolution of hydrodynamic radius in the presence of $CaCl_2$ at equal ionic strength (a) and $CaCl_2$ at equal concentration of Cl^- ions (b) at ionic strength equal to 25 mM (♦), 50 mM (■), 75 mM (▲), 100 mM (●).

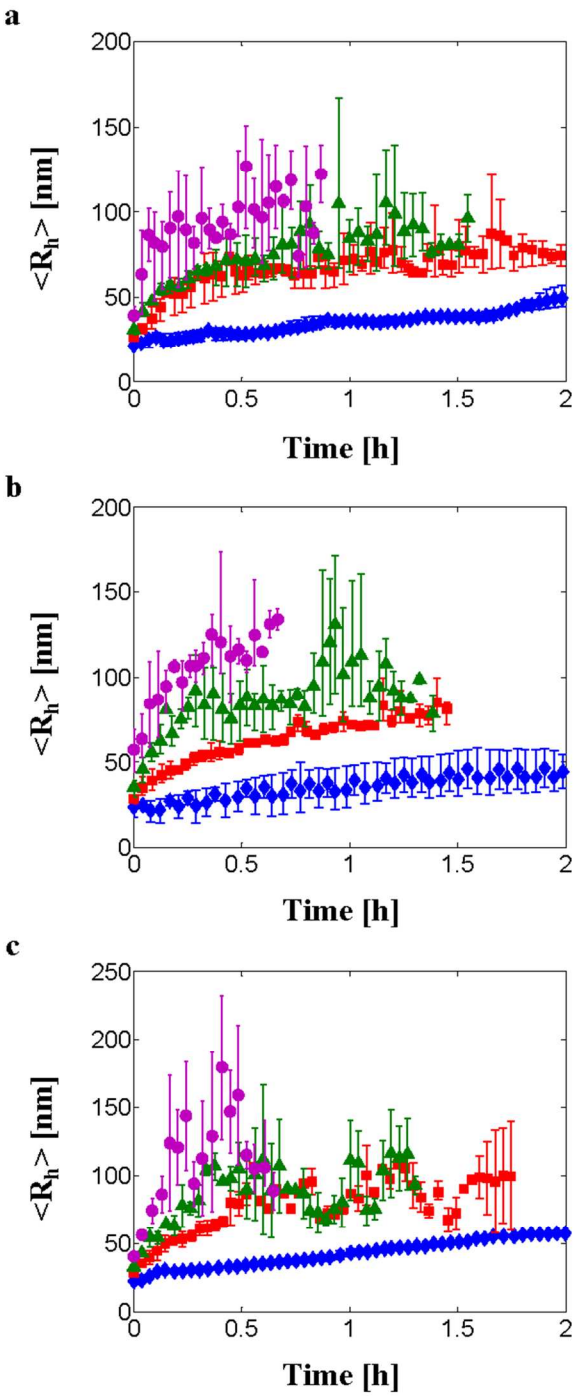

Figure S5. **The solvent effect on the aggregation of RADA 16-I peptide at 1 g/L in 10 mM HCl at pH 2.0.** The time evolution of hydrodynamic radius in the presence of 10% isopropanol (a), 10% ethanol (b) and 20% ethanol (c) in the presence of 25 mM (♦), 50 mM (■), 75 mM (▲), 100 mM (●) NaCl.