# Functionalized carbon dots enable simultaneous bone crack detection and drug deposition

**A. Shanti Krishna[a], C. Radhakumary[a*], Molly Antony[b], and K. Sreenivasan[a,*]**

[a] Laboratory for Polymer Analysis, Biomedical Technology Wing, Sree Chitra Tirunal Institute

   for Medical Sciences & Technology, Thiruvananthapuram-695012, India.

[b] Department of Microbiology, Sree Chitra Tirunal Institute for Medical Sciences & Technology,

   Thiruvananthapuram-695011, India.

*Phone 091- 471 -2520248, Fax. 091- 471- 2341814. Email: sreeni@sctimst.ac.in,
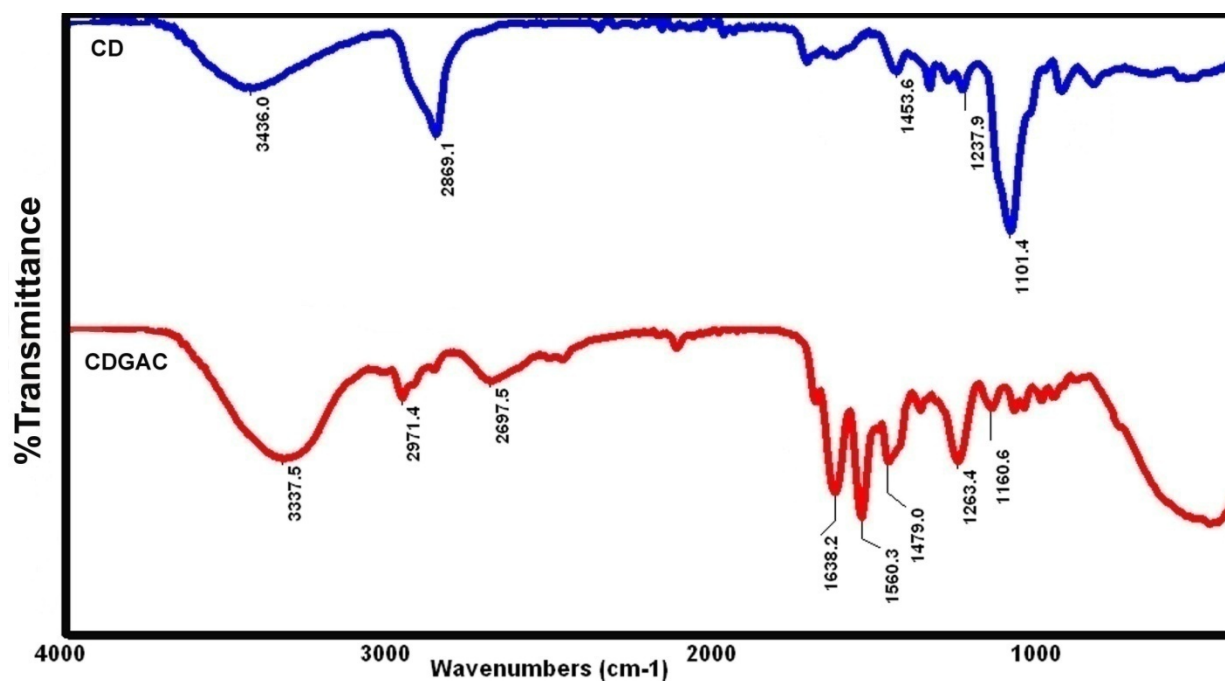radha.changerath@gmail.com

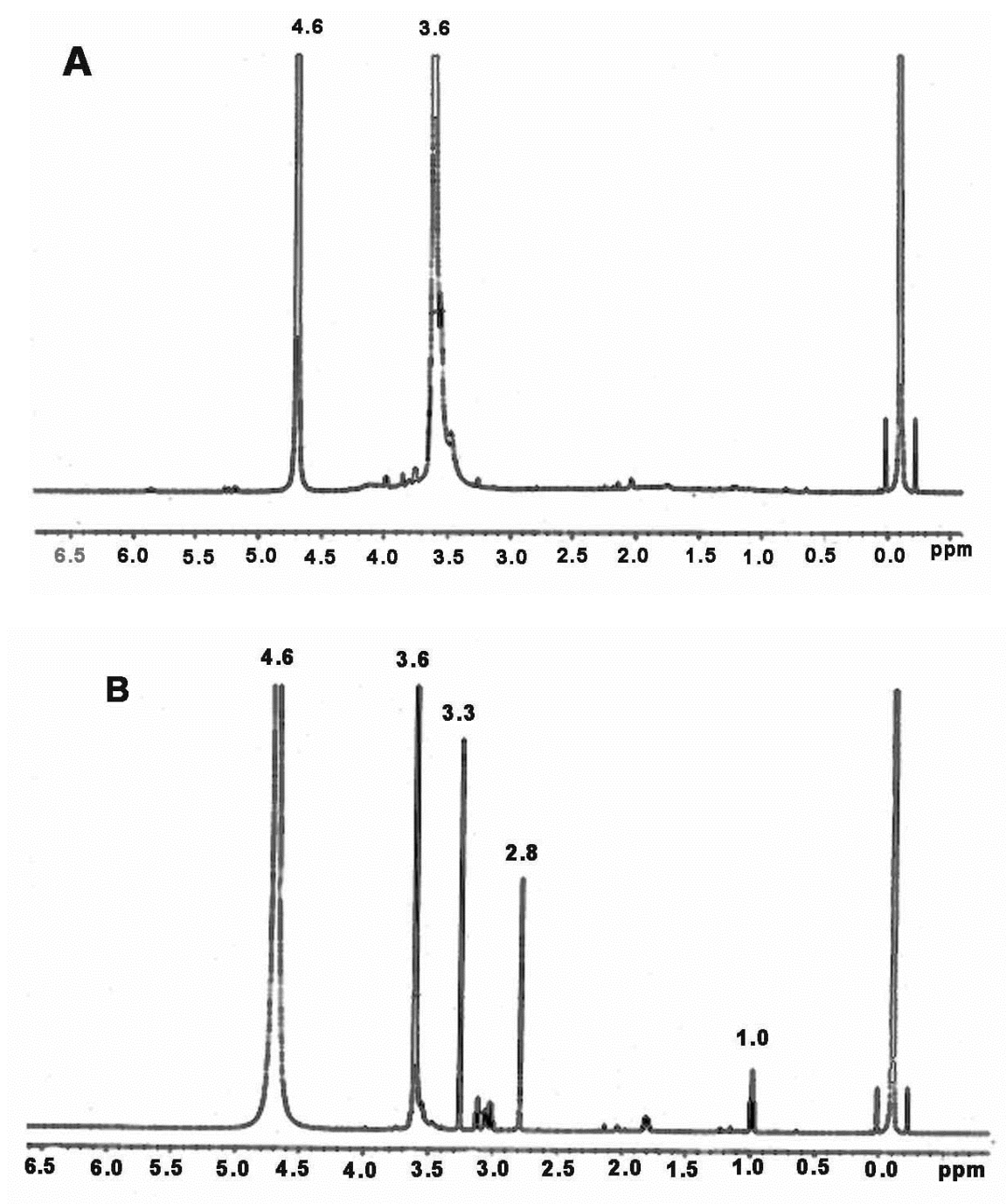## Supporting Information



**Fig S1. FTIR spectra of CD and CDGAC**
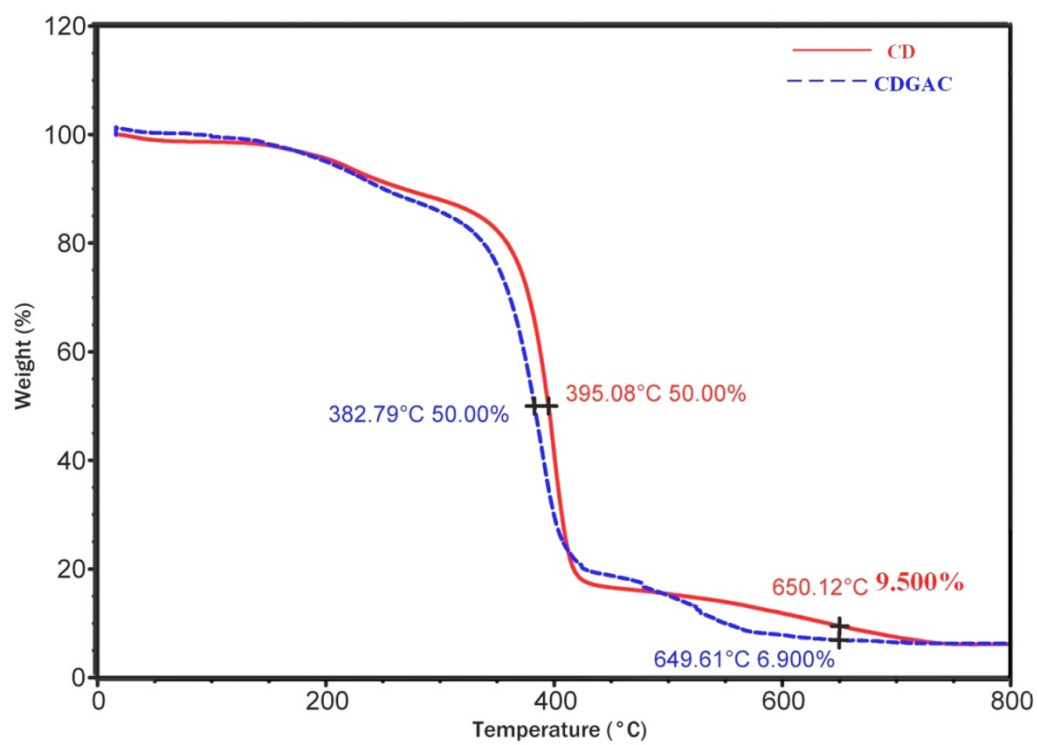
**Fig S2. H¹NMR spectra of A) CD and B) CDGAC**
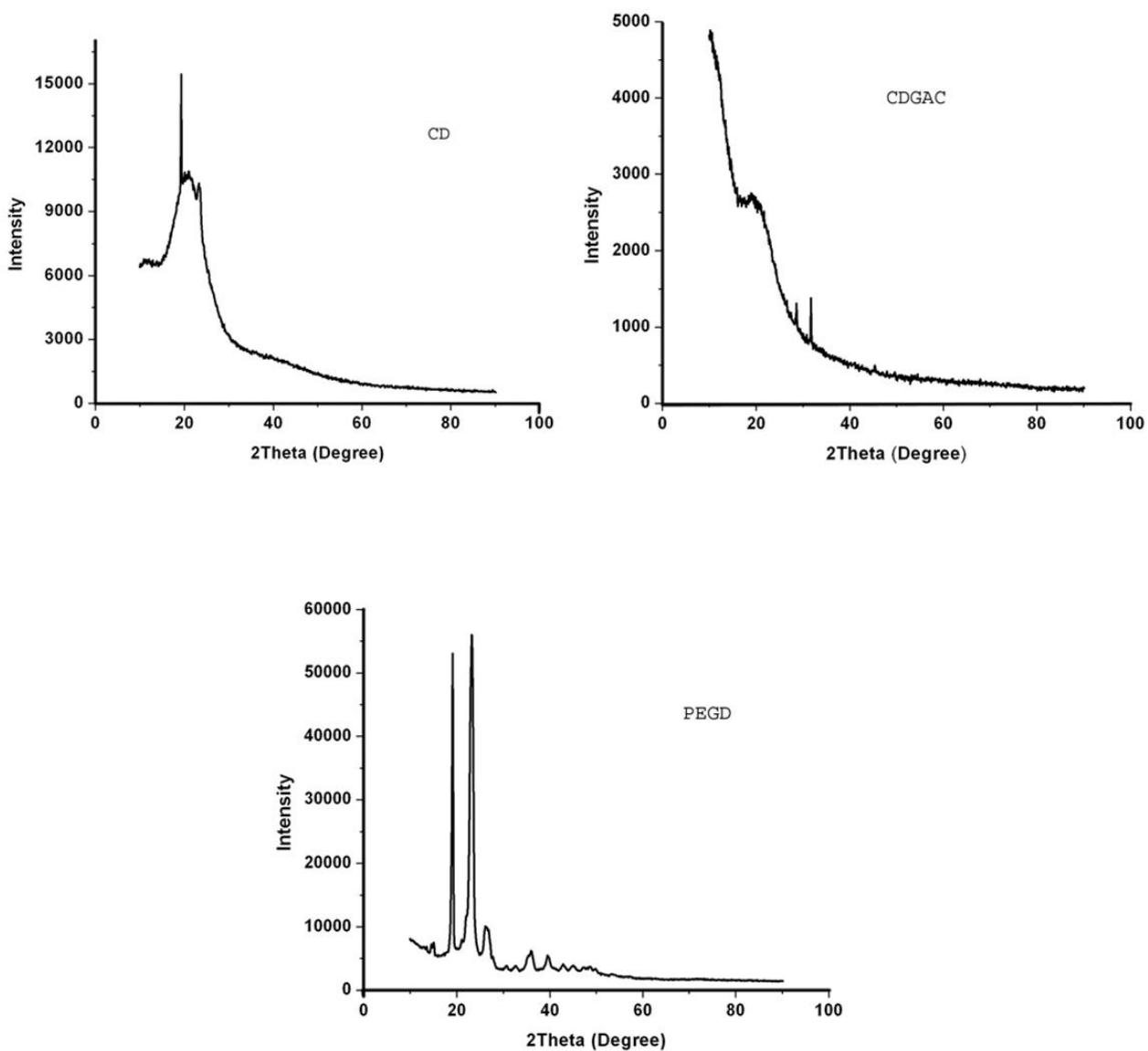
**Fig S3. Thermograms of CD and CDGAC**
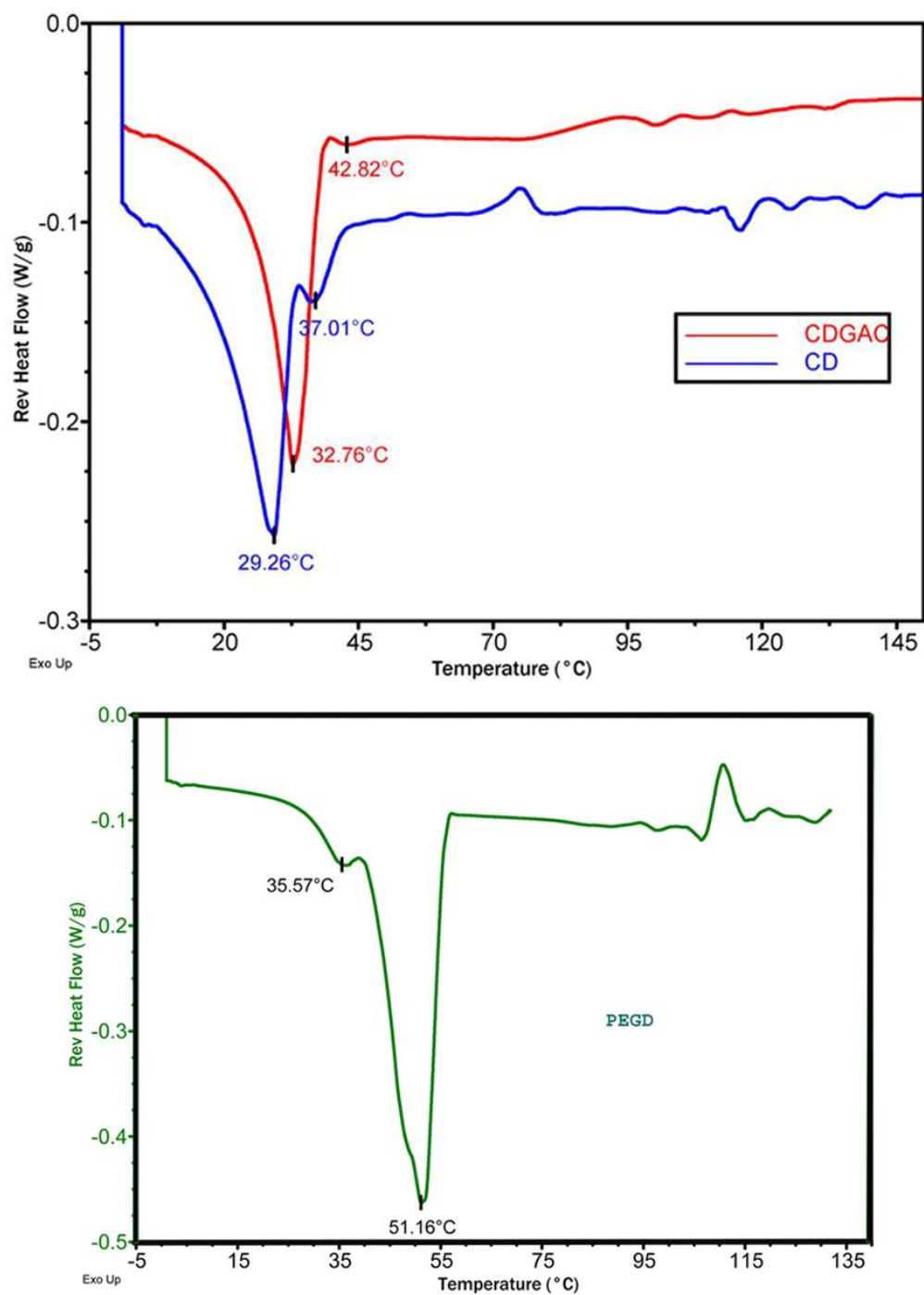
**Fig S4. XRD pattern of CD, CDGAC and PEGD**

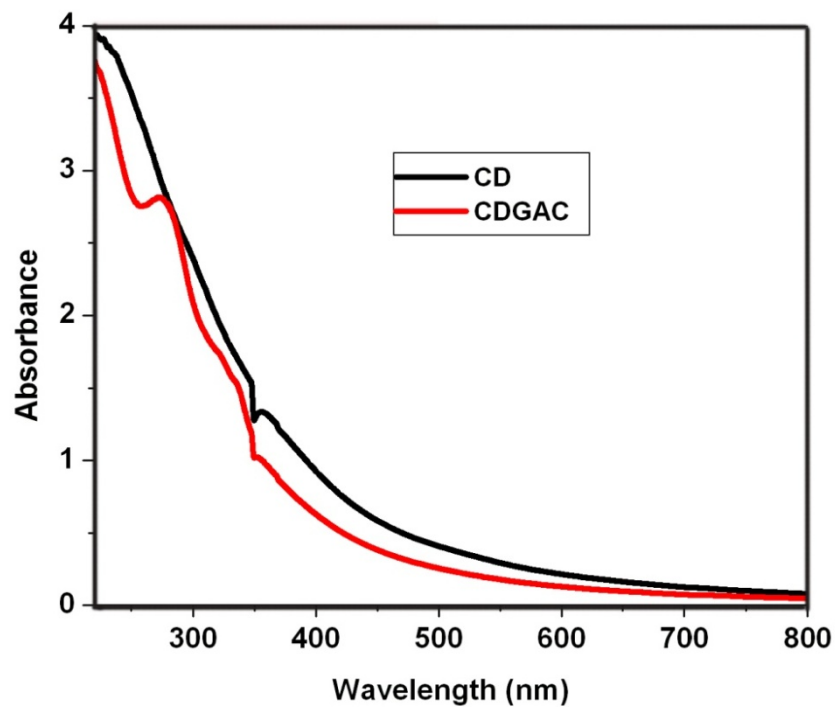**Fig S5. MDSC curve for CD, CDGAC and PEGD**
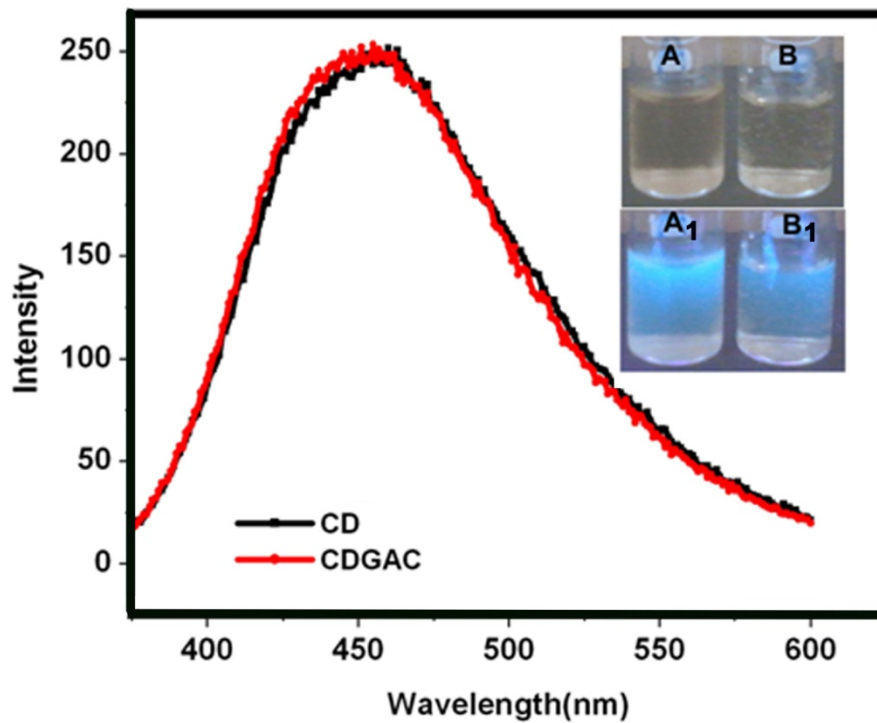
**Fig S6. UV-visible absorbance spectra of CD and CDGAC**



**Fig S7. Fluorescence emission spectra of CD and CDGAC [Inset shows photograhic images of CD and CDGAC in day light (A&B) and under UV light (A$_1$& B$_1$)]**
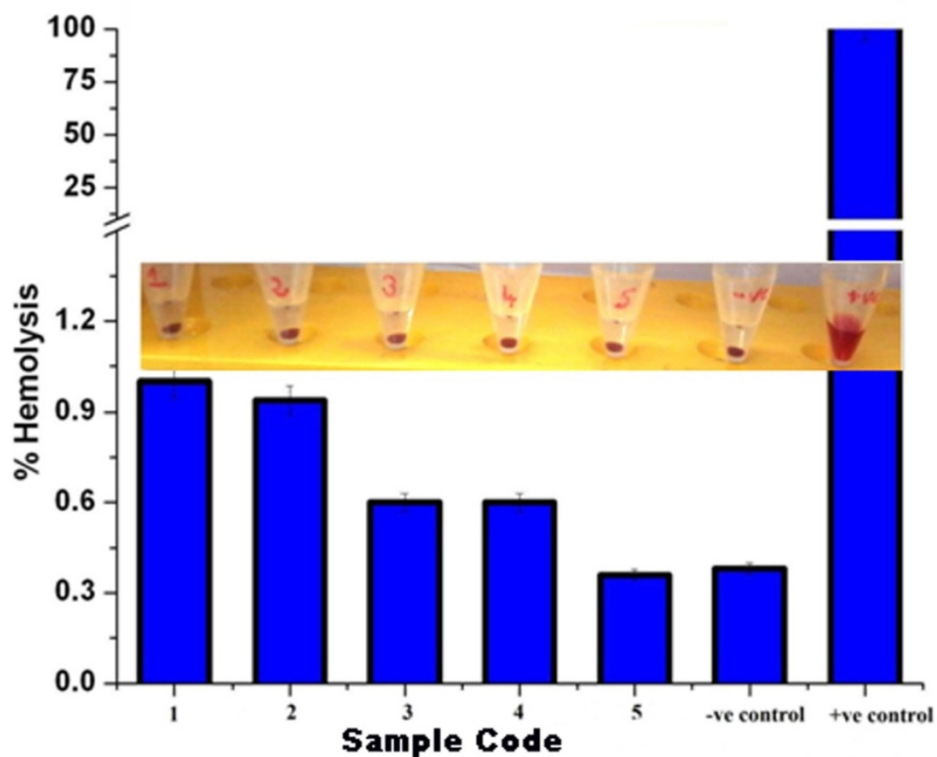
**Fig S8. Haemolysis assay for CD and CDGAC (Samples 1, 2, 3, 4 and 5 are CD 1mg/mL, CD 0.5mg/mL, CD 0.25mg/mL, CDGAC 1mg/mL and CDGAC 0.5mg/mL respectively).**
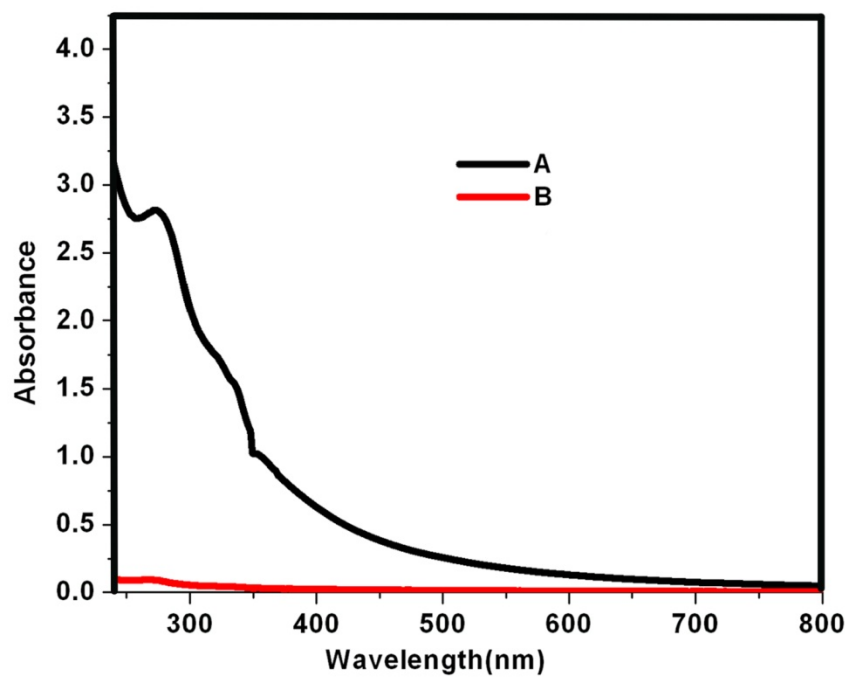


**Fig S9. UV-visible absorbance spectra of A) CDGAC B) PBS in which dialysis membrane containing CDGAC was immersed for 24h**

**Table: S1 Particle sizes of CD and CDGAC obtained from DLS analysis**

| No | Sample | Particle size (nm) |
|----|--------|--------------------|
| 1 | CD | 10 ± 3.0 |
| 2 | CDGAC | 137 ± 7.0 |

**Table  S2. Antibacterial assay by MIC method.**

| No | Concentration (µg/mL) | C | CD | CDGAC |
|----|-----------------------|---|-----|-------|
| 1. | 50000 | - | Scanty growth | - |
| 2. | 25000 | - | Scanty growth | - |
| 3. | 12500 | - | Moderate growth | - |
| 4. | 6250 | - | Heavy growth | - |
| 5. | 3125 | - | Heavy | - |
| 6. | 1560 | - | Heavy | - |
| 7. | 781 | - | Heavy | Moderate growth |
| 8. | 390 | - | Heavy | Heavy |
| 9. | 195 | - | Heavy | Heavy |
| 10. | 97 | - | Heavy | Heavy |
| 11. | 48 | - | Heavy | Heavy |
| 12. | 24 | - | Heavy | Heavy |
| 13. | 12 | - | Heavy | Heavy |
| 14. | 6 | - | Heavy | Heavy |
| 15. | 3 | - | Heavy | Heavy |
| 16. | 1.5 | - | Heavy | Heavy |