Electronic Supplementary Material (ESI) for Soft Matter.

Supplementary data

Effect of protein type, concentration and oil droplet size on the formation of repulsively jammed elastic nanoemulsion gels

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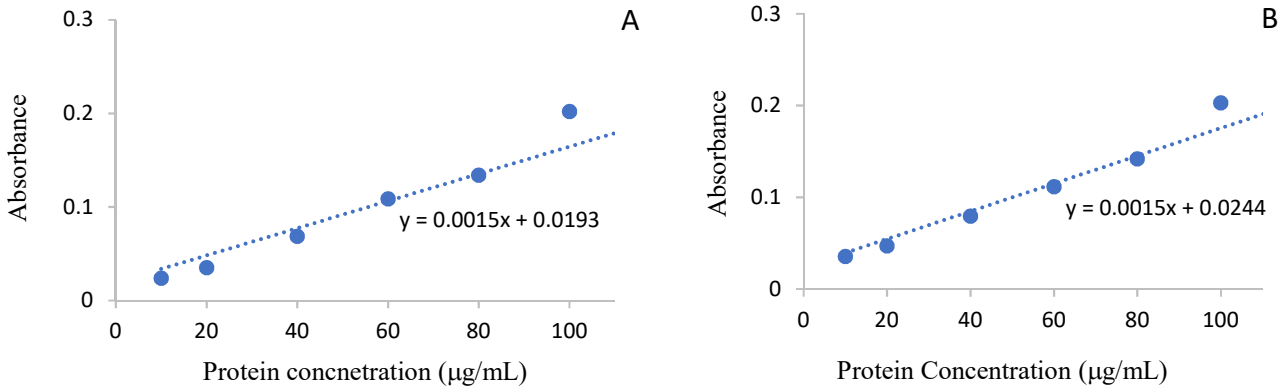

Figure S1: Calibration curves prepared using known concentration of (A) sodium casinate (SC) and (B) whey protein isolate (WPI).

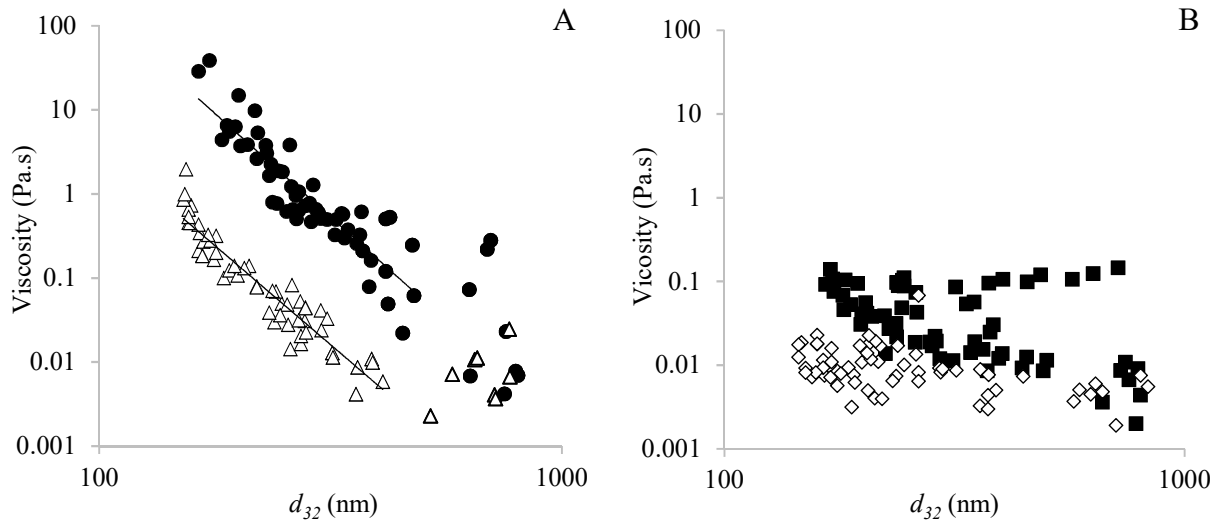

Figure S2. Effect of average droplet size (d_{32}) on apparent viscosities (at $1s^{-1}$ shear rate) of all emulsions made with (A) SC with 40% (filled circle) and 30% (open triangle) oil concentrations or with (B) WPI with 40% (filled square) and 30% (open diamond) oil concentrations. Data for all samples from different homogenization passes were plotted. The line represents a power law model fit to the experimental data for SC emulsions with d_{32} < 500 nm (R^2 0.82 and 0.90 for 40% oil and 30% oil, respectively).

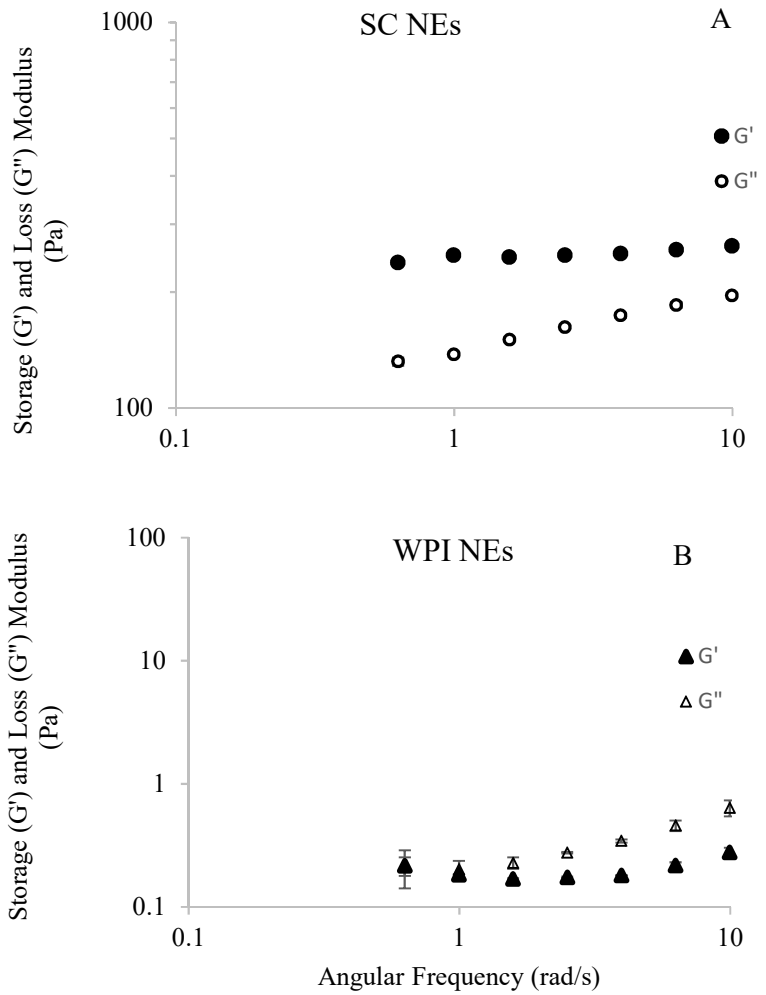

Figure S3. Frequency sweep viscoelasticity of (A) SC and (B) WPI NEs stabized with 5% protein and 40% oil. G' (filled) and G" (open) were measured as function of frequency at a constant 0.1% strain. Note the difference in Y-axis scale for A and B.

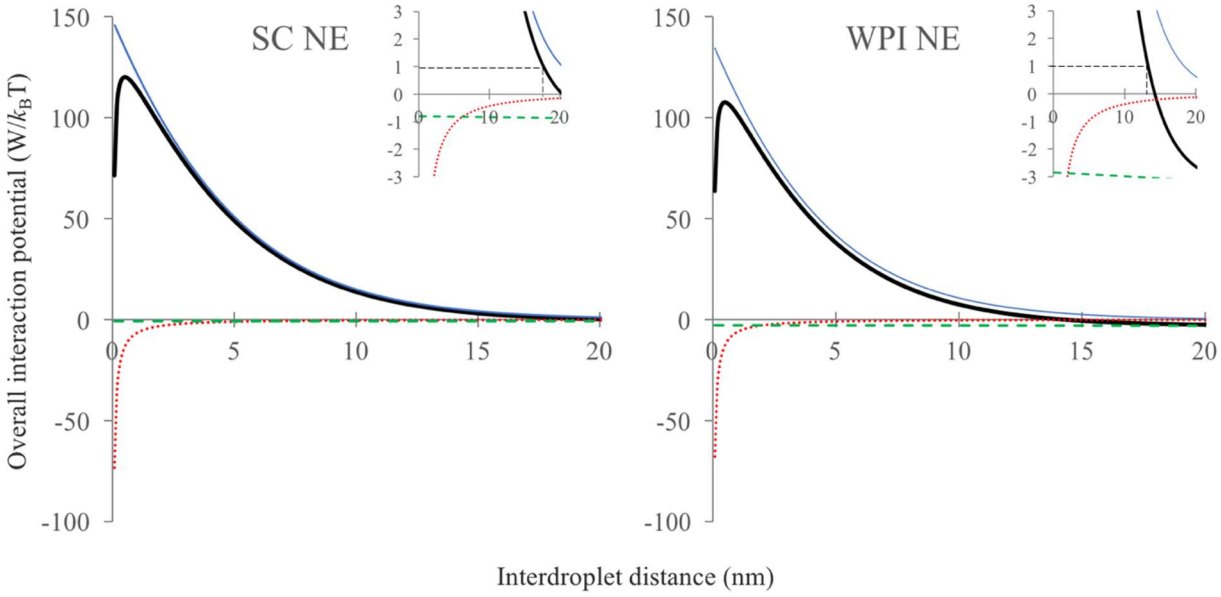

Figure S4. Overall interaction potential (dark bold line) and the component electrostatic (blue line), van der Waal (red dotted line) and depletion interaction (green dashed line) potentials for 40% O/W NEs containing 5% SC or WPI. Inset shows interdroplet distance when the overall interaction potential is equal to 1 k_BT. For SC and WPI NEs interdroplet distances at 1 k_BT are 18 nm and 13 nm, respectively (as reported in Table 2).

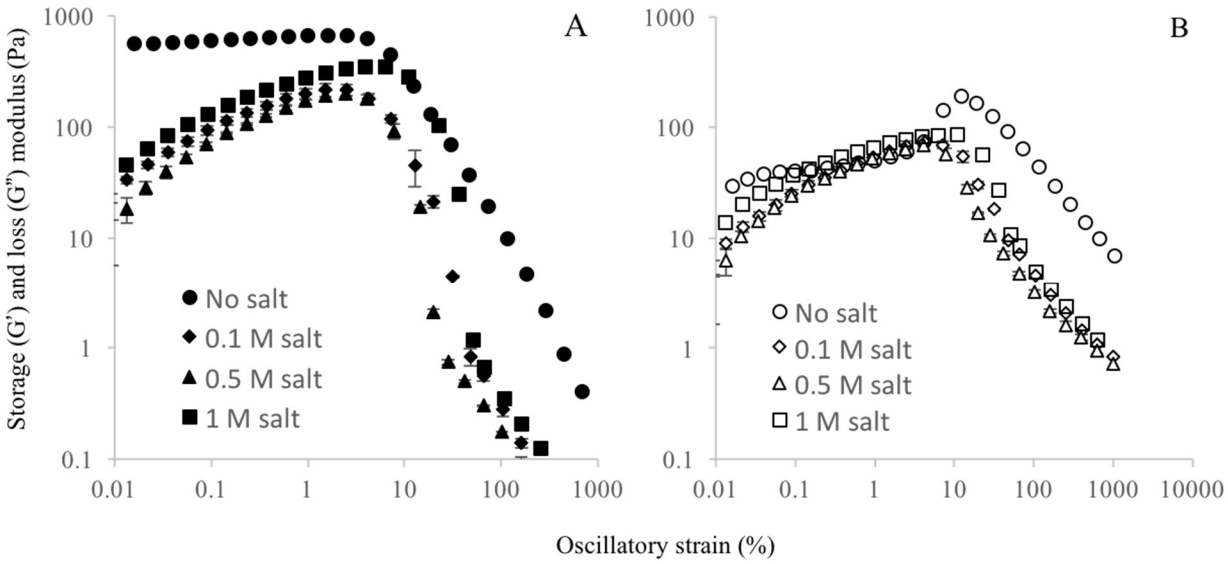

Figure S5. Effect of different concentration of salt on oscillatory strain sweep viscoelasticity, G' (A) and G" (B) of 40% O/W emulsions stabilized by 5% SC.

Table S1. Results of protein content determination from modified Lowry method.

Sample	Amount of aqueous phase (μL)	Absorption at 660 nm
NE with 5%SC+40%Oil	50	0.256
	100	0.660
	200	0.750
NE with 5%WPI+40%Oil	25	0.150
	50	0.210
	100	0.376