Synthesis of sodium alginate based sprayable new soft gel system

ELECTRONIC SUPPLEMENTARY INFORMATION

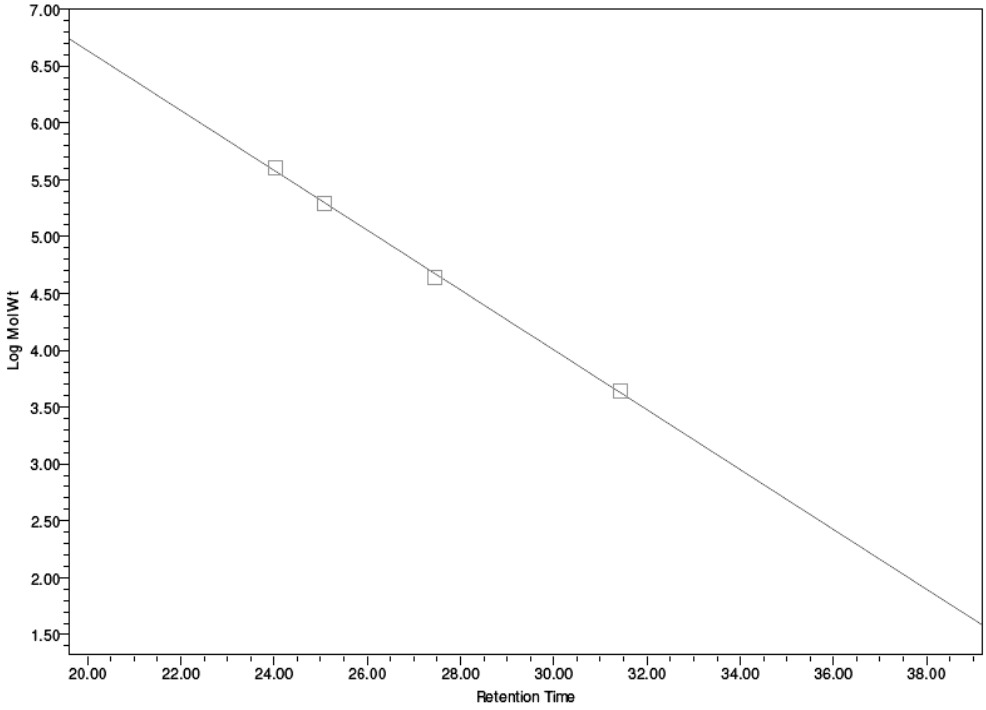

Fig. S1 GPC calibration curve of Dextran standards with different molecular weight

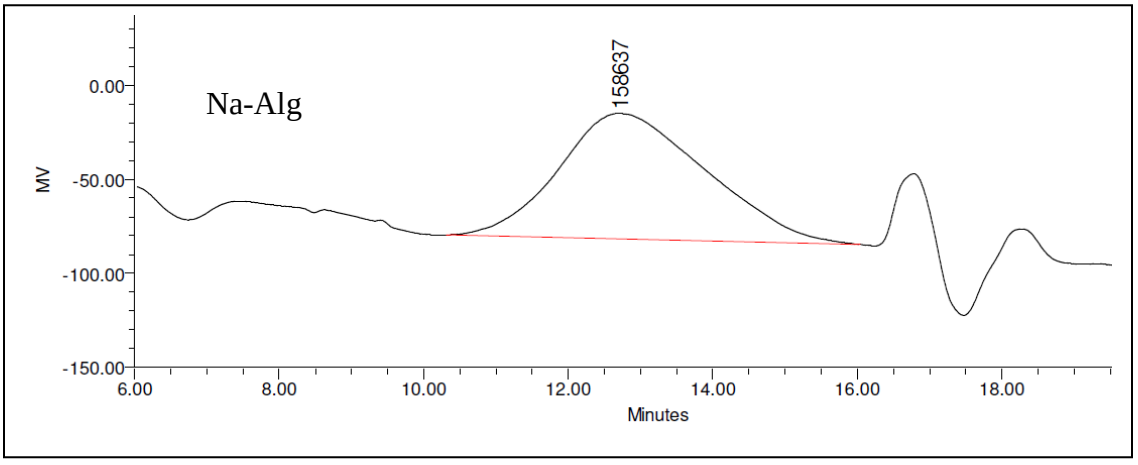

Fig. S2 GPC trace for Na-Alg

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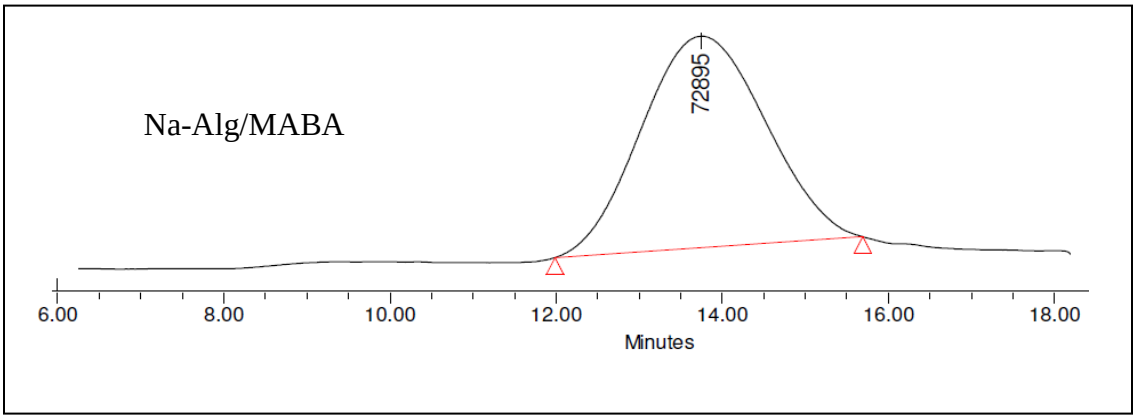

Fig. S3. GPC trace for Na-Alg/MABA

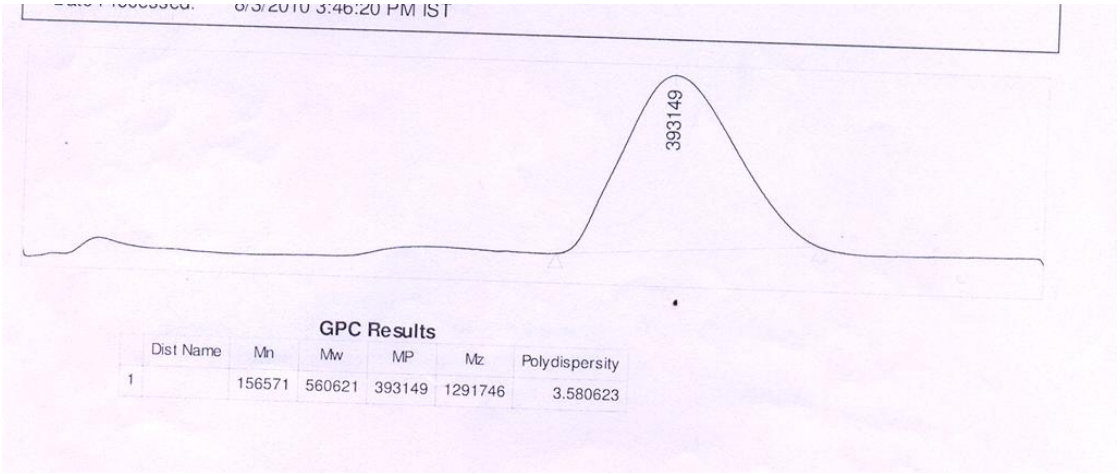

Fig. S4. GPC trace for Na-Alg/OABA

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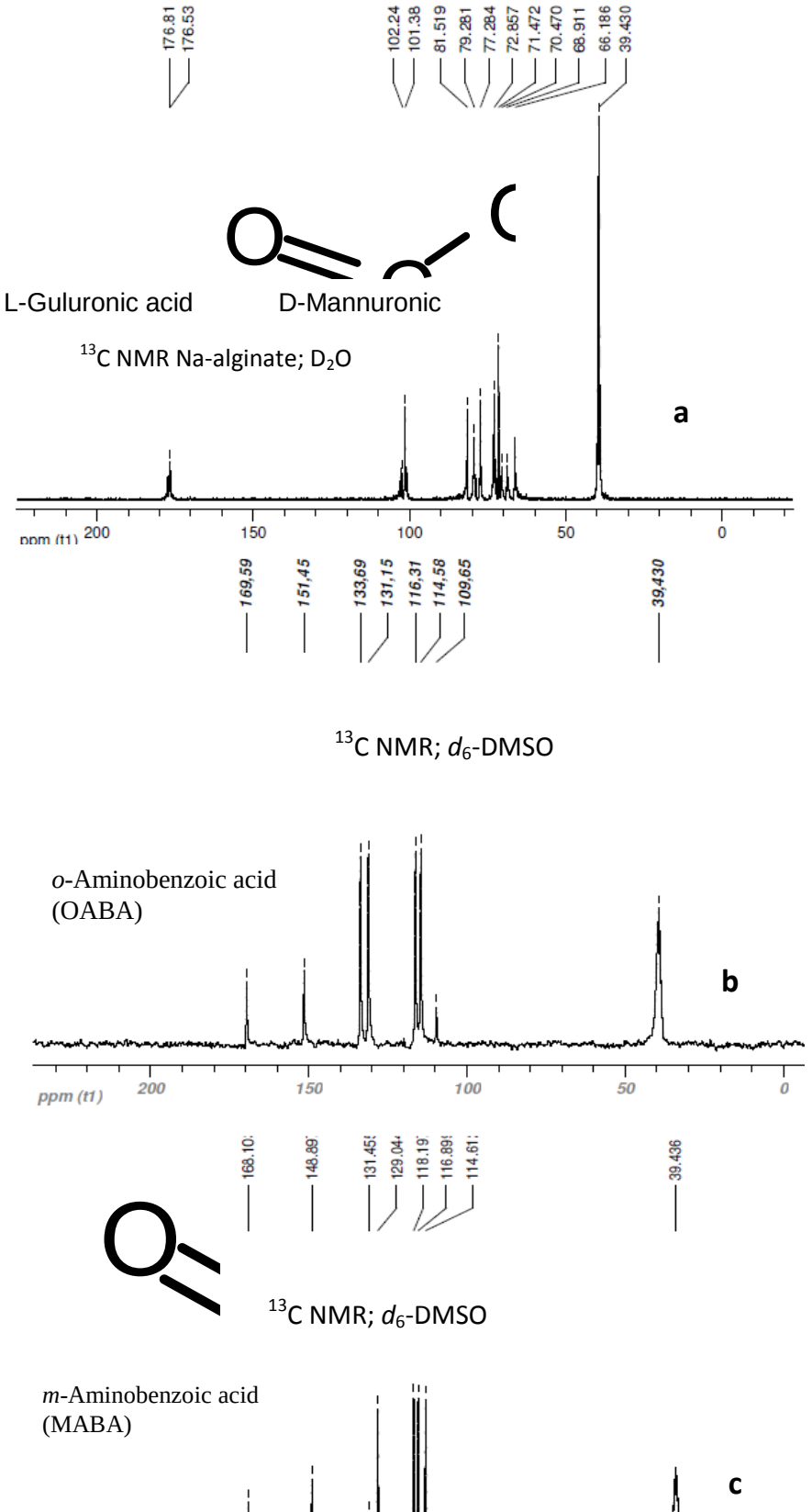

Fig. S5. ^{13}C NMR spectra of (a) Na-Alg, (b) OABA and (c) MABA

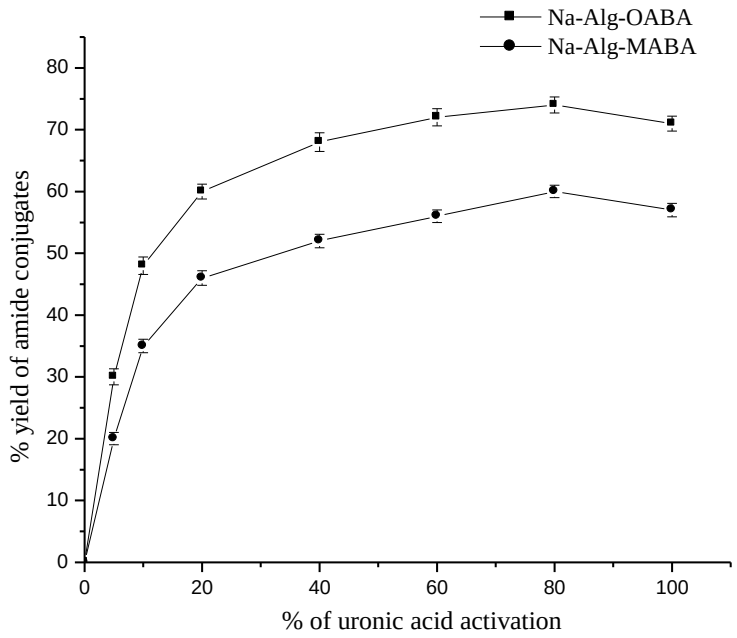

Fig. S6 Variation of the theoretical uronic acid activation by altering the concentration of EDC/NHS added to the reaction medium

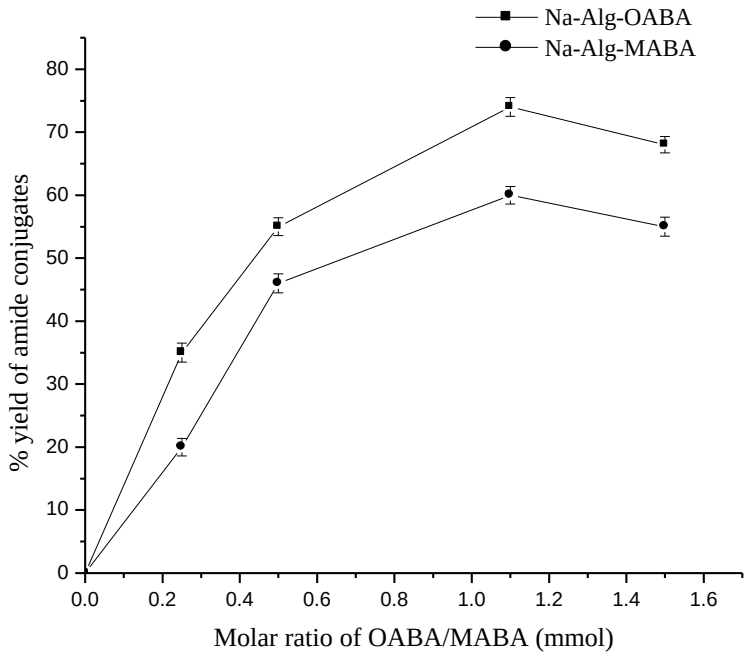

Fig. S7 Effect of molar concentration of aminobenzoic acids (OABA and MABA) on the reaction of alginate-amide conjugates

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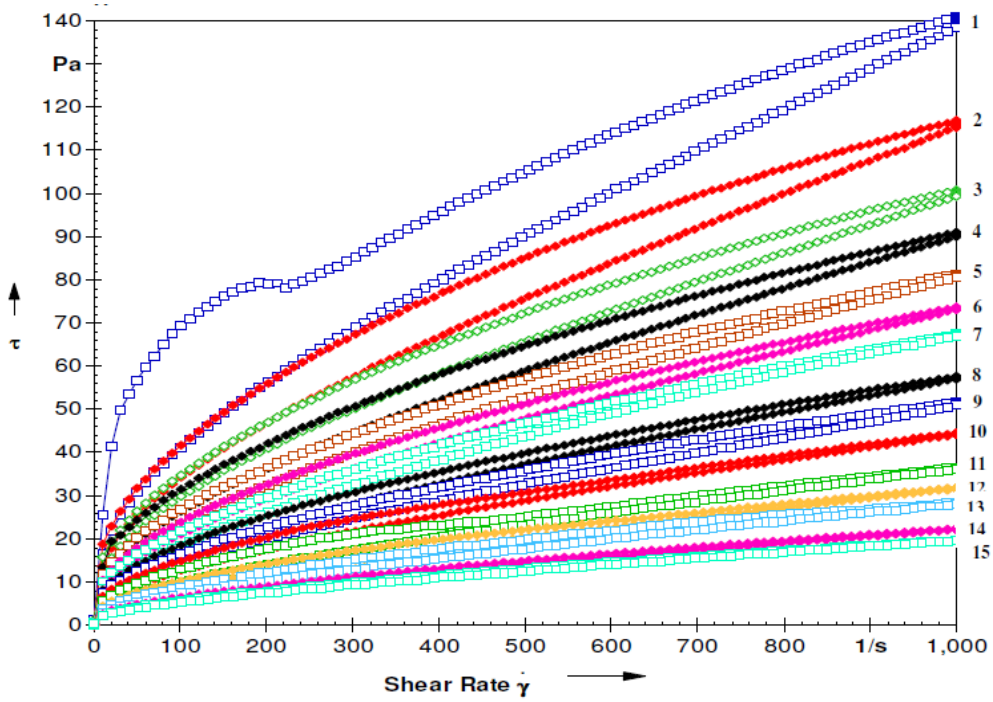

Fig. S8. Thixotropic loops for Na-Alg/OABA for 15 subsequent cycles.

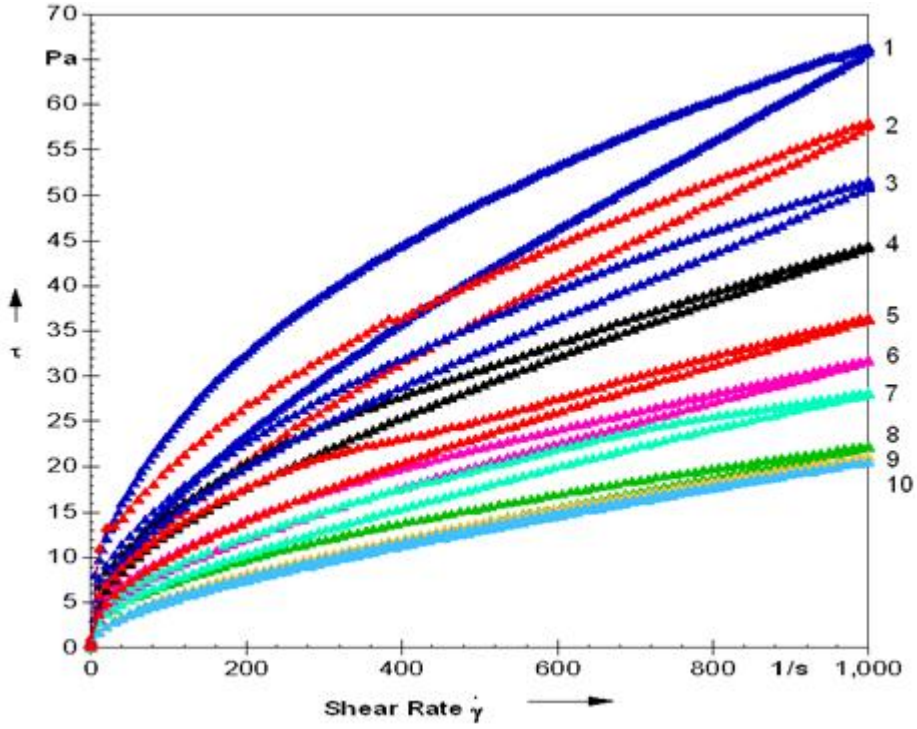

Fig. S9. Thixotropic loops for Na-Alg/MABA for 9 subsequent cycles.

Creep recovery measurements

Fig. S7 provides a diagram of the output response from a creep and recovery experiment which is the compliance (J) as a function of time and the compliance of the sample is initially overcome by the elastic component, followed by the viscoelastic component, then finally the viscous component where continuous flow occurs. In the recovery experiment, the extent of the recovery gives an indication of the thixotropic property of the samples Na-Alg / OABA and Na-Alg / MABA. The extent of recovery (R%) was calculated using equation No (SE1) was described by (ez-Sales et al. 2007 and Phair et al. 2009).[1, 2]

$$R\ (\%) = [J_e/J_{max}] \times 100 \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{(SE1)}$$

Where, J_e is the elastic recoverable compliance which is the difference between the compliance at the end of the creep ($t = t_2$) and recovery experiment ($t = t_3$) (Fig. S6).

A characteristic relaxation time (t_r) may also yield a quantitative assessment of the thixotropy and which was calculated using equation No (SE2).[2]

$$t_r = \eta_0 \times J_e \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{(SE2)}$$

Where, η_0 is the zero shear viscosity which was determined by the slope of the line of the viscous regime of the creep curve.

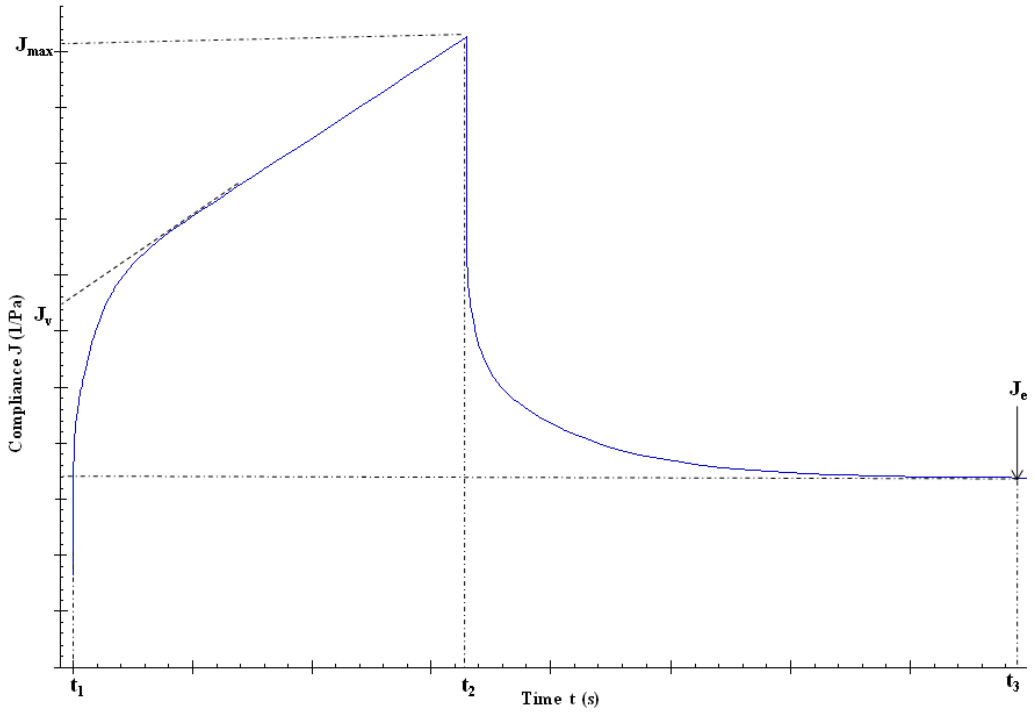

Fig. S10 Visual discription of creep and recovery

References

1) O. ez-Sales, M. Dolz, M. J. Hernandez, A. Casanovas and M. Herraez, *J. Appl. Polym. Sci.*, 2007, **105**, 2121–2128.

2) J. W. Phair, M. Lundberg and A. Kaiser, *Rheol. Acta*, 2009, **48**, 121-133