

## ***Electronic Supporting Information***

### **Smart soaps: Stimulus responsive soap-hydrogel bead composites for controlled dissolution and release of actives”**

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*(Materials Chemistry Frontiers, 2018, DOI: 10.1039/c7qm00556c)*

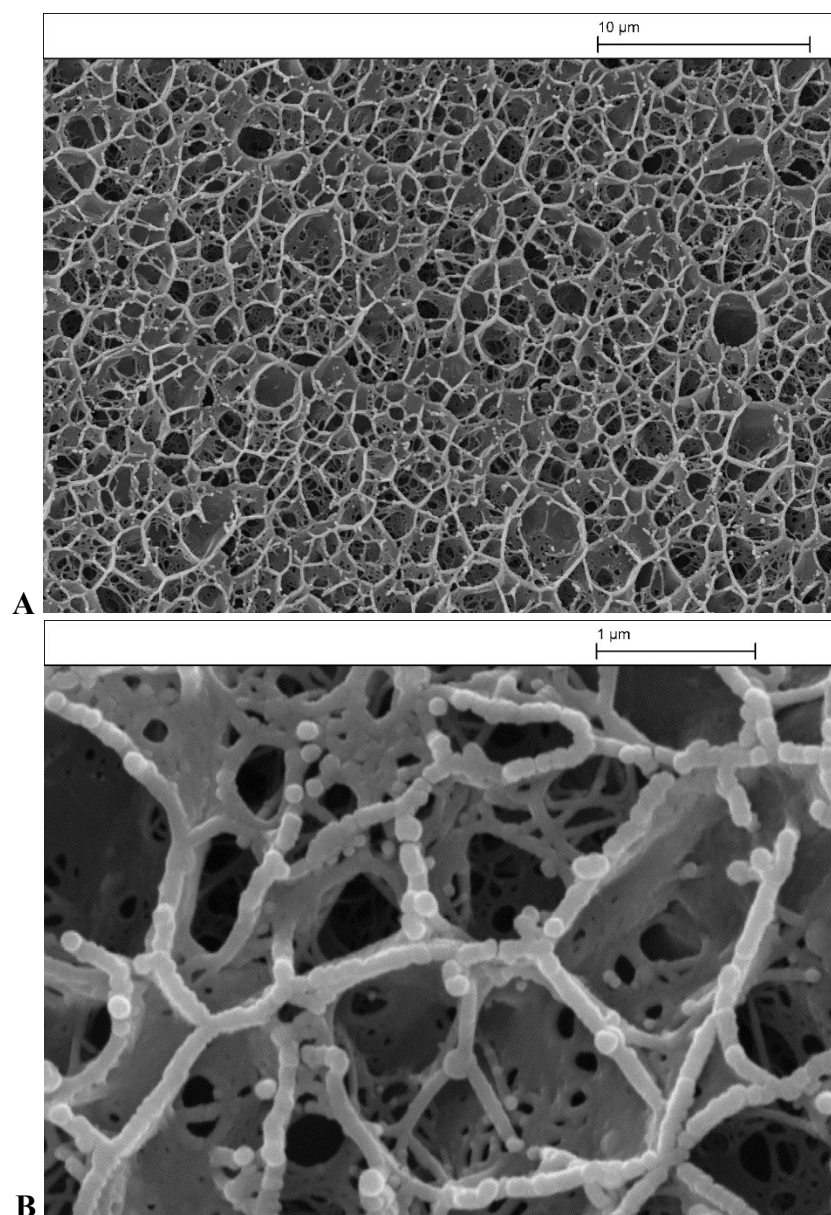
Description of the enclosed video supplementary materials:

**Video S1.** Materials for preparation of soap-hydrogel bead composites

**Video S2.** Formulation of soap-hydrogel bead composites

**Video S3.** Behaviour of soap-hydrogel bead composites under compression

**Video S4.** Release of active components encapsulated in soap-hydrogel bead composites



**Figure S1.** SEM images of a flash-frozen and freeze-dried agar (2.0% w/v) hydrogel sample. The sample were imaged after it was flash-frozen in slush nitrogen, fractured by a blade and then the water content sublimed at -70 °C for 7 minutes. (A) and (B) correspond to different magnifications.

The microstructure of agar hydrogel is known to be largely independent of the agar concentration. We did not observe any difference between 1.0% w/v and 2.0% w/v agar hydrogel morphology upon freeze-dying.

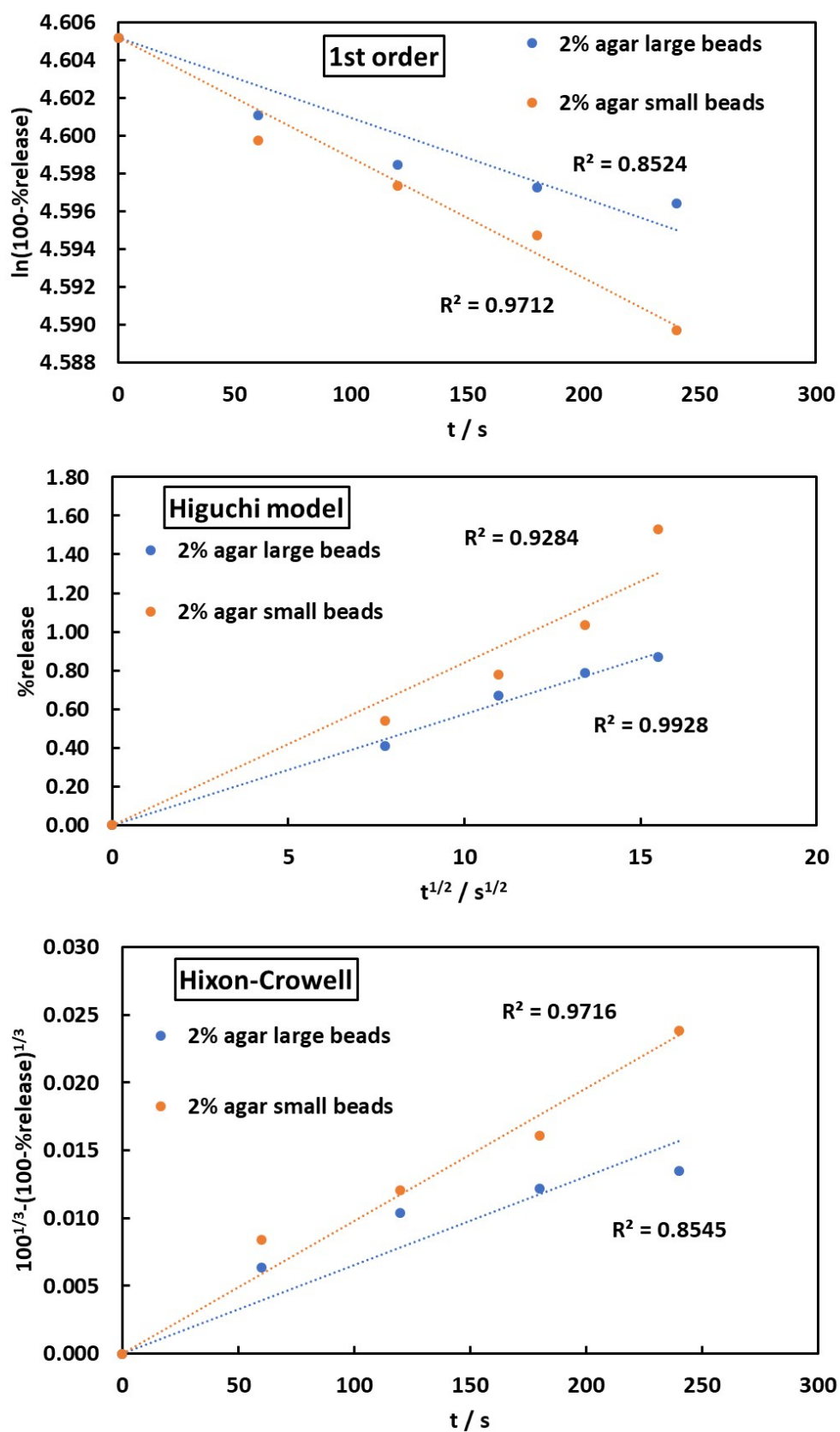


Figure S2. Fitting of the experimental data for berberine release from 50:50 soap:agar hydrogel beads composites at 2% agar concentration in the hydrogel.

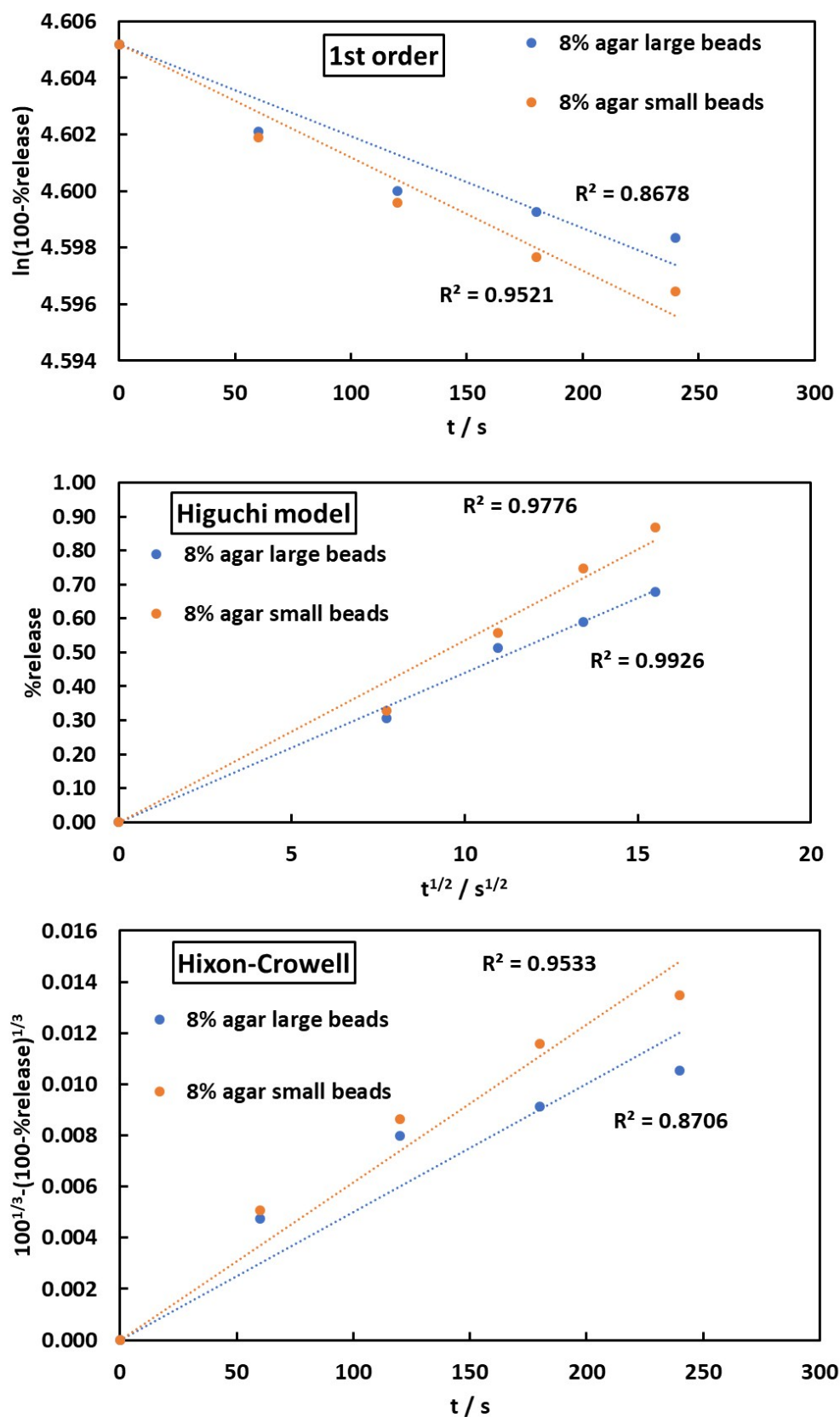


Figure S3. Fitting of the experimental data for berberine release from 50:50 soap:agar hydrogel beads composites at 8% agar concentration in the hydrogel.

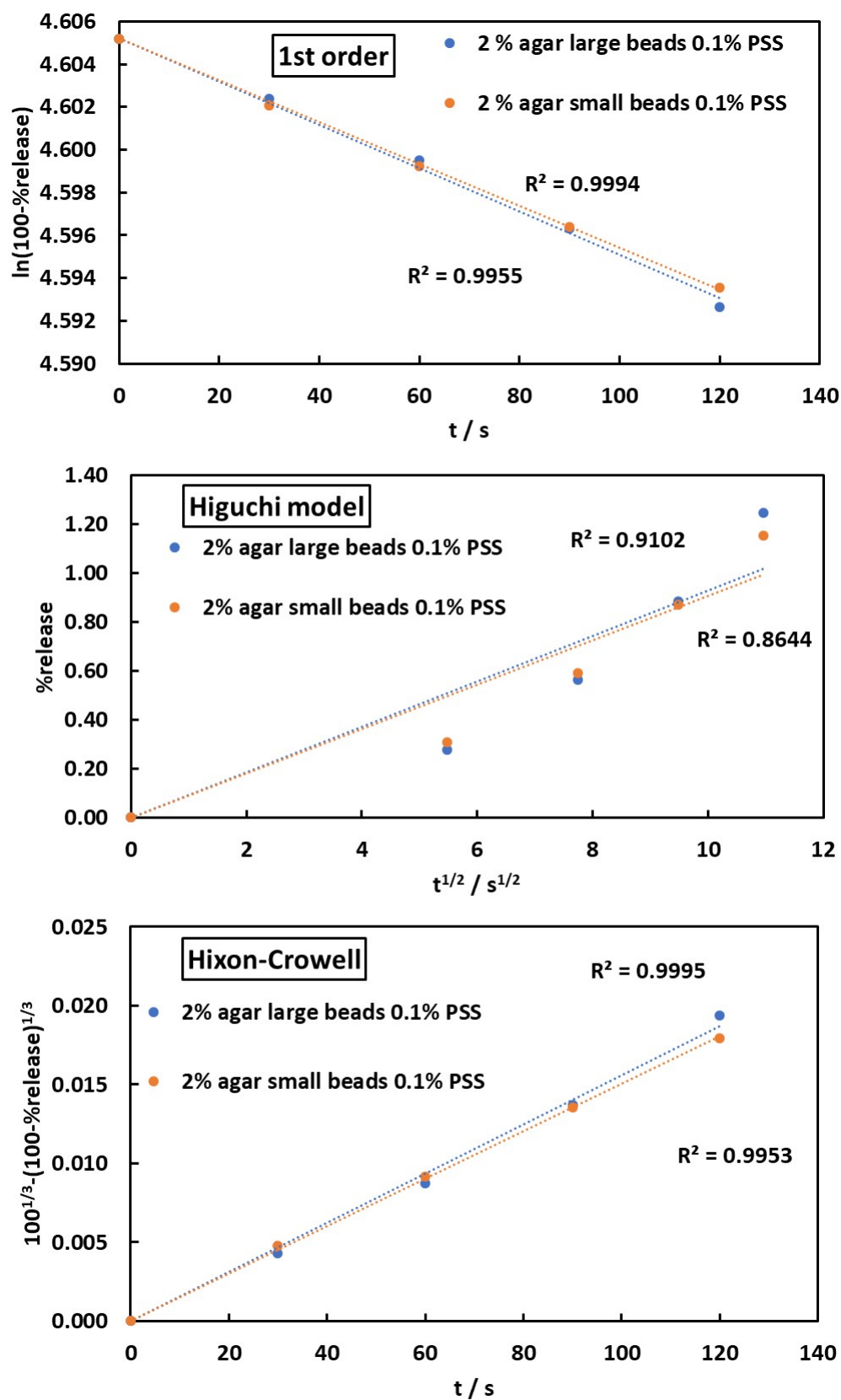


Figure S4. Fitting of the experimental data for berberine release from 50:50 soap:agar hydrogel beads composites at 2% agar concentration in the hydrogel and 0.1% PSS.

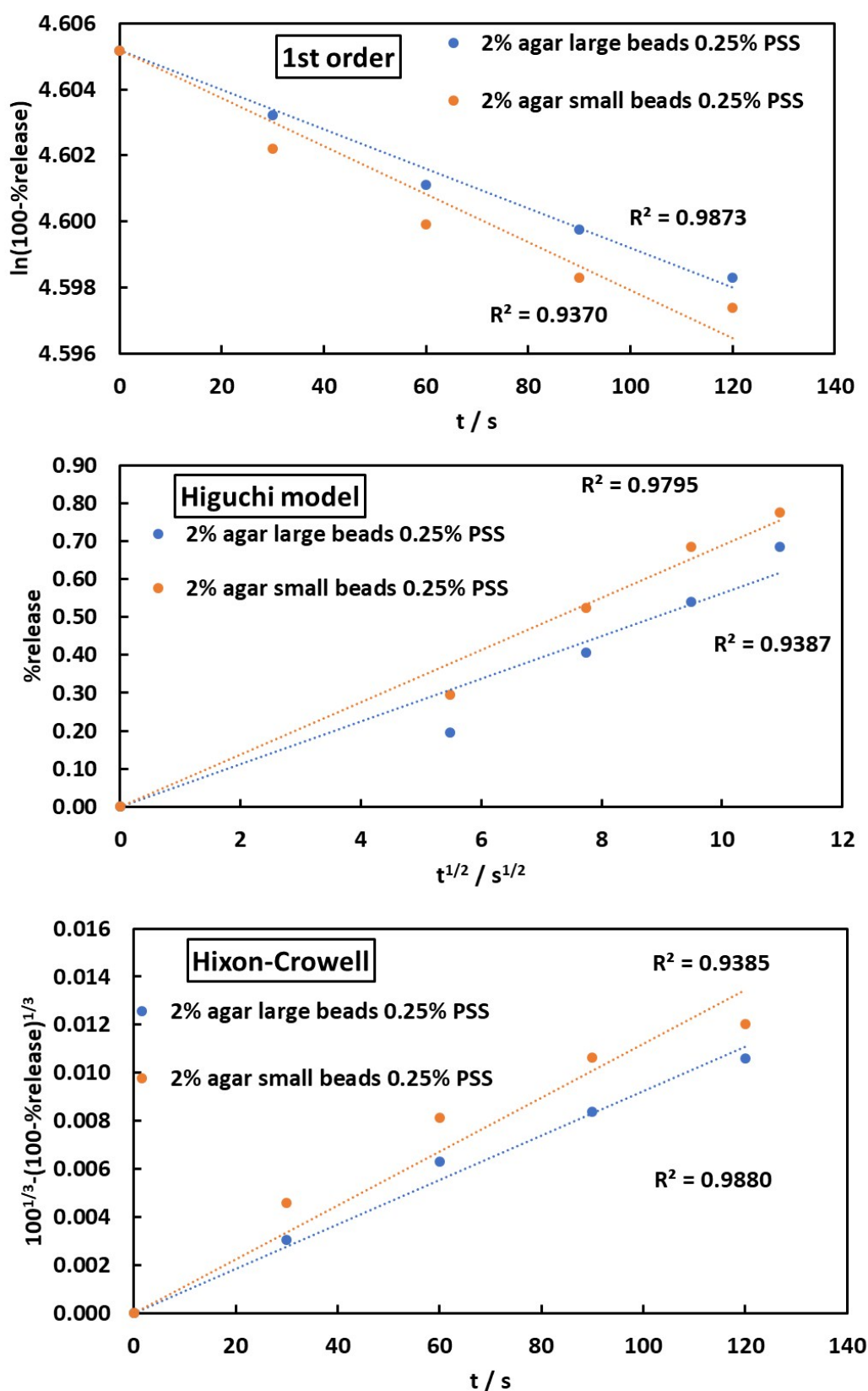


Figure S5. Fitting of the experimental data for berberine release from 50:50 soap:agar hydrogel beads composites at 2% agar concentration in the hydrogel and 0.25% PSS.