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Supporting Material

Oleoylethanolamide-Based Lyotropic Liquid Crystals as Vehicles for Delivery of Amino Acids in Aqueous Environment

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Table S1a-e: Variation of the lattice parameter (a) with temperature for the liquid crystalline cubic phases observed for samples containing 20.0 wt % Water to OEA . The concentration of arginine solutions are 0.0, 2.5, 5.0, 7.5 and 10.0 wt % in table 1a, 1b, 1c, 1d and 1e, respectively.

Table S1a:

T/°C (nm)	42.0	50.0	60.0	65.0	68.5	70.0
LC -Structure	**Ia3d**	**Ia3d**	**Ia3d+Pn3m**	**Ia3d+Pn3m**	**Pn3m**	**L_2**
(a)	10.04	11.14	10.88 6.28	11.25 6.49	6.82	4.36

Table S1b:

T/°C (nm)	42.0	50.0	55.0	60.0	65.0	70.0
LC-Structure	**Ia3d**	**Ia3d+Pn3m**	**Ia3d+Pn3m**	**Ia3d+Pn3m**	**Ia3d+Pn3m**	**L_2**
(a)	10.88	10.44 6.91	11.54 6.99	11.46 6.62	11.84 6.58	3.18

Table S1c:

T/°C (nm)	42.0	55.0	60.0	65.0
LC -Structure	**Ia3d+Pn3m**	**Ia3d+Pn3m**	**Ia3d+Pn3m**	**L_2**
(a)	10.86 6.89	11.41 6.58	11.25 6.49	4.44

Table S1d:

T/°C (nm)	42.0	55.0	58.5	62.0
LC -Structure	**Pn3m**	**Pn3m**	**Pn3m**	**L_2**
(a)	6.85	6.49	6.51	4.40

Table S1e:

T/°C (nm)	42.0	50.0	55.0	65.0
LC -Structure	**Pn3m**	**Pn3m**	**Pn3m**	**L_2**
(a)	7.14	7.11	6.49	4.32

Table S2a-b: Variation of the lattice parameter (a) with temperature for the liquid crystalline cubic phases observed for samples containing 50.0 wt % Water to OEA . The concentration of arginine solutions are 2.5 and 5.0wt % in table 2a and 2b, respectively.

Table S2a:

T/°C (nm)	42.0	50.0	70.0	75.0
LC -Structure	**Pn3m**	**Pn3m**	**Pn3m**	**L_2**
(a)	7.94	7.54	6.79	not measured

Table S2b:

T/°C (nm)	42.0	50.0	70.0	75.0
LC -Structure	**Pn3m**	**Pn3m**	**Pn3m**	**L_2**
(a)	7.80	7.40	6.65	not measured

Table S3: Weight fractions of lipid, arginine and water components at points A, B and C, respectively in Figure 4b.

Case 1 : Water to " water + lipid"ratio is 25.0 wt for A, 50%wt for B and 100% for C , and the original arginine concentraion in water is 5.0 wt %.

Component	Weight fractions at point **A**	Weight fraction at point **B**	Weight fraction at point **C**
Lipid	0.7410	0.4880	0.0000
Arginine	0.0120	0.0240	0.0500
Water	0.2470	0.4880	0.9500

Case 2 : Water to " water + lipid"ratio is 23.5 wt for A, 50%wt for B and 100% for C and the original arginine concentraion in water is 7.5 wt %.

Component	Weight fractions at point **A**	Weight fraction at point **B**	Weight fraction at point **C**
Lipid	0.7518	0.4819	0.0000
Arginine	0.0173	0.0362	0.0500
Water	0.2309	0.4819	0.9500

Case 3 : Water to lipid ratio is 70 wt % and the original arginine concentraion is 5.0 wt % in water.

Component	Weight fractions at point **A**	Weight fraction at point **B**	Weight fraction at point **C**
Lipid	0.2899	0.4880	0.0000
Arginine	0.0338	0.0240	0.0500
Water	0.6763	0.4880	0.9500

Case 4 : Water to lipid ratio is 70 wt % and the original arginine concentraion is 7.5 wt % in water.

Component	Weight fractions at point **A**	Weight fraction at point **B**	Weight fraction at point **C**
Lipid	0.2850	0.4819	0.0000
Arginine	0.0375	0.0362	0.0500
Water	0.6775	0.4819	0.9500

Determination of Arginine maximum solubility in water

"A series of water ariginine solutions were prepared in a 20 ml recipient with 1g weight increments. The solution with lowest arginine content in which arginine was found to precipitated, was taken as the first supersaturated solution. Then, we put exactly weighed portion of the supersaturated solution (w1 = about 1 gram) in a Petri dish and left for 24 hours for drying at 60°C under vacuum. Afterwards, the Petri dish is weighed (w2). The wt % solubility of arginine = (w2 / w1) x 100. The given value is an average of 4 independent experiments. Results were highly reproducible (the difference in the weight was in the fourth decimal)."