

Supporting Information

***Emblica officinalis* loaded poly(ϵ -caprolactone) electrospun nanofiber scaffold as potential antibacterial and anticancer deployable patch**

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1. Porosity of the nanofiber scaffolds

The porosity of the nanofiber scaffolds was determined according to the method reported previously¹. Briefly, rectangular samples were cut from the nanofiber mats and their length, width and thickness were measured to estimate the volume (V). The weight (m) of the samples was measured using analytical balance. At least three specimens were taken for measurements. The density of each sample was then estimated. The porosity (ϵ) was determined from the average density (ρ) of the sample and the standard density of the polymer (PCL) ($\rho_0=1.145\text{g/cm}^3$) according to the equation,

$$\epsilon = [1 - (\rho/\rho_0)] \times 100$$

2. Thermo-gravimetric analysis (TGA)

The thermal stability of pristine PCL and PCL-EO scaffolds was investigated using thermo-gravimetric analysis (TGA) using a Perkin Elmer TGA 4000 (USA) instrument between 30 °C and 800 °C at a heating rate of 10 °C/min under nitrogen gas environment (20 mL/min). EO is highly hygroscopic, thus the initial weight loss is due to elimination of moisture followed by decomposition of organic species. The nanofiber scaffolds showed thermal stability up to a temperature of 400°C then showed a sharp weight loss due to decomposition. The decomposition temperature was not found to be affected by the addition of EO, indicating no adverse effect of EO on PCL.

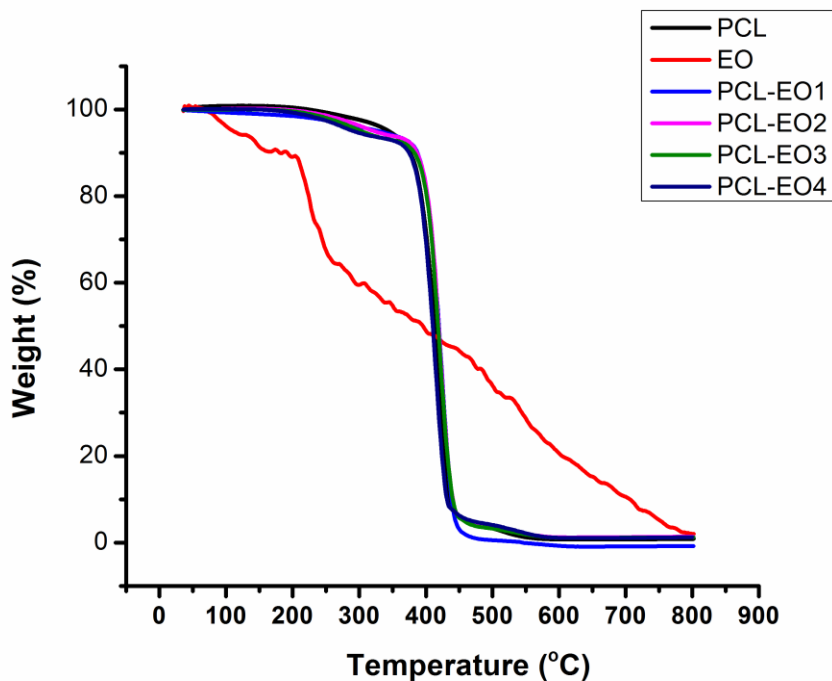


Figure S1. TGA curve for pure PCL, EO and nanofiber scaffolds with different EO content

3. GC-MS studies

GC-MS analysis was carried out by using Agilent's 7890B gas chromatography instrument coupled with a 5977B MSD mass spectrometer (GC-MS). 1 μL of sample (EO extracted in methanol) was injected in GC-MS in splitless mode where separation of compounds were performed using a 30m \times 0.25mm ID \times 0.25 μm DF., Rtx[®]-5MS column (Crossbond[®] 5 % diphenyl / 95 % dimethyl polysiloxane) (RESTEK[®], USA). The helium was used as carrier gas with flow rate of 1 mL/min. Inlet temperature kept at 250 $^{\circ}\text{C}$. The oven programme of total run time 30 min was designed such that initial temperature kept at 70 $^{\circ}\text{C}$ for 1 min hold; 70-150 $^{\circ}\text{C}$ at rate of 12 $^{\circ}\text{C}/\text{min}$; 150-290 $^{\circ}\text{C}$ at rate of 15 $^{\circ}\text{C}/\text{min}$; and finally hold at 290 $^{\circ}\text{C}$ for 5 min. The transfer line, ion source, and quadrupole temperatures were set at 290 $^{\circ}\text{C}$, 230 $^{\circ}\text{C}$, and 150 $^{\circ}\text{C}$, respectively; the electron impact ionization voltage (EI) was 70 eV. The mass spectrometer was operated in full scan mode with data acquired after 4 min of solvent delay. In full scan mode the mass range m/z 30-600 amu was scanned.

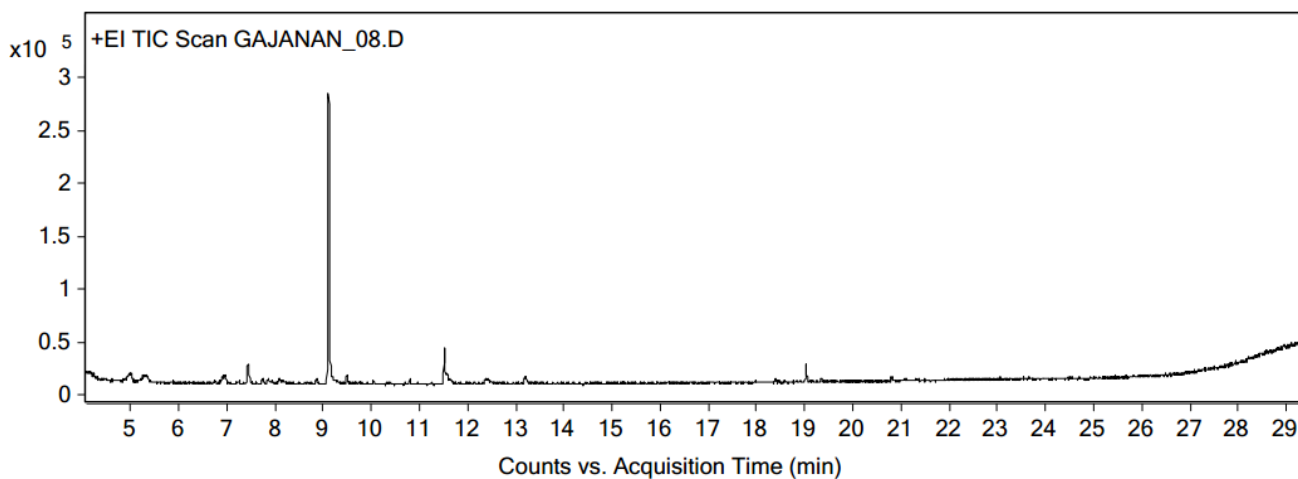


Figure S2: GCMS spectrum for EO extract

The following compounds were identified in GC-MS investigation.

1. Carbamic acid, phenyl ester
2. 3,3-Dimethyl-4-methylamino-butan-2-one
3. 1-Hexanamine, N-hexyl

4. Butanedioic acid, hydroxy-, dimethyl ester
5. 5-Hydroxymethylfurfural
6. Octodrine
7. 3,7,11,15-tetramethylhexadecan-1,2,3-triol silylated
8. 1,2,3-Benzenetriol
9. 1-Propanol, 2-amino-, (\pm)
10. Methyl 8-methyl-nonanoate

References:

- 1 C. Ru, F. Wang, M. Pang, L. Sun, R. Chen and Y. Sun, *ACS Appl. Mater. Interfaces*, 2015, **7**, 10872–10877.