

Supplementary Information

Article

Deep eutectic solvent formulations and alginate-based hydrogels as a new partnership for the transdermal administration of anti-inflammatory drugs

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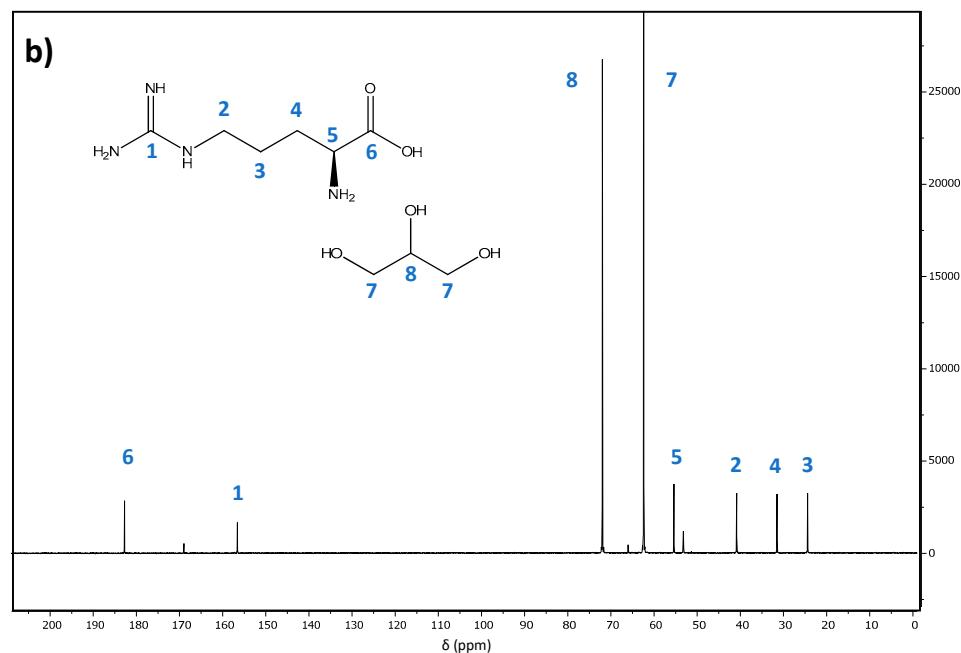
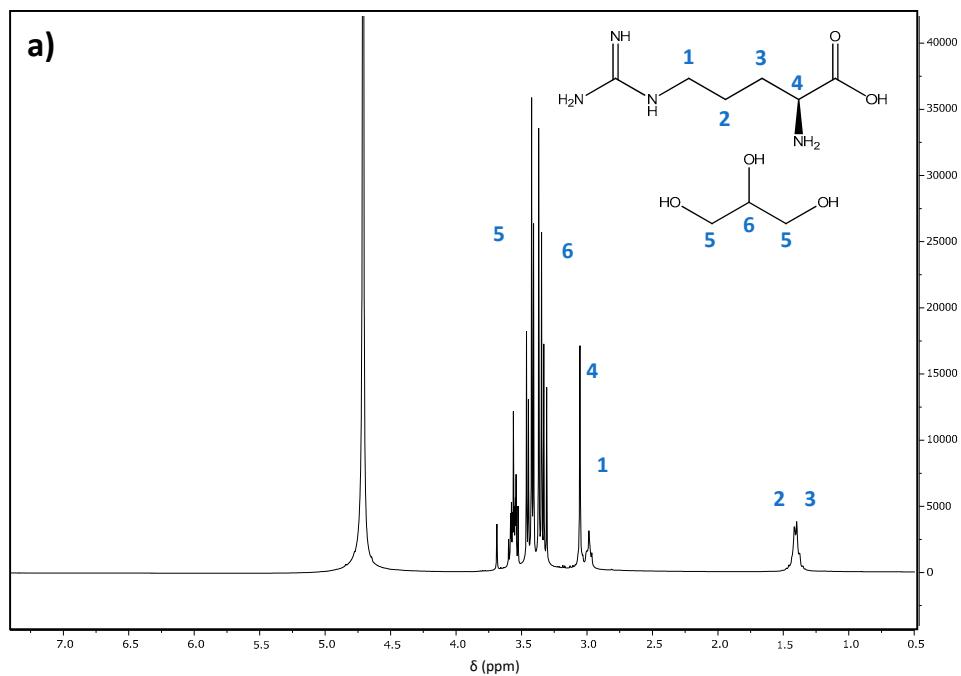


Figure S1. (a) ¹H NMR and (b) ¹³C NMR spectra of arginine:glycerol DES in D₂O.

Arginine:glycerol: ¹H NMR, δ/ppm (300 MHz, D₂O): 1.41 [4 H, m, CH₂(2,3)]; 2.98 [2 H, m, CH₂(1)]; 3.05 [1 H, m, CH₂(4)]; 3.39 [1 H, m, CH₂(6)]; 3.55 [4 H, m, CH₂(5)]. ¹³C NMR, δ/ppm (75.47 MHz, D₂O): 24.40 [CH₂(3)]; 31.50 [CH₂(4)]; 40.86 [CH₂(2)]; 53.21 [CH(5)]; 62.15 [CH₂(7)]; 71.97 [CH(8)]; 156.57 [C=NH(1)]; 182.54 [C=O(6)].

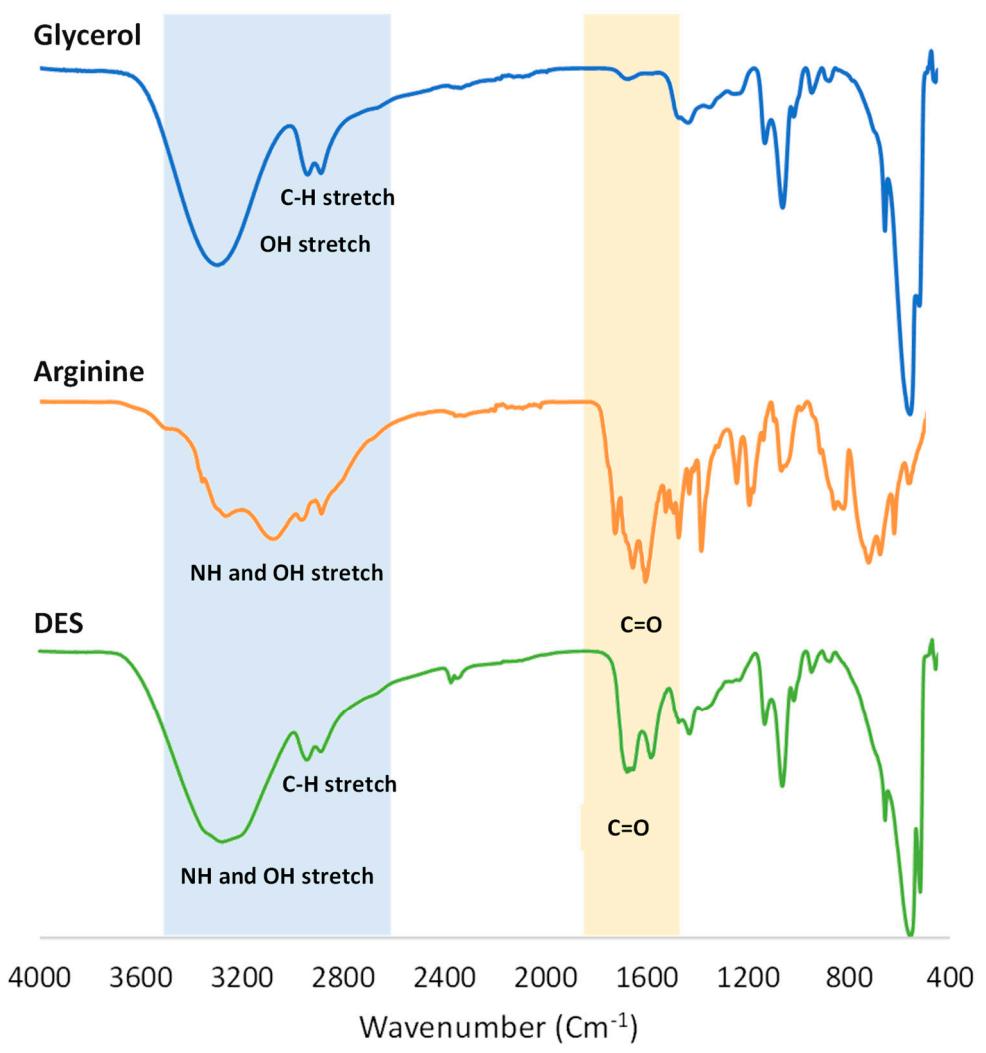


Figure S2. FTIR-ATR spectra of glycerol, arginine and the DES arginine:glycerol.

Table S1. Ibuprofen solubility in aqueous solutions of arginine:glycerol (1:4) at 25 and 37 °C, expressed in mg·mL⁻¹ and mol·dm⁻³ (M). Results expressed as mean ± SD of independent measurements.

% of DES in water (w/w)	25 °C		37 °C	
	mg·mL ⁻¹	M	mg·mL ⁻¹	M
0	(5.926 ± 0.433) × 10 ⁻³	(2.163 ± 0.158) × 10 ⁻⁵	(8.731 ± 0.484) × 10 ⁻³	(3.186 ± 0.177) × 10 ⁻⁵
10	(7.387 ± 0.346) × 10 ⁰	(2.696 ± 0.126) × 10 ⁻²	(8.144 ± 0.131) × 10 ⁰	(2.972 ± 0.048) × 10 ⁻²
20	(1.558 ± 0.012) × 10 ¹	(5.688 ± 0.042) × 10 ⁻²	(1.597 ± 0.017) × 10 ¹	(5.830 ± 0.060) × 10 ⁻²
30	(1.725 ± 0.034) × 10 ¹	(6.296 ± 0.124) × 10 ⁻²	(2.433 ± 0.041) × 10 ¹	(8.881 ± 0.149) × 10 ⁻²
40	(2.367 ± 0.083) × 10 ¹	(8.638 ± 0.302) × 10 ⁻²	(2.975 ± 0.083) × 10 ¹	(1.086 ± 0.030) × 10 ⁻¹
50	(2.459 ± 0.048) × 10 ¹	(8.973 ± 0.177) × 10 ⁻²	(3.604 ± 0.070) × 10 ¹	(1.315 ± 0.026) × 10 ⁻¹
60	(4.692 ± 0.046) × 10 ¹	(1.712 ± 0.017) × 10 ⁻¹	(4.977 ± 0.084) × 10 ¹	(1.816 ± 0.031) × 10 ⁻¹