



Supplementary Information

D- α -tocopherol-Based Polymeric Micelles for Successful Improving Encapsulation of Retinoic Acid

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Section S1. Figure S1-S15.

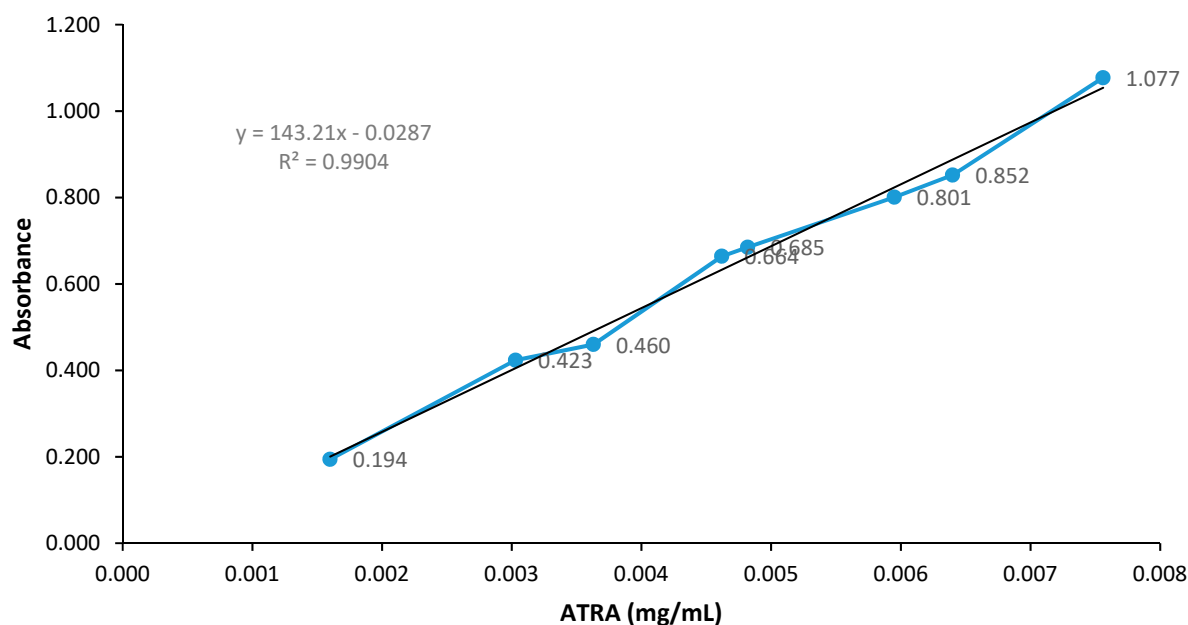


Figure S1. ATRA calibration curve in methanol at $\lambda_{\max} = 340$ nm using an UV-Vis spectrophotometer within a range $5.33 \times 10^{-3} - 2.13 \times 10^{-2}$ μM .

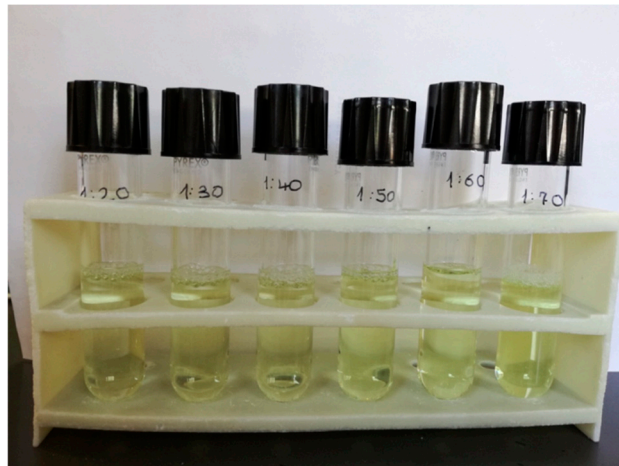


Figure S2. ATRA-TPGS colloidal dispersions obtained at different ATRA:TPGS ratios (w:w) by solvent casting method.

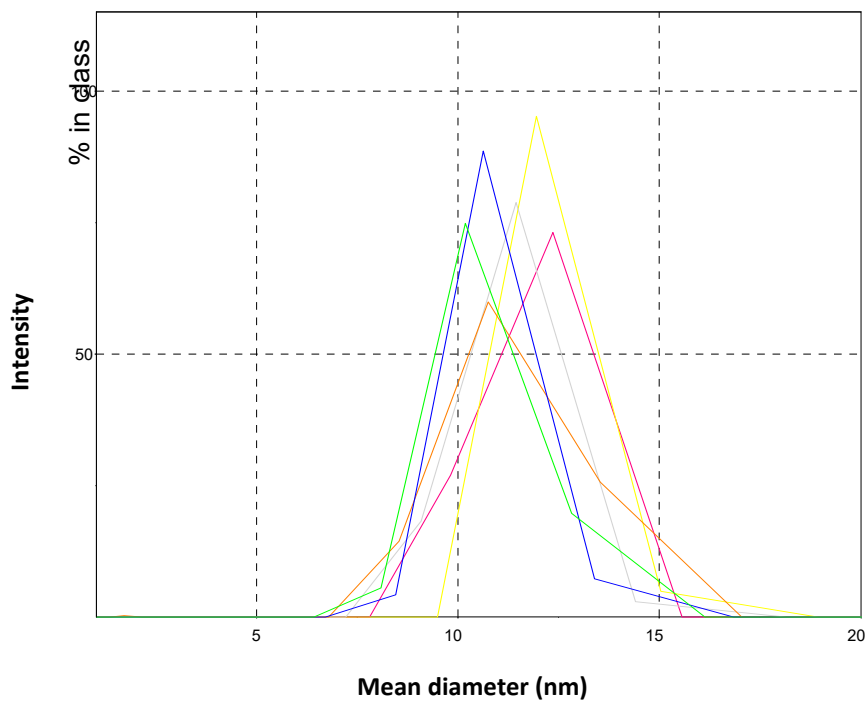


Figure S3. Representative size distribution of different freshly prepared ATRA-TPGS formulations. Green line corresponds to 1:70 ratio, blue line to 1:60 ratio, orange line to 1:50 ratio, grey line to 1:40 ratio, yellow line to 1:30 ratio and red line to 1:20 ratio.

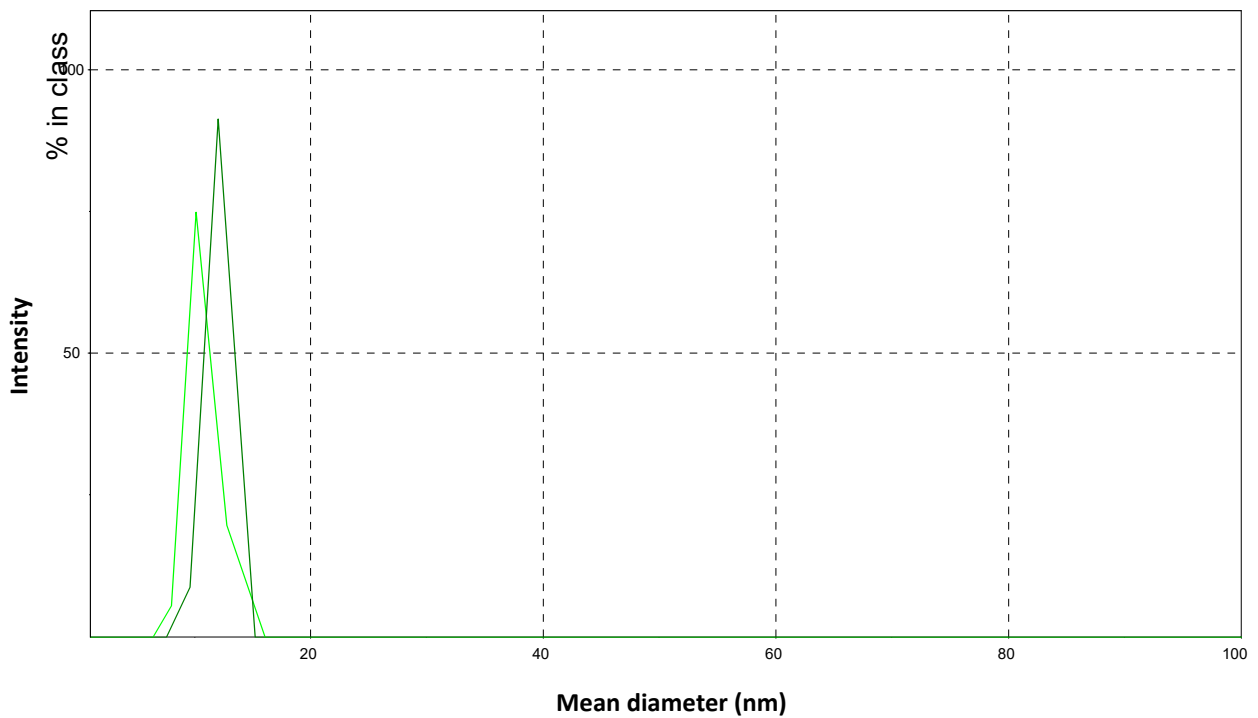


Figure S4. Representative size distribution of ATRA-TPGS formulation at 1:50 ratio. Light green line corresponds to a freshly prepared micellar dispersion, and green line to micelles reconstituted in water from lyophilized powder.

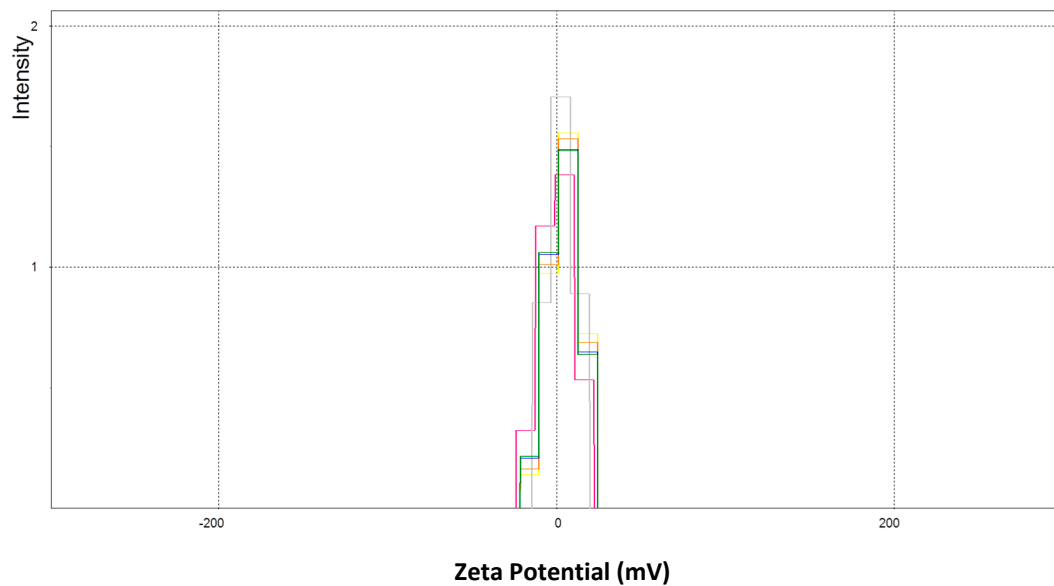


Figure S5. Representative Z potentials distribution of different ATRA-TPGS formulations measured in HEPES buffer (pH 7.4). Green line corresponds to 1:70 ratio, blue line to ratio 1:60, orange line to 1:50 ratio, grey line to 1:40 ratio, yellow line to 1:30 ratio and red line to 1:20 ratio.

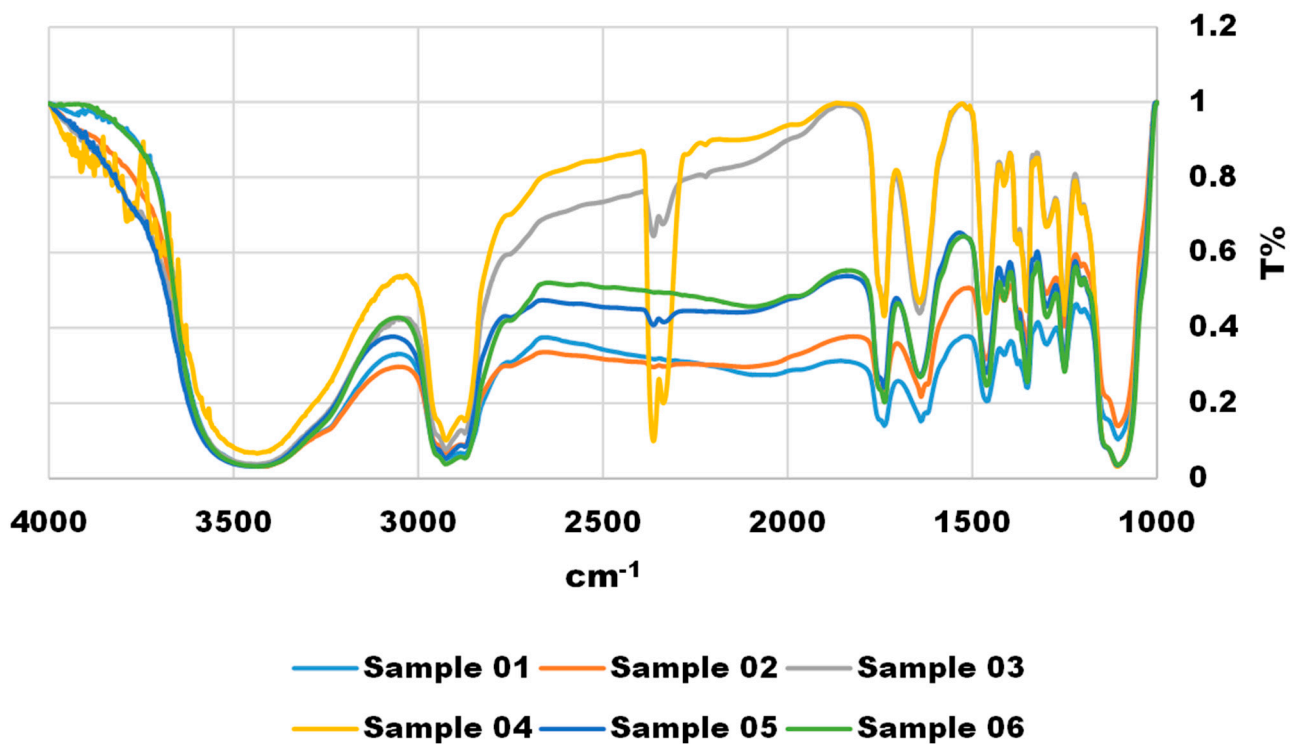


Figure S6. FTIR spectra of ATRA-TPGS formulations obtained using ATRA:TPGS ratios of 1:20, 1:30, 1:40, 1:50, 1:60 and 1:70 and named Sample 01, 02, 03, 04, 05 and 06 respectively.

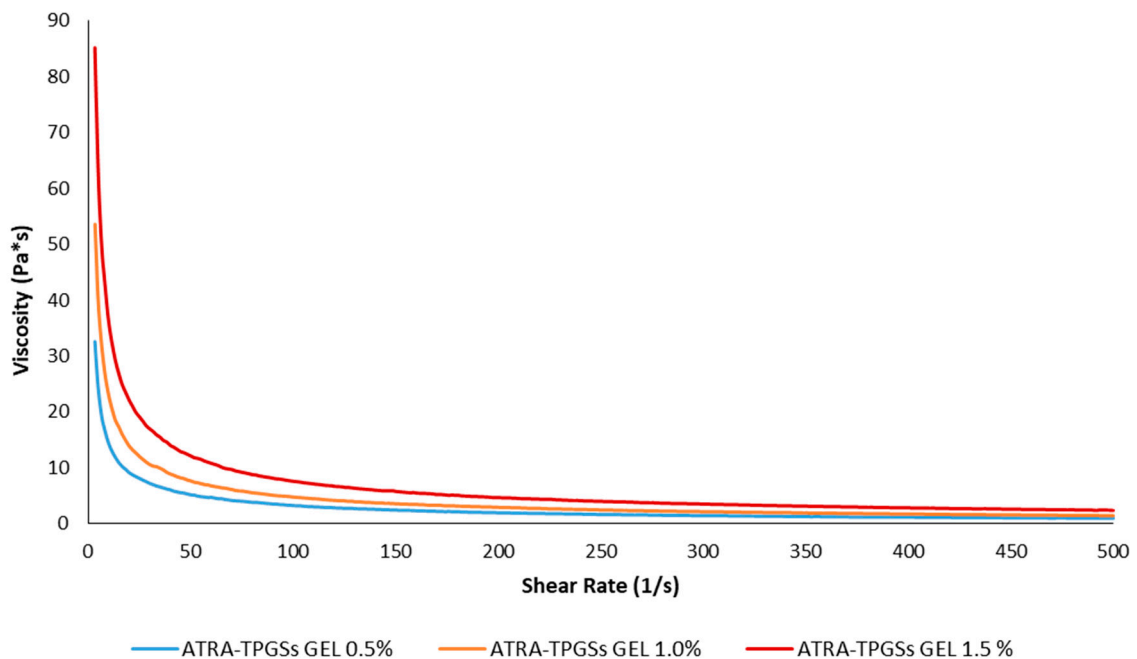


Figure S7. Viscosity curves of ATRA-TPGSs loaded gels at 0.5%, 1.0% and 1.5% (w/w) Carbopol® 980 concentrations, recorded at 25 °C using a concentric cylinder viscometer equipped with a Z4 probe.

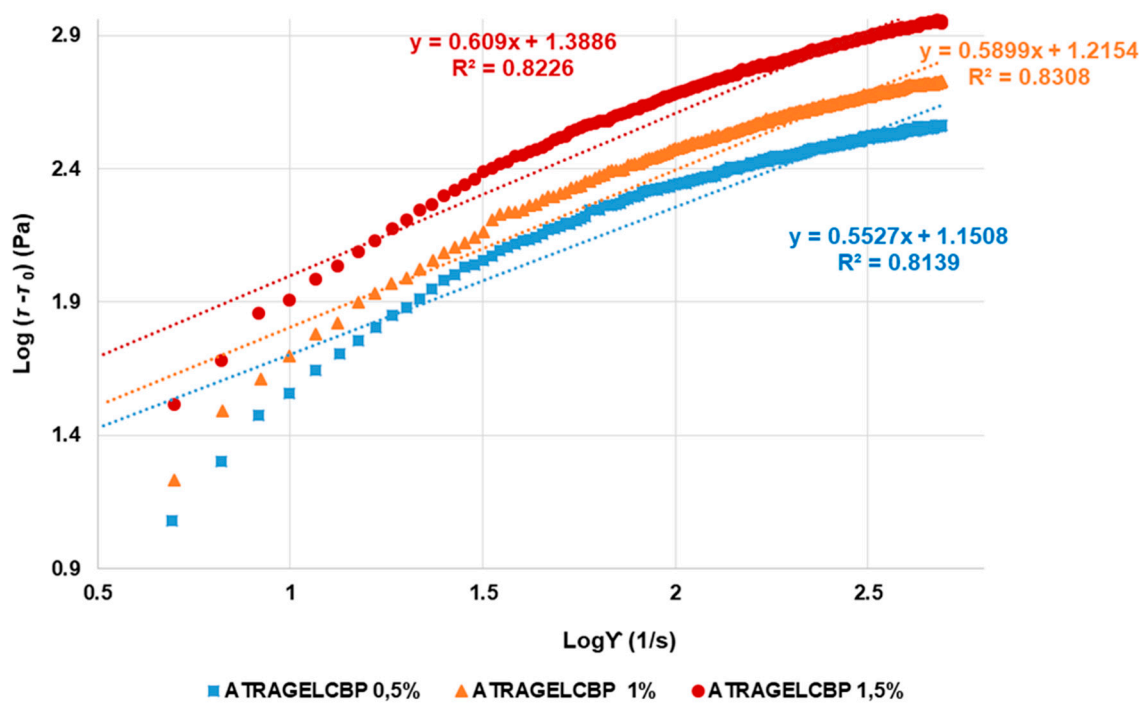


Figure S8. Hershel-Buckley rheograms of ATRA-TPGSs loaded gels at 0.5%, 1.0% and 1.5% (w/w) Carbopol® 980 concentrations.

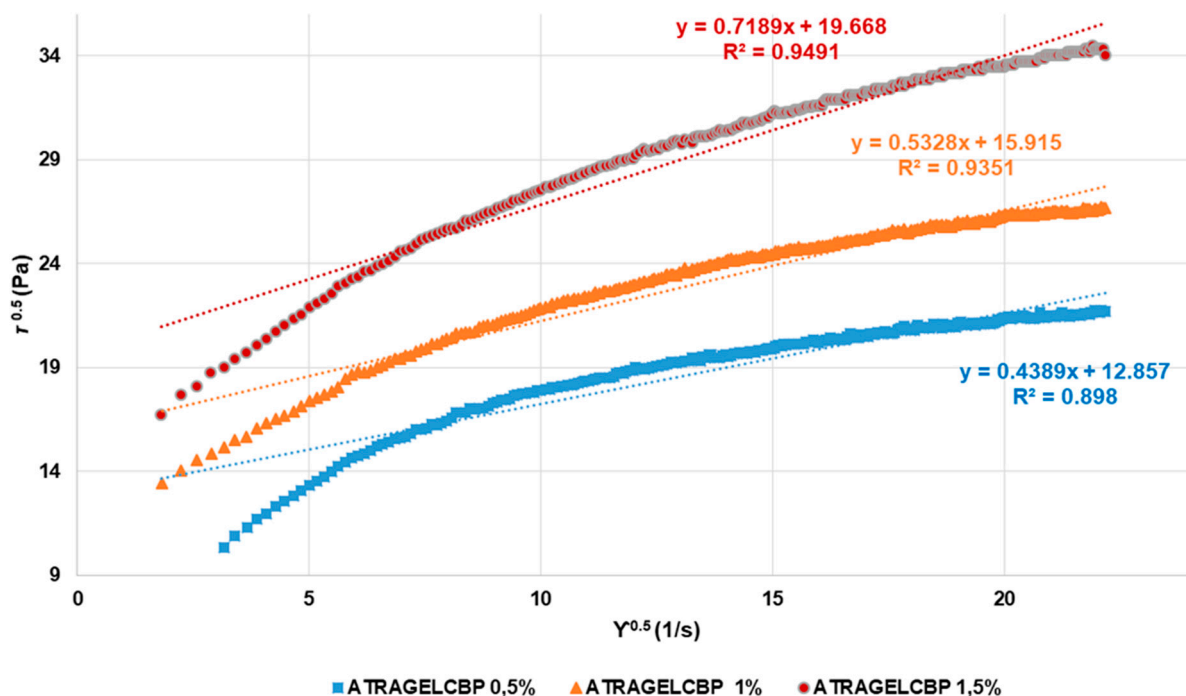


Figure S9. Casson rheograms of ATRA-TPGSs loaded gels at 0.5%, 1.0% and 1.5% (w/w) Carbopol® 980 concentrations.

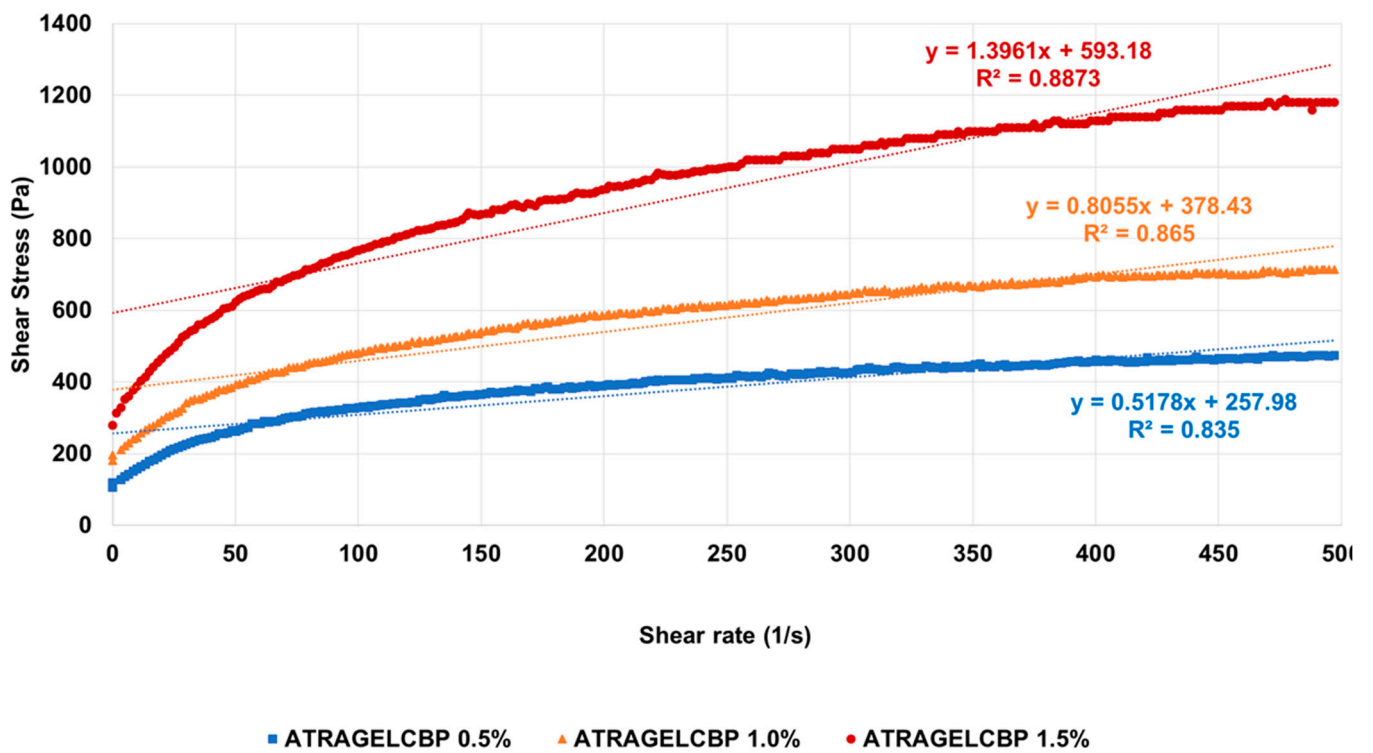


Figure S10. Bingham Plastic rheograms of ATRA-TPGSs loaded gels at 0.5%, 1.0% and 1.5% (w/w) Carbopol® 980 concentrations.

Section 2. Table S1.

Table S1. Models parameters, i.e. n and nH , k and kH , τ_{oc} , η_{cp} , τ_o and η_p .

Model	n	k	τ_{oH}	τ_{oc}	η_{cp}	τ_o	η_p
	0.2877 ¹	83.04					
Power Law	0.2866 ²	124.94					
	0.3015 ³	187.20					
	0.5527 ¹	14.15	107				
Herschel-Bulkley	0.5899 ²	16.42	180				
	0.6090 ³	24.47	280				
				165.30 ¹	0.19		
Casson				253.61 ²	0.28		
				386.83 ³	0.52		
						257.98 ¹	0.5178
Bingham Plastic						378.43 ²	0.8055
						593.18 ³	1.3961

¹ ATRA-TPGSs loaded gel with Carbopol ¹ 0.5%, ² 1.0%, ³ 1.5% (w/w).