SUPPORTING INFORMATION SECTION

Theoretical Background:

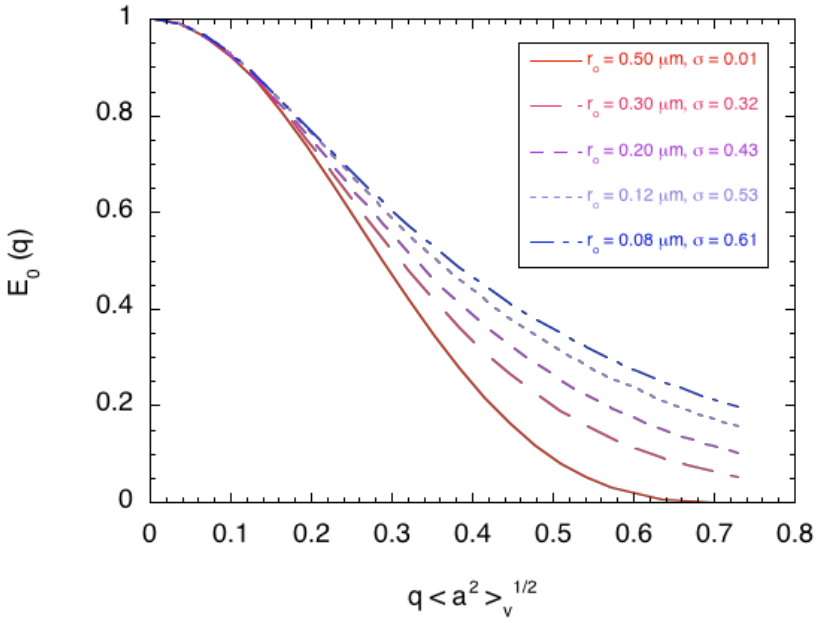

Figure SI-1. Effects of size polydispersity induced by log-normal distributions of radii. Echo attenuation functions at long diffusion time are drawn. The number average $< a^2 >_v$ is kept constant, $\sqrt{< a^2 >_v} = 0.5\mu m$, r_0 varies between 0.08 μm and 0.5 μm with corresponding widths σ ranging from 0.61 to 0.01.

Experimental results:

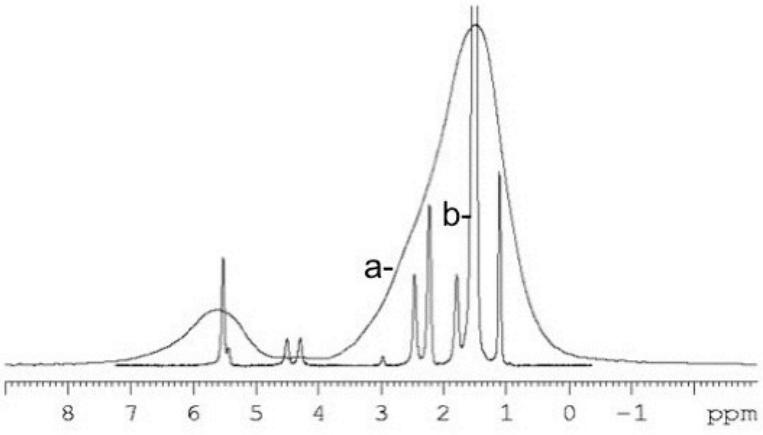

Figure SI-2. 400 MHz ^{1}H NMR spectra. (a) lettuce seeds, Fourier Transform of a spin-echo at 2τ = 12 ms. (b) spectrum of a pure olive oil sample recorded with a single pulse excitation. Low resolution of seeds spectrum is due to the heterogeneous packing of seeds in the NMR tube.

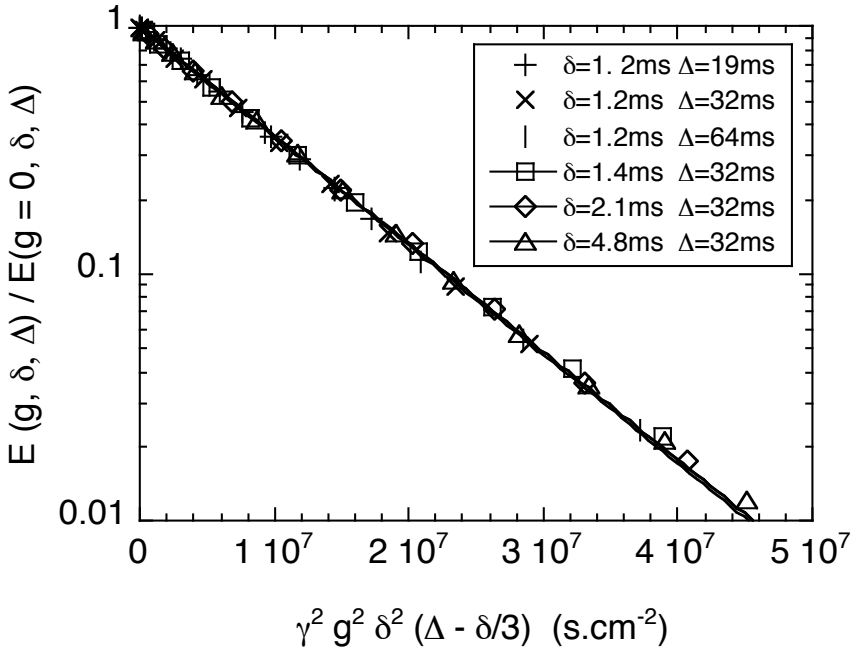

Figure SI-3. Pure olive oil sample. The proton echo attenuations E (g, δ, Δ) are recorded at 298 K. The continuous line is the fit of the experimental data with the Stejskal and Tanner equation yielding $D_s = 1.04 \pm 0.08\ 10^{-7}$ cm^2/s.

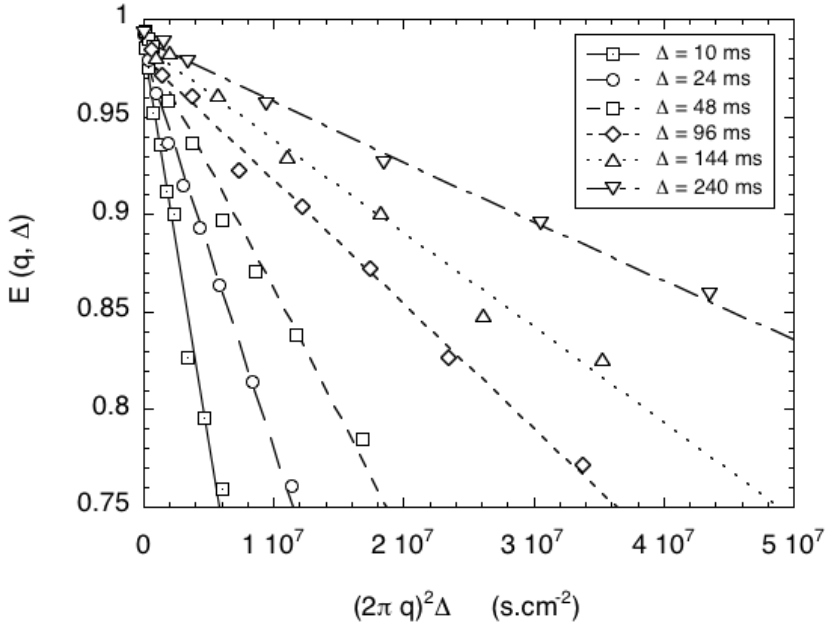

Figure SI-4. Lettuce seeds. Linear plot, at low q, of E (q, Δ) versus $(2\pi q)^2 \Delta$; the slopes of the straight lines determine the apparent self-diffusion coefficient $D_{app}(\Delta)$ of TAG molecules in oil-bodies (eq 5).

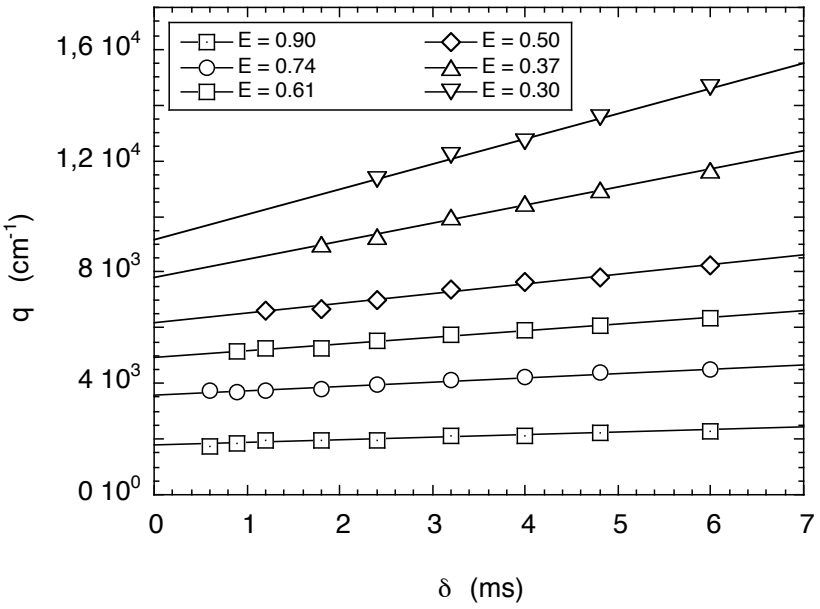

Figure SI-5. Lettuce seeds. Plot of experimental values q that generate E(q) = 0.90 (⊡), 0.74 (○), 0.61 (□), 0.50 (◇), 0.37 (△) and 0.30 (▽). Linear variations q (δ) are evidenced; q values extrapolated to δ = 0 are the wave vector magnitudes q_{eff} in agreement with the SGP approximation.

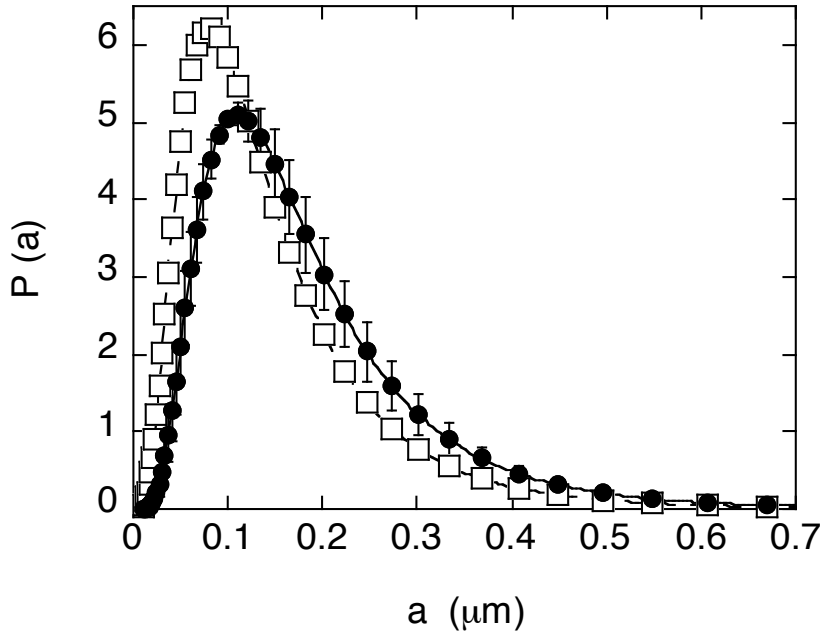

Figure SI-6. Normalized log-normal distributions of the lettuce oil-bodies radius obtained from the simulation of SGP (q_{eff}) (●) and from the GPD analysis of the PFGSE function measured with the longest gradient pulse delay (δ = 6 ms) (□).

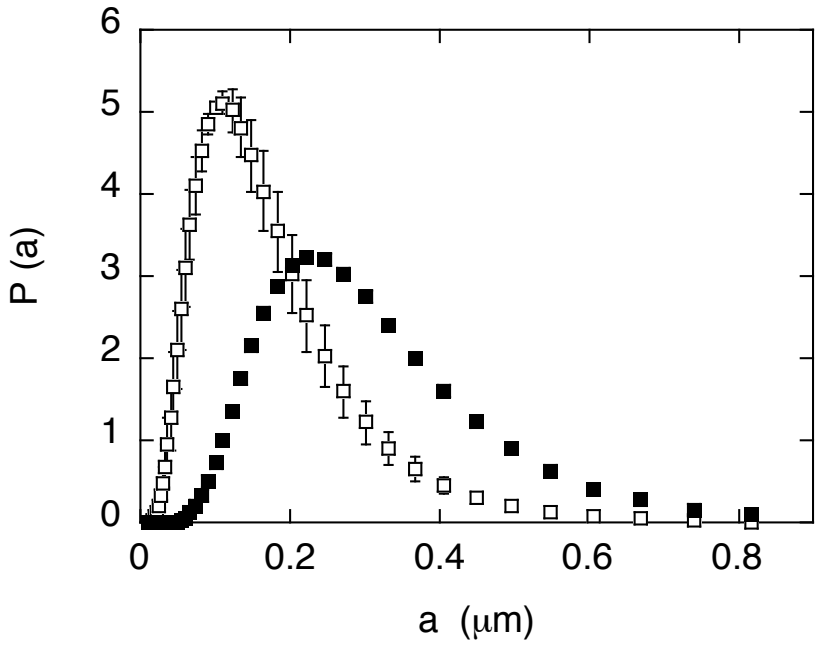

Figure SI-7. Normalized log-normal radius distributions for tomato oil-bodies (■) and lettuce oil-bodies (□). The distribution parameters are r_o = 0.23 μm, σ = 0.48 and r_o = 0.11 μm, σ = 0.60 respectively.