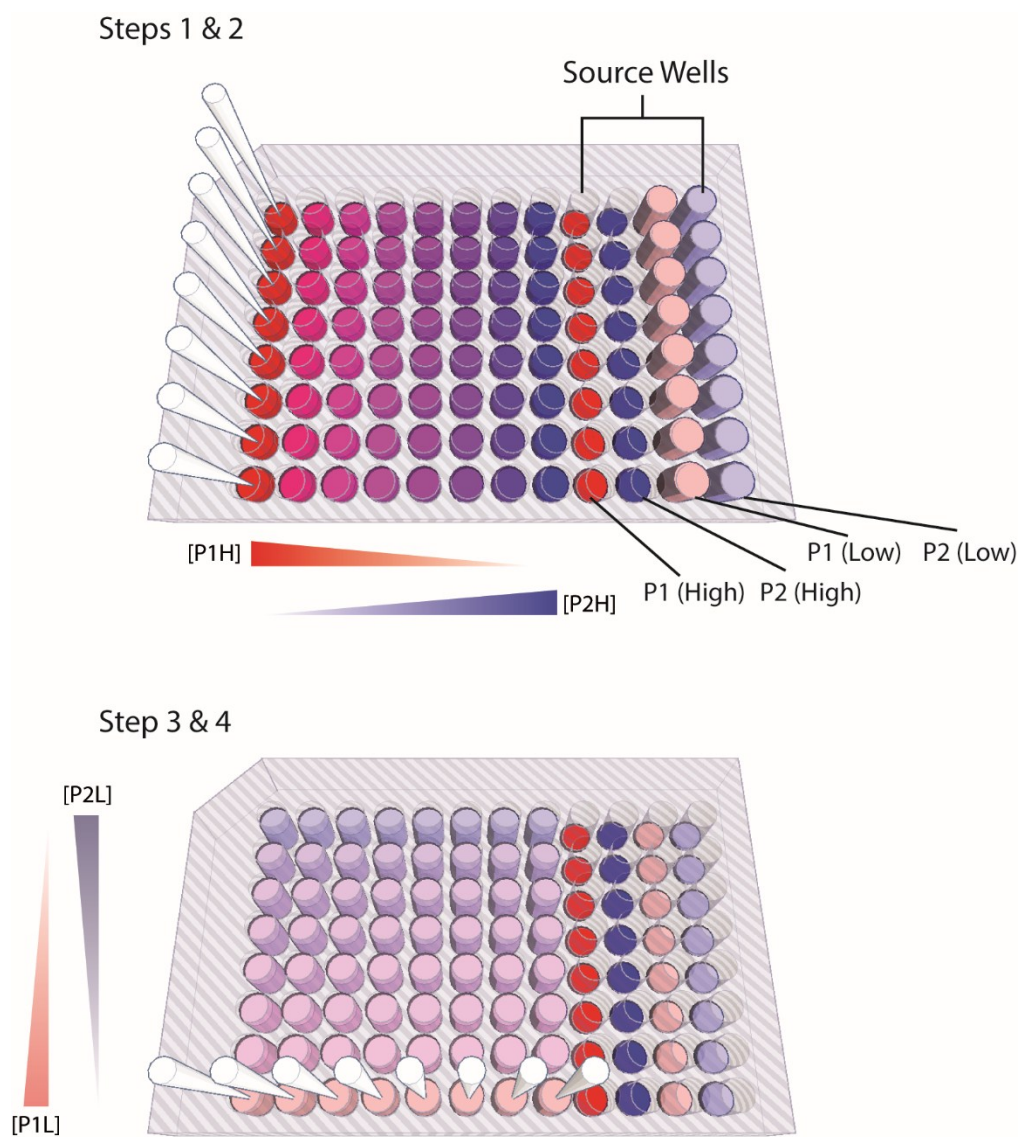
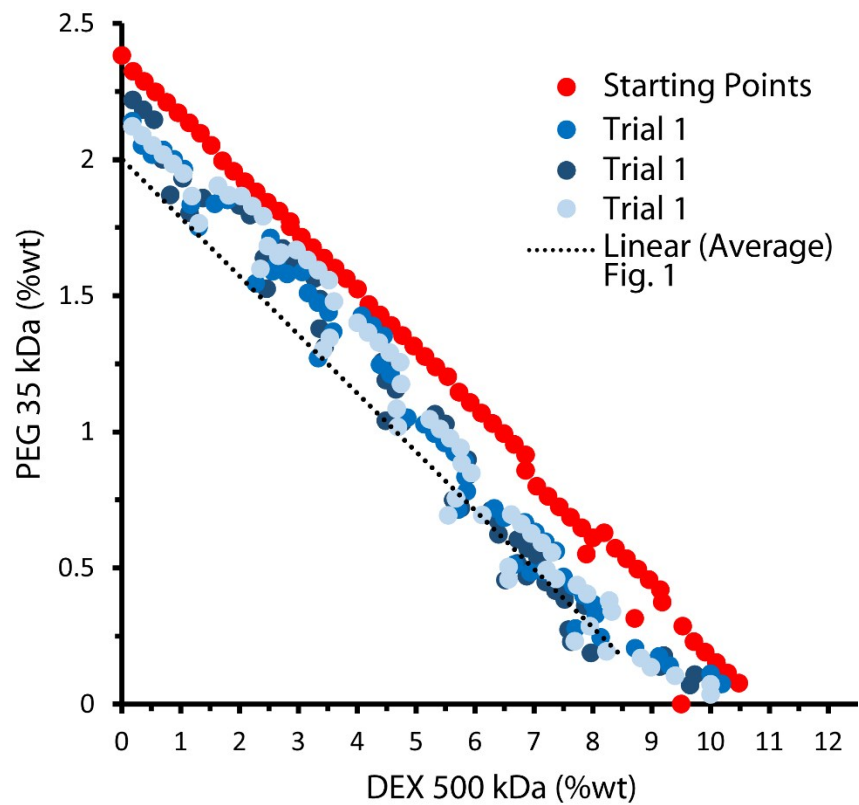


## Electronic Supplementary Information

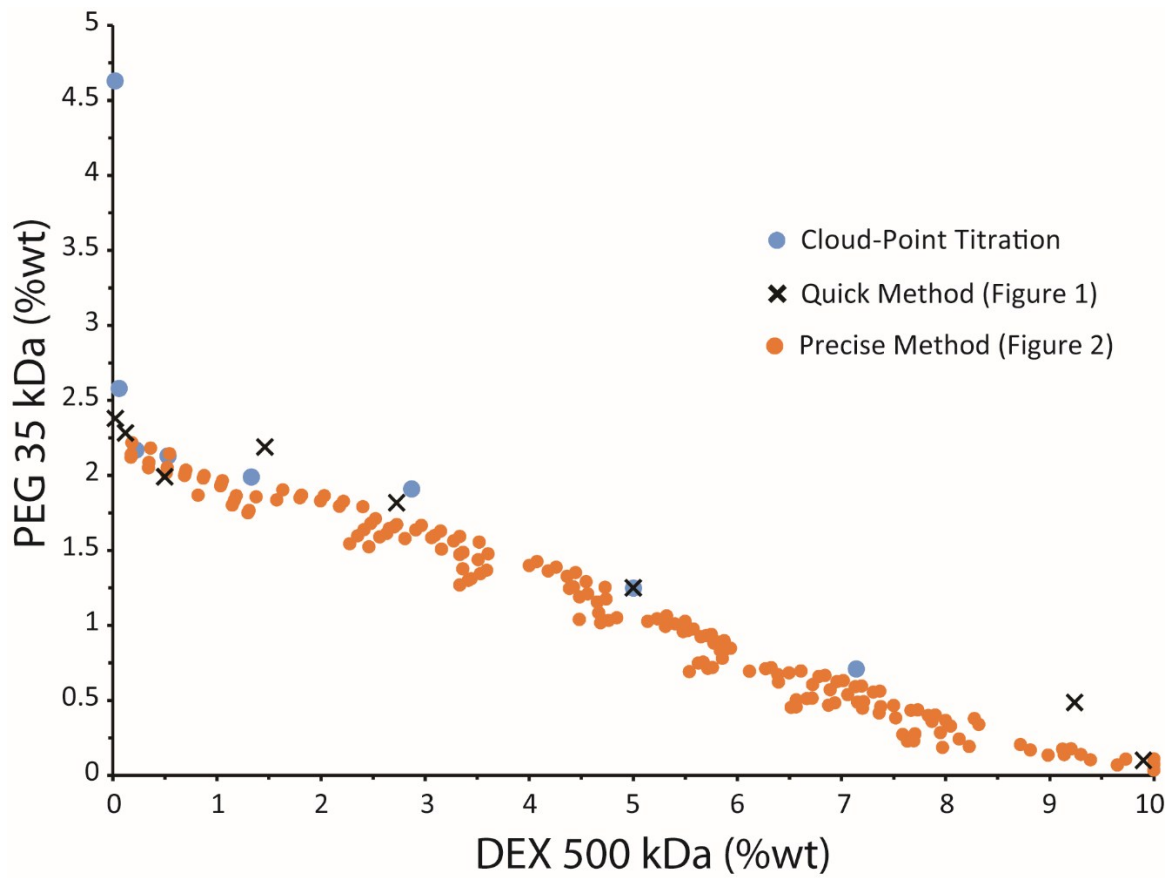


**Fig. S1.** Schematic for generating 64 starting points for precise determination of phase diagrams.

P1= Polymer 1. P2= Polymer 2. H= High concentration. L= Low concentration.



**Fig. S2.** Data for three independent trials for the precise method for phase diagram determination for the PEG 35 kDa-DEX 500 kDa ATPS.



**Fig. S3.** Comparison of phase diagrams determined by macroscopic turbidimetric analysis, microplate estimation assay and precision microplate assay.