Table SI.1 Density (ρ) experimental values for binary mixtures of (i) choline lactate + water, (ii) LC(2:1) + water and (iii) choline chloride + water as a function of temperature (T) and composition (X). The choline chloride concentration is kept below the saturation point of the mixture (0.650 g/cm^3).

Choline Lactate (1) + water (2)										
X_1	1.0000	0.9008	0.7952	0.6992	0.5962	0.4974	0.4142	0.299	0.2007	0.1002	0.0000[a]
T (K)	ρ (g/cm^3)										
293.15	1.1456	1.1457	1.1449	1.1441	1.1429	1.1409	1.1388	1.1331	1.1218	1.0930	0.9982
298.15	1.1423	1.1422	1.1415	1.1407	1.1395	1.1375	1.1355	1.1297	1.1184	1.0899	0.9971
303.15	1.1390	1.1390	1.1382	1.1375	1.1363	1.1343	1.1322	1.1264	1.1152	1.0869	0.9957
308.15	1.1358	1.1357	1.1350	1.1343	1.1331	1.1311	1.1290	1.1231	1.1119	1.0839	0.9940
313.15	1.1327	1.1326	1.1319	1.1312	1.1300	1.1279	1.1258	1.1198	1.1087	1.0810	0.9922
318.15	1.1296	1.1295	1.1288	1.1281	1.1268	1.1247	1.1225	1.1165	1.1055	1.0779	0.9902
323.15	1.1265	1.1264	1.1257	1.1249	1.1237	1.1215	1.1193	1.1133	1.1022	1.0749	0.9880
328.15	1.1235	1.1233	1.1226	1.1218	1.1205	1.1184	1.1161	1.1100	1.0990	1.0717	0.9857
333.15	1.1205	1.1202	1.1195	1.1187	1.1174	1.1152	1.1129	1.1067	1.0956	1.0687	0.9832
338.15	1.1175	1.1172	1.1164	1.1156	1.1142	1.1120	1.1096	1.1035	1.0925	1.0654	0.9806
343.15	1.1145	1.1141	1.1133	1.1125	1.1111	1.1089	1.1064	1.1002	1.0891	1.0622	0.9778
348.15	1.1115	1.1111	1.1103	1.1095	1.1080	1.1057	1.1033	1.0969	1.0857	1.0589	0.9748
353.15	1.1085	1.1081	1.1073	1.1064	1.1049	1.1026	1.1001	1.0937	1.0824	1.0556	0.9718

LC(2:1) (1) + water (2)										
X_1	1.0000	0.8796	0.7983	0.6990	0.6012	0.4934	0.3977	0.2944	0.2005	0.1003	0.0000[a]
T (K)	ρ (g/cm^3)										
293.15	1.1829	1.1788	1.1757	1.1717	1.1672	1.1603	1.1509	1.1355	1.1139	1.0749	0.9982
298.15	1.1794	1.1754	1.1723	1.1684	1.1639	1.1570	1.1475	1.1321	1.1106	1.0720	0.9971
303.15	1.1761	1.1721	1.1691	1.1652	1.1606	1.1537	1.1443	1.1289	1.1075	1.0693	0.9957
308.15	1.1728	1.1689	1.1659	1.162	1.1574	1.1505	1.1411	1.1257	1.1044	1.0666	0.9940
313.15	1.1696	1.1657	1.1627	1.1588	1.1541	1.1472	1.1378	1.1225	1.1013	1.0638	0.9922
318.15	1.1664	1.1625	1.1595	1.1556	1.1508	1.1439	1.1345	1.1192	1.0981	1.0609	0.9902
323.15	1.1633	1.1593	1.1562	1.1523	1.1475	1.1407	1.1312	1.1159	1.0949	1.0580	0.9880
328.15	1.1602	1.1561	1.1530	1.1491	1.1443	1.1373	1.1279	1.1126	1.0916	1.0550	0.9857
333.15	1.1570	1.1529	1.1498	1.1459	1.1410	1.1340	1.1246	1.1093	1.0884	1.0520	0.9832
338.15	1.1539	1.1496	1.1465	1.1426	1.1377	1.1307	1.1213	1.1059	1.0850	1.0488	0.9806
343.15	1.1507	1.1464	1.1433	1.1394	1.1344	1.1274	1.1179	1.1026	1.0818	1.0457	0.9778
348.15	1.1476	1.1432	1.1401	1.1361	1.1310	1.1240	1.1144	1.0992	1.0783	1.0426	0.9748
353.15	1.1444	1.1400	1.1368	1.1329	1.1277	1.1206	1.1110	1.0957	1.0749	1.0391	0.9718

Choline Chloride (1) + water (2)					
X_1	0.3033	0.2500	0.2015	0.1500	0.0991	0.0000[a]
T (K)	ρ (g/cm^3)					
293.15	1.1008	1.0930	1.0849	1.0722	1.0554	0.9982
298.15	1.0985	1.0906	1.0826	1.0699	1.0532	0.9971
303.15	1.0961	1.0883	1.0803	1.0676	1.0511	0.9957
308.15	1.0938	1.0860	1.0779	1.0653	1.0490	0.9940
313.15	1.0914	1.0837	1.0756	1.0631	1.0468	0.9922
318.15	1.0891	1.0813	1.0732	1.0607	1.0845	0.9902
323.15	1.0868	1.0789	1.0709	1.0548	1.0422	0.9880
328.15	1.0844	1.0766	1.0685	1.0560	1.0398	0.9857
333.15	1.0821	1.0742	1.0661	1.0537	1.0374	0.9832
338.15	1.0797	1.0718	1.0637	1.0513	1.0349	0.9806
343.15	1.0772	1.0693	1.0612	1.0487	1.0325	0.9778
348.15	1.0749	1.0669	1.0588	1.0462	1.0298	0.9748
353.15	1.0725	1.0645	1.0563	1.0437	1.027	0.9718

[a]**Data from NIST**

Table SI. 2 Fit parameters of the first-order polynomial ($\rho = a + bT$) for the fitting of the density (g/cm³) in dependence of the temperature (K) at different concentrations (X) including standard deviation (σ) for the binary systems (i) choline lactate + water, (ii) LC(2:1) + water and (iii) choline chloride + water.

Choline lactate (1) + water (2)				LC(2:1) (1) + water (2)				Choline Chloride (1) + water (2)			
X_1	a (g/cm³)	b (K⁻¹)	σ	X_1	a (g/cm³)	b (K⁻¹)	σ	X_1	a (g/cm³)	b (K⁻¹)	σ
1	1.3241	-0.0006	0.0038	1	1.3686	-0.0006	0.0113	0.3	1.2395	-0.0005	0.0096
0.9	1.3267	-0.0006	0.0068	0.9	1.3674	-0.0006	0.0142	0.25	1.2330	-0.0005	0.0081
0.8	1.3264	-0.0006	0.0073	0.8	1.3651	-0.0006	0.0150	0.20	1.2254	-0.0005	0.0076
0.7	1.3263	-0.0006	0.0080	0.7	1.3611	-0.0006	0.0149	0.15	1.2128	-0.0005	0.0076
0.6	1.3270	-0.0006	0.0102	0.6	1.3599	-0.0007	0.0138	0.1	1.1965	-0.0005	0.0075
0.5	1.3268	-0.0006	0.0124	0.5	1.3539	-0.0007	0.0129	0	1.1400	-0.0005	0.0090
0.4	1.3272	-0.0006	0.0152	0.4	1.3452	-0.0007	0.0121				
0.3	1.3249	-0.0007	0.0160	0.3	1.3292	-0.0007	0.0128				
0.2	1.3140	-0.0007	0.0157	0.2	1.3038	-0.0006	0.0153				
0.1	1.2773	-0.0006	0.0097	0.1	1.2490	-0.0006	0.0025				
0	1.1400	-0.0005	0.0090	0	1.1400	-0.0005	0.0090				

Here, the root-mean square deviation is calculated as follows:

$$\sigma = \sqrt{\sum_{i=1}^{n} \frac{(\rho_{exp} - \rho_{calc})^2}{(n-2)}}$$

where ρ_{exp} and ρ_{calc} are the experimental and calculated values (from eq. 1) found for density.

Table SI.3 Experimental values of excess molar volume (V_m^E) of the binary mixtures composed of (i) choline lactate + water, (ii) LC (2:1) + water and (iii) choline chloride + water as a function of temperature (T) and composition (X).

					Choline Lactate (1) + water (2)						
X_1	1.0000	0.9008	0.7952	0.6992	0.5962	0.4974	0.4142	0.2990	0.2007	0.1002	0.0000
T (K)					V_m^E (cm³·mol⁻¹)						
293.15	0.0000	-0.4871	-0.3913	-0.5372	-0.6845	-0.7883	-0.8874	-0.9491	-0.8706	-0.5948	0.0000
298.15	0.0000	-0.4581	-0.3737	-0.5182	-0.6638	-0.7657	-0.8704	-0.9225	-0.8411	-0.5699	0.0000
303.15	0.0000	-0.4660	-0.3690	-0.5219	-0.6636	-0.7614	-0.8557	-0.9043	-0.8233	-0.5518	0.0000
308.15	0.0000	-0.4507	-0.3654	-0.5165	-0.6560	-0.7517	-0.8442	-0.8843	-0.8013	-0.5357	0.0000
313.15	0.0000	-0.4485	-0.3627	-0.5125	-0.6505	-0.7361	-0.8284	-0.8620	-0.7831	-0.5241	0.0000
318.15	0.0000	-0.4471	-0.3608	-0.5095	-0.6367	-0.7222	-0.8074	-0.8420	-0.7677	-0.5095	0.0000
323.15	0.0000	-0.4462	-0.3594	-0.4963	-0.6336	-0.7097	-0.7950	-0.8295	-0.7501	-0.5005	0.0000
328.15	0.0000	-0.4338	-0.3466	-0.4845	-0.6130	-0.6994	-0.7782	-0.8089	-0.7363	-0.4868	0.0000
333.15	0.0000	-0.4219	-0.3341	-0.4732	-0.6030	-0.6819	-0.7627	-0.7899	-0.7156	-0.4814	0.0000
338.15	0.0000	-0.4230	-0.3222	-0.4628	-0.5842	-0.6658	-0.7414	-0.7786	-0.7104	-0.4692	0.0000
343.15	0.0000	-0.4119	-0.3106	-0.4530	-0.5762	-0.6592	-0.7288	-0.7632	-0.6937	-0.4625	0.0000
348.15	0.0000	-0.4140	-0.3121	-0.4553	-0.5690	-0.6453	-0.7249	-0.7493	-0.6789	-0.4547	0.0000
353.15	0.0000	-0.4167	-0.3142	-0.4468	-0.5628	-0.6410	-0.7149	-0.7428	-0.6703	-0.4490	0.0000

					LC(2:1) (1) + water (2)						
X_1	1.0000	0.8796	0.7983	0.6990	0.6012	0.4934	0.3977	0.2944	0.2005	0.1003	0.0000
T (K)					V_m^E (cm³·mol⁻¹)						
293.15	0.0000	-0.0567	-0.1082	-0.2016	-0.3122	-0.4100	-0.4440	-0.4310	-0.3778	-0.2491	0.0000
298.15	0.0000	-0.0590	-0.1071	-0.2022	-0.3082	-0.4008	-0.4260	-0.4079	-0.3528	-0.2272	0.0000
303.15	0.0000	-0.0554	-0.1075	-0.1992	-0.2967	-0.3862	-0.4124	-0.3901	-0.3338	-0.2121	0.0000
308.15	0.0000	-0.0592	-0.1087	-0.1974	-0.2920	-0.3782	-0.4011	-0.3750	-0.3178	-0.2005	0.0000
313.15	0.0000	-0.0566	-0.1044	-0.1912	-0.2786	-0.3634	-0.3846	-0.3598	-0.3029	-0.1889	0.0000
318.15	0.0000	-0.0544	-0.1009	-0.1861	-0.2666	-0.3502	-0.3701	-0.3436	-0.2879	-0.1780	0.0000
323.15	0.0000	-0.0457	-0.0849	-0.1703	-0.2508	-0.3392	-0.3541	-0.3270	-0.2734	-0.1689	0.0000
328.15	0.0000	-0.0372	-0.0762	-0.1613	-0.2417	-0.3203	-0.3400	-0.3126	-0.2585	-0.1602	0.0000
333.15	0.0000	-0.0360	-0.0742	-0.1586	-0.2328	-0.3112	-0.3304	-0.3022	-0.2501	-0.1546	0.0000
338.15	0.0000	-0.0208	-0.0596	-0.1451	-0.2201	-0.2996	-0.3193	-0.2878	-0.2363	-0.1460	0.0000
343.15	0.0000	-0.0202	-0.0587	-0.1439	-0.2132	-0.2931	-0.3086	-0.2811	-0.2322	-0.1429	0.0000
348.15	0.0000	-0.0127	-0.0517	-0.1317	-0.1968	-0.2789	-0.2918	-0.2700	-0.2191	-0.1412	0.0000
353.15	0.0000	-0.0126	-0.0449	-0.1320	-0.1917	-0.2698	-0.2838	-0.2592	-0.2126	-0.1325	0.0000

			Choline Chloride (1) + water (2)		
X_1	0.3033	0.2500	0.2015	0.1500	0.0991	0.0000
T (K)			V_m^E (cm³·mol⁻¹)		
293.15	-1.1988	-0.9697	-0.7945	-0.5641	-0.3485	0.0000
298.15	-1.1090	-0.8880	-0.7280	-0.5093	-0.3079	0.0000
303.15	-1.0173	-0.8132	-0.6646	-0.4579	-0.2738	0.0000
308.15	-0.9325	-0.7411	-0.6006	-0.4096	-0.2431	0.0000
313.15	-0.8452	-0.6713	-0.5426	-0.3673	-0.2126	0.0000
318.15	-0.7647	-0.5998	-0.4836	-0.3215	-0.1826	0.0000
323.15	-0.6858	-0.5302	-0.4304	-0.2812	-0.1550	0.0000
328.15	-0.6043	-0.4669	-0.3759	-0.2403	-0.1276	0.0000
333.15	-0.5289	-0.4012	-0.3233	-0.2047	-0.1024	0.0000
338.15	-0.4507	-0.3374	-0.2728	-0.1682	-0.0770	0.0000
343.15	-0.3692	-0.2711	-0.2205	-0.1272	-0.0567	0.0000
348.15	-0.2986	-0.2106	-0.1737	-0.0915	-0.0300	0.0000
353.15	-0.2247	-0.1518	-0.1250	-0.0578	-0.0026	0.0000

Table SI.4 Coefficients of the Redlich-Kister equation for the fitting of the excess molar volume (V_m^E) of the binary mixtures composed of (i) choline lactate + water, (ii) LC (2:1) + water and (iii) choline chloride + water.

T (K)	b_1	b_2	b_3	b_4	c_1	c_2	c_3	c_4	σ
Choline Lactate (1) + water (2)									
293.15	-6.007500	5.660200	-5.644200	-2.101100	0.009661	-0.010987	0.011716	0.007399	0.0082
298.15	-6.007500	5.660200	-5.644200	-2.101100	0.009736	-0.010989	0.012457	0.007555	0.0065
303.15	-6.007500	5.660200	-5.644200	-2.101100	0.009664	-0.011108	0.012466	0.007093	0.0086
308.15	-6.007500	5.660200	-5.644200	-2.101100	0.009615	-0.011282	0.012833	0.007365	0.0069
313.15	-6.007500	5.660200	-5.644200	-2.101100	0.009629	-0.011475	0.012737	0.007497	0.0079
318.15	-6.007500	5.660200	-5.644200	-2.101100	0.009673	-0.011569	0.012538	0.007390	0.0074
323.15	-6.007500	5.660200	-5.644200	-2.101101	0.009656	-0.011496	0.012464	0.007087	0.0079
328.15	-6.007500	5.660200	-5.644200	-2.101101	0.009691	-0.011405	0.012612	0.007111	0.0055
333.15	-6.007500	5.660200	-5.644199	-2.101099	0.009719	-0.011508	0.012717	0.007617	0.0060
338.15	-6.007500	5.660200	-5.644200	-2.101100	0.009788	-0.011241	0.012404	0.007129	0.0070
343.15	-6.007500	5.660200	-5.644200	-2.101100	0.009748	-0.011274	0.012625	0.007492	0.0058
348.15	-6.007500	5.660200	-5.644200	-2.101100	0.009703	-0.011307	0.012464	0.007335	0.0071
353.15	-6.007500	5.660200	-5.644200	-2.101100	0.009649	-0.011155	0.012264	0.006984	0.0052
LC(2:1) (1) + water (2)									
293.15	-6.007481	5.660187	-5.644173	-2.101100	0.015125	-0.014660	0.019582	0.007525	0.0083
298.15	-6.007482	5.660187	-5.644176	-2.101101	0.014998	-0.014838	0.019636	0.007258	0.0084
303.15	-6.007482	5.660188	-5.644177	-2.101100	0.014913	-0.014823	0.019466	0.006990	0.0068
308.15	-6.007483	5.660188	-5.644179	-2.101102	0.014779	-0.014804	0.019239	0.006679	0.0073
313.15	-6.007483	5.660190	-5.644180	-2.101103	0.014726	-0.014699	0.018964	0.006439	0.0065
318.15	-6.007484	5.660190	-5.644180	-2.101104	0.014658	-0.014626	0.018726	0.006257	0.0063
323.15	-6.007484	5.660191	-5.644181	-2.101104	0.014612	-0.014395	0.018695	0.006133	0.0080
328.15	-6.007484	5.660191	-5.644182	-2.101104	0.014557	-0.014328	0.018546	0.006238	0.0065
333.15	-6.007485	5.660192	-5.644183	-2.101104	0.014448	-0.014215	0.018243	0.006141	0.0065
338.15	-6.007486	5.660192	-5.644182	-2.101103	0.014368	-0.014035	0.018341	0.006234	0.0065
343.15	-6.007486	5.660192	-5.644184	-2.101104	0.014248	-0.013936	0.017979	0.006251	0.0064
348.15	-6.007487	5.660193	-5.644185	-2.101103	0.014227	-0.013788	0.017666	0.006293	0.0070
353.15	-6.007487	5.660193	-5.644185	-2.101102	0.014104	-0.013697	0.017492	0.006215	0.0069
Choline Chloride (1) + water (2)									
293.15	-6.007481	5.660187	-5.644173	-2.101100	0.015125	-0.014660	0.019582	0.007525	0.0083
298.15	-6.007482	5.660187	-5.644176	-2.101101	0.014998	-0.014838	0.019636	0.007258	0.0084
303.15	-6.007482	5.660188	-5.644177	-2.101100	0.014913	-0.014823	0.019466	0.006990	0.0068
308.15	-6.007483	5.660188	-5.644179	-2.101102	0.014779	-0.014804	0.019239	0.006679	0.0073
313.15	-6.007483	5.660190	-5.644180	-2.101103	0.014726	-0.014699	0.018964	0.006439	0.0065
318.15	-6.007484	5.660190	-5.644180	-2.101104	0.014658	-0.014626	0.018726	0.006257	0.0063
323.15	-6.007484	5.660191	-5.644181	-2.101104	0.014612	-0.014395	0.018695	0.006133	0.0080
328.15	-6.007484	5.660191	-5.644182	-2.101104	0.014557	-0.014328	0.018546	0.006238	0.0065
333.15	-6.007485	5.660192	-5.644183	-2.101104	0.014448	-0.014215	0.018243	0.006141	0.0065
338.15	-6.007486	5.660192	-5.644182	-2.101103	0.014368	-0.014035	0.018341	0.006234	0.0065
343.15	-6.007486	5.660192	-5.644184	-2.101104	0.014248	-0.013936	0.017979	0.006251	0.0064
348.15	-6.007487	5.660193	-5.644185	-2.101103	0.014227	-0.013788	0.017666	0.006293	0.0070
353.15	-6.007487	5.660193	-5.644185	-2.101102	0.014104	-0.013697	0.017492	0.006215	0.0069

Table SI.5 Experimental dynamic viscosity (η) for binary mixtures of (i) choline lactate + water, (ii) LC(2:1) + water and (iii) choline chloride + water as a function of temperature (T) and composition (X). The choline chloride concentration is kept below the saturation point of the mixture (0.650 g/cm^3).

Choline Lactate (1) + water (2)

X_1	1.0000	0.9008	0.7952	0.6992	0.5962	0.4974	0.4142	0.299	0.2007	0.1002	0.0000[a]
T (K)						η (mPa ·s)					
293.15	818.0800	619.7300	477.9000	374.5300	259.2500	174.9200	117.7600	59.5160	26.2630	7.3116	1.0016
298.15	559.2500	433.3100	336.9300	266.3600	187.3600	127.9600	87.9580	45.7620	20.9190	6.1852	0.8901
303.15	393.2500	308.5400	242.5100	193.6400	138.2300	95.8170	66.8750	35.6970	16.8500	5.2503	0.7974
308.15	283.9300	225.2600	178.9200	144.2000	104.3700	73.3550	51.9060	28.3600	13.7850	4.4975	0.7193
313.15	209.9500	168.2900	134.9500	107.7400	80.4510	57.2430	41.0420	22.9030	11.4400	3.8970	0.6530
318.15	158.6600	128.4100	103.9200	85.1670	63.1620	45.4950	32.9940	18.7810	9.6163	3.4053	0.5961
323.15	122.2900	99.8350	81.4810	67.2730	50.4320	36.7440	26.9310	15.6140	8.1746	3.0007	0.5468
328.15	95.9390	78.9400	64.9550	54.0010	40.8900	30.1130	22.2870	13.1430	7.0285	2.6661	0.5040
333.15	76.4910	63.3940	52.5440	43.9700	33.6090	24.9170	18.6740	11.1840	6.1012	2.3844	0.4664
338.15	61.8990	51.6330	43.1030	36.2770	27.9730	20.9340	15.8240	9.6214	5.3234	2.1458	0.4333
343.15	50.7610	42.6010	35.7970	30.2970	23.5470	17.7800	13.5510	8.3533	4.6922	1.9406	0.4039
348.15	42.1330	35.5470	30.0520	25.5850	20.0450	15.2520	11.7140	7.3047	4.1707	1.7668	0.3777
353.15	35.3780	30.0020	25.5170	21.8200	17.2230	13.2010	10.2040	6.4377	3.7294	1.6138	0.3544

LC(2:1) (1) + water (2)

X_1	1.0000	0.8796	0.7983	0.6990	0.6012	0.4934	0.3977	0.2944	0.2005	0.1003	0.0000[a]
T (K)						η (mPa ·s)					
293.15	645.9900	305.940	202.1200	152.240	77.8870	48.7670	24.7860	11.831	5.8246	2.5607	1.0016
298.15	440.0400	215.860	145.2000	110.850	59.0150	37.8120	19.9890	9.8378	5.0175	2.2581	0.8901
303.15	305.8800	154.930	106.2000	82.2770	45.4880	29.8250	16.1690	8.2700	4.3027	1.9815	0.7974
308.15	218.3700	113.620	79.5900	62.4410	35.4260	23.6760	13.2150	6.9946	3.7362	1.7571	0.7193
313.15	159.7400	85.4730	60.9120	48.3520	28.0870	19.1950	11.0070	5.9878	3.2737	1.5742	0.6530
318.15	119.5000	65.6320	47.4990	38.1310	22.6600	15.7860	9.3009	5.1743	2.8890	1.4175	0.5961
323.15	91.18000	51.3290	37.6800	30.5720	18.5630	13.1550	7.9230	4.5135	2.5718	1.2849	0.5468
328.15	70.8930	40.8320	30.3780	24.8840	15.4200	11.0950	6.8141	3.9680	2.3051	1.1715	0.5040
333.15	56.0390	32.9830	24.8620	20.5310	12.9710	9.4593	5.9240	3.5184	2.0796	1.0739	0.4664
338.15	45.0000	27.0180	20.5870	17.1470	11.0240	8.1618	5.1880	3.1412	1.8990	0.9926	0.4333
343.15	36.6520	22.4220	17.2460	14.4970	9.4730	7.1639	4.5794	2.8197	1.7131	0.9352	0.4039
348.15	30.2470	18.8280	14.6190	12.3860	8.2507	6.2250	4.0372	2.5474	1.5835	0.8816	0.3777
353.15	25.2610	15.9870	12.5190	10.6730	7.2069	5.3840	3.5706	2.2789	1.4540	0.8328	0.3544

Choline Chloride (1) + water (2)

X_1	0.3033	0.2500	0.2015	0.1500	0.0991	0.0000[a]
T (K)					η (mPa ·s)	
293.15	29.2050	16.3180	10.1970	5.5745	3.1201	1.0016
298.15	24.2590	13.8180	8.7678	4.8722	2.7668	0.8901
303.15	20.3860	11.8240	7.6071	4.2916	2.4712	0.7974
308.15	17.3030	10.2070	6.6510	3.8058	2.2214	0.7193
313.15	14.8250	8.8821	5.8573	3.3959	2.0067	0.6530
318.15	12.8120	7.7875	5.1931	3.0476	1.8244	0.5961
323.15	11.1630	6.8756	4.6331	2.7498	1.6684	0.5468
328.15	9.7918	6.1115	4.1570	2.4930	1.5341	0.5040
333.15	8.6453	5.4624	3.7493	2.2697	1.4189	0.4664
338.15	7.6803	4.9093	3.3970	2.0751	1.3133	0.4333
343.15	6.8641	4.4396	3.0943	1.9047	1.2234	0.4039
348.15	6.1739	4.0308	2.8304	1.7596	1.1456	0.3777
353.15	5.5925	3.6820	2.6054	1.6257	1.0759	0.3544

[a]**Data from NIST**

Table SI. 6 Fitting parameters of the VFT equation for the fitting of viscosity (η) (mPa·s) (equation 6) in function of the temperature (K) at different concentrations (X) including standard deviation (σ) for the binary systems (i) choline lactate + water and (ii) LC(2:1) + water.

	Choline lactate (1) + water (2)					LC(2:1) (1) + water (2)			
X_1	A (mPa·s)	B (K)	T_0 (K)	σ	X_1	A (mPa·s)	B (K)	T_0 (K)	σ
1	0.0802	1069.0	-177.3	0.4788	1	0.0284	1276.0	-168.0	0.5944
0.9	0.0593	1132.0	-170.8	0.6287	0.9	0.0348	1147.0	-169.0	0.6655
0.8	0.0725	1049.0	-173.8	0.4648	0.8	0.0407	1070.0	-169.7	0.4527
0.7	0.0849	977.9	-176.6	0.3820	0.7	0.0345	1186.0	-151.3	0.5741
0.6	0.0808	953.5	-175.0	0.4510	0.6	0.0382	1021.0	-161.9	0.2180
0.5	0.0885	879.8	-177.2	0.1278	0.5	0.0451	938.9	-161.6	0.1026
0.4	0.0795	866.0	-174.5	0.1629	0.4	0.0401	920.2	-153.1	0.0560
0.3	0.0717	812.8	-172.3	0.0879	0.3	0.0392	868.1	-144.4	0.0166
0.2	0.0613	763.1	-167.3	0.0320	0.2	0.0434	751.2	-143.2	0.0136
0.1	0.0488	722.1	-151.4	0.3427	0.1	0.0611	509.7	-159.2	0.0140
0	0.0260	551.3	-142.1	0.0006	0	0.0260	551.3	-142.1	0.0006

Table SI.7 Experimental values of viscosity deviation ($\Delta\eta$) of the binary mixtures composed of (i) choline lactate + water and (ii) LC (2:1) + water as a function of temperature (T) and composition (X).

X_1	1.0000	0.9008	0.7952	0.6992	0.5962	0.4974	0.4142	0.2990	0.2007	0.1002	0.0000
					Choline Lactate (1) + water (2)						
T (K)						$\Delta\eta$ (mPa·s)					
293.15	0.0000	-117.2958	-172.8423	-197.7728	-228.8937	-232.4964	-221.6755	-185.7920	-138.7262	-75.5613	0.0000
298.15	0.0000	-70.5507	-107.9679	-124.9353	-146.4243	-150.6583	-144.2048	-122.0777	-92.0339	-50.6525	0.0000
303.15	0.0000	-45.7787	-70.3657	-81.5602	-96.5476	-100.1863	-96.4762	-82.4437	-62.7126	-34.8708	0.0000
308.15	0.0000	-30.5755	-47.0085	-54.5402	-65.1995	-68.2333	-66.1192	-57.0393	-43.7747	-24.5995	0.0000
313.15	0.0000	-20.8977	-32.1360	-39.2535	-44.9849	-47.5143	-46.3018	-40.3298	-31.2189	-17.7275	0.0000
318.15	0.0000	-14.5701	-22.3685	-25.9474	-31.6718	-33.7221	-33.0721	-29.0762	-22.7032	-13.0288	0.0000
323.15	0.0000	-10.3781	-15.8760	-18.3966	-22.6981	-24.3579	-24.0418	-21.3340	-16.8061	-9.7448	0.0000
328.15	0.0000	-7.5318	-11.4389	-13.2311	-16.5123	-17.8604	-17.7462	-15.8961	-12.6293	-7.4005	0.0000
333.15	0.0000	-5.5554	-8.3772	-9.6528	-12.1833	-13.3640	-13.2818	-12.0138	-9.6233	-5.6997	0.0000
338.15	0.0000	-4.1686	-6.2078	-7.1331	-9.1061	-10.0723	-10.0684	-9.1901	-7.4460	-4.4463	0.0000
343.15	0.0000	-3.1646	-4.6509	-5.3166	-6.8798	-7.6715	-7.7108	-7.1074	-5.8184	-3.5091	0.0000
348.15	0.0000	-2.4439	-3.5295	-3.9880	-5.2272	-5.8948	-5.9588	-5.5579	-4.5873	-2.7948	0.0000
353.15	0.0000	-1.9017	-2.6882	-3.0229	-4.0125	-4.5741	-4.6571	-4.3887	-3.6542	-2.2499	0.0000

X_1	1.0000	0.8796	0.7983	0.6990	0.6012	0.4934	0.3977	0.2944	0.2005	0.1003	0.0000
					LC(2:1) (1) + water (2)						
T (K)						$\Delta\eta$ (mPa·s)					
293.15	0.0000	-311.6218	-372.6509	-385.8990	-368.9428	-320.9790	-276.0383	-212.2328	-147.5610	-74.8407	0.0000
298.15	0.0000	-202.9432	-244.3194	-253.4123	-243.7244	-212.7972	-184.0466	-142.2808	-99.2240	-50.4484	0.0000
303.15	0.0000	-134.9539	-163.2081	-165.7426	-163.8221	-143.5021	-125.0742	-97.1314	-68.0169	-34.6887	0.0000
308.15	0.0000	-92.5719	-111.8264	-112.6196	-113.2797	-99.5017	-87.2315	-68.0328	-47.8122	-24.4674	0.0000
313.15	0.0000	-64.7935	-78.4741	-77.7139	-80.1818	-70.5002	-62.1888	-48.7424	-34.3860	-17.6567	0.0000
318.15	0.0000	-46.3828	-56.3267	-55.5052	-57.9666	-51.0204	-45.2505	-35.6631	-25.2571	-13.0158	0.0000
323.15	0.0000	-33.8676	-41.2292	-40.0466	-42.6944	-37.6118	-33.5600	-26.5763	-18.8939	-9.7740	0.0000
328.15	0.0000	-25.2059	-30.7396	-29.0227	-32.0085	-28.2202	-25.3344	-20.1539	-14.3812	-7.4688	0.0000
333.15	0.0000	-19.0679	-23.2745	-21.9162	-24.3715	-21.5033	-19.4107	-15.5144	-11.1129	-5.7947	0.0000
338.15	0.0000	-14.6676	-17.9401	-16.8160	-18.8520	-16.6128	-15.0986	-12.1186	-8.6996	-4.5581	0.0000
343.15	0.0000	-11.4451	-14.5766	-13.0706	-14.7745	-12.9396	-11.9011	-9.5925	-6.9282	-3.6168	0.0000
348.15	0.0000	-9.0561	-11.1223	-10.2927	-11.6897	-10.3222	-9.5361	-7.6855	-5.5559	-2.9031	0.0000
353.15	0.0000	-7.2484	-8.9203	-8.2121	-9.3963	-8.4111	-7.7462	-6.2638	-4.5182	-2.3537	0.0000

Table SI.8 Coefficients of the Redlich-Kister equation for the fitting of the viscosity deviation ($\Delta\eta$) of the binary mixtures composed of (i) choline lactate + water and (ii) LC (2:1) + water.

T (K)	b_1	b_2	b_3	b_4	c_1	c_2	c_3	c_4	σ
				Choline Lactate (1) + water (2)					
293.15	-6.0181	5.6599	-5.6461	-2.1060	-3.1014	-0.0921	-0.5544	-1.4150	1.9957
298.15	-6.0141	5.6603	-5.6451	-2.1037	-1.9671	0.0078	-0.2676	-0.7678	1.7040
303.15	-6.0117	5.6604	-5.6448	-2.1028	-1.2787	0.0521	-0.1719	-0.5019	1.3294
308.15	-6.0103	5.6605	-5.6446	-2.1022	-0.8495	0.0659	-0.1160	-0.3413	1.2320
313.15	-6.0094	5.6604	-5.6445	-2.1017	-0.5788	0.0365	-0.0829	-0.1863	0.5294
318.15	-6.0088	5.6604	-5.6444	-2.1017	-0.3960	0.0580	-0.0551	-0.1682	0.6594
323.15	-6.0084	5.6604	-5.6444	-2.1015	-0.2761	0.0490	-0.0388	-0.1216	0.4980
328.15	-6.0081	5.6604	-5.6443	-2.1014	-0.1942	0.0403	-0.0274	-0.0900	0.3850
333.15	-6.0079	5.6603	-5.6443	-2.1013	-0.1377	0.0321	-0.0183	-0.0674	0.3115
338.15	-6.0078	5.6603	-5.6443	-2.1013	-0.0977	0.0250	-0.0125	-0.0510	0.2485
343.15	-6.0077	5.6603	-5.6443	-2.1012	-0.0689	0.0188	-0.0080	-0.0387	0.2024
348.15	-6.0077	5.6603	-5.6442	-2.1012	-0.0480	0.0140	-0.0048	-0.0309	0.1664
353.15	-6.0076	5.6603	-5.6442	-2.1012	-0.0328	0.0099	-0.0019	-0.0242	0.1368
				LC(2:1) (1) + water (2)					
293.15	-6.0225	5.6498	-5.6555	-2.1107	-4.3915	-3.0488	-3.3034	-2.7955	2.2925
298.15	-6.0171	5.6538	-5.6512	-2.1071	-2.8587	-1.9274	-2.0836	-1.7784	1.7330
303.15	-6.0137	5.6563	-5.6487	-2.1053	-1.8846	-1.1815	-1.3469	-1.2750	1.2491
308.15	-6.0117	5.6578	-5.6471	-2.1041	-1.2778	-0.7608	-0.8943	-0.9036	0.9526
313.15	-6.0103	5.6587	-5.6462	-2.1032	-0.8840	-0.4961	-0.6054	-0.6599	1.1832
318.15	-6.0095	5.6592	-5.6456	-2.1026	-0.6247	-0.3411	-0.4199	-0.4724	0.9125
323.15	-6.0089	5.6595	-5.6452	-2.1022	-0.4481	-0.2349	-0.2966	-0.3551	1.1326
328.15	-6.0085	5.6597	-5.6449	-2.1020	-0.3255	-0.1599	-0.2129	-0.2821	1.0694
333.15	-6.0082	5.6599	-5.6447	-2.1018	-0.2402	-0.1185	-0.1549	-0.2117	0.8396
338.15	-6.0081	5.6600	-5.6446	-2.1016	-0.1792	-0.0903	-0.1143	-0.1615	0.6716
343.15	-6.0079	5.6600	-5.6445	-2.1015	-0.1343	-0.0722	-0.0920	-0.1285	0.5948
348.15	-6.0078	5.6601	-5.6444	-2.1014	-0.1019	-0.0550	-0.0637	-0.1014	0.4410
353.15	-6.0077	5.6601	-5.6444	-2.1014	-0.0781	-0.0441	-0.0457	-0.0824	0.3638

Table SI.9 Density (ρ) experimental values for binary mixture of choline lactate + ethanol as a function of temperature (T) and composition (X).

X_1	1.0000	0.8961	0.7989	0.7004	0.6001	0.4997	0.3990	0.2987	0.2013	0.1004	0.0000[a]
T (K)						ρ (g/cm^3)					
293.15	1.1456	1.1356	1.1210	1.1049	1.0862	1.0627	1.0344	0.9979	0.9511	0.8857	0.7894
298.15	1.1423	1.1322	1.1177	1.1016	1.0828	1.0594	1.0309	0.9943	0.9476	0.8817	0.7852
303.15	1.1390	1.1289	1.1145	1.0984	1.0796	1.0560	1.0275	0.9907	0.9439	0.8778	0.7810
308.15	1.1358	1.1258	1.1113	1.0952	1.0763	1.0527	1.0241	0.9872	0.9402	0.8740	0.7767
313.15	1.1327	1.1226	1.1082	1.0920	1.0731	1.0494	1.0207	0.9836	0.9365	0.8699	0.7725
318.15	1.1296	1.1196	1.1051	1.0888	1.0699	1.0461	1.0173	0.9800	0.9328	0.8658	0.7683
323.15	1.1265	1.1165	1.1020	1.0857	1.0667	1.0429	1.0140	0.9765	0.9291	0.8618	0.7640
328.15	1.1235	1.1135	1.0989	1.0825	1.0635	1.0396	1.0105	0.9730	0.9254	0.8579	0.7598
333.15	1.1205	1.1104	1.0958	1.0794	1.0603	1.0364	1.0072	0.9695	0.9217	0.8539	0.7556
338.15	1.1175	1.1074	1.0927	1.0763	1.0571	1.0330	1.0039	0.9660	0.9180	0.8499	0.7513
343.15	1.1145	1.1044	1.0897	1.0732	1.0540	1.0298	1.0006	0.9625	0.9144	0.8458	0.7471

[a]**Data from NIST**

Table SI. 10 Fit parameters of the first-order polynomial ($\rho = a + bT$) for the fitting of the density (g/cm^3) in function of the temperature (K) at different concentrations (X) including standard deviation (σ) for the binary system choline lactate + ethanol.

X_1	a (g/cm^3)	b (K^{-1})	σ
1	1.3241	-0.0006	0.0038
0.9	1.3172	-0.0006	0.0073
0.8	1.3039	-0.0006	0.0087
0.7	1.2904	-0.0006	0.0117
0.6	1.2746	-0.0006	0.0152
0.5	1.2554	-0.0007	0.0149
0.4	1.2324	-0.0007	0.0085
0.3	1.2053	-0.0007	0.0028
0.2	1.1674	-0.0007	0.0132
0.1	1.1196	-0.0008	0.0008
0	1.0375	-0.0008	0.0163

Table SI.11 Experimental values of excess molar volume (V_m^E) of the binary mixtures composed of choline lactate + ethanol as a function of temperature (T) and composition (X).

	Choline Lactate (1) + ethanol (2)										
X_1	1.0000	0.8961	0.7989	0.7004	0.6001	0.4997	0.3990	0.2987	0.2013	0.1004	0.0000
T (K)	V_m^E (cm^3·mol^{-1})										
293.15	0.0000	-0.5191	-0.5179	-0.6459	-0.8480	-0.9413	-1.0807	-1.1026	-0.9888	-0.7441	0.0000
298.15	0.0000	-0.5179	-0.5395	-0.6771	-0.8778	-0.9916	-1.1203	-1.1421	-1.0441	-0.7643	0.0000
303.15	0.0000	-0.5307	-0.5746	-0.7212	-0.9312	-1.0321	-1.1706	-1.1825	-1.0836	-0.7929	0.0000
308.15	0.0000	-0.5583	-0.5983	-0.7555	-0.9649	-1.0767	-1.2159	-1.2285	-1.1210	-0.8287	0.0000
313.15	0.0000	-0.5588	-0.6237	-0.7800	-1.0020	-1.1147	-1.2561	-1.2617	-1.1562	-0.8396	0.0000
318.15	0.0000	-0.5877	-0.6496	-0.8049	-1.0398	-1.1534	-1.2973	-1.2958	-1.1922	-0.8509	0.0000
323.15	0.0000	-0.6028	-0.6759	-0.8430	-1.0783	-1.2040	-1.3495	-1.3401	-1.2292	-0.8708	0.0000
328.15	0.0000	-0.6187	-0.6905	-0.8584	-1.1085	-1.2369	-1.3763	-1.3809	-1.2639	-0.8980	0.0000
333.15	0.0000	-0.6205	-0.7055	-0.8870	-1.1393	-1.2817	-1.4244	-1.4226	-1.2995	-0.9175	0.0000
338.15	0.0000	-0.6369	-0.7207	-0.9162	-1.1708	-1.3051	-1.4735	-1.4653	-1.3360	-0.9376	0.0000
343.15	0.0000	-0.6536	-0.7502	-0.9460	-1.2152	-1.3517	-1.5238	-1.5091	-1.3825	-0.9497	0.0000

Table SI.12 Coefficients of the Redlich-Kister equation for the fitting of the excess molar volume (V_m^E) of the binary mixtures composed of choline lactate + ethanol.

T (K)	b_1	b_2	b_3	b_4	c_1	c_2	c_3	c_4	σ
				Choline Lactate (1) + ethanol (2)					
293.15	-5.257000	8.022206	-3.860000	1.072204	0.004865	-0.019210	0.004575	0.000000	0.0246
298.15	-5.257000	2.495392	-3.860000	1.053800	0.004235	0.000023	0.004157	0.000000	0.0191
303.15	-5.257000	2.445163	-3.860000	1.053930	0.003538	0.000023	0.003725	0.000655	0.0208
308.15	-5.257000	2.495727	-3.860000	1.191455	0.002937	0.000023	0.003321	0.000672	0.0215
313.15	-5.257000	2.577726	-3.860000	1.036092	0.002404	0.000023	0.003161	0.000656	0.0215
318.15	-5.257000	2.662075	-5.64429	0.880190	0.001904	-0.000158	0.008346	0.000680	0.0222
323.15	-6.007505	2.745749	-3.860000	0.786569	0.003572	0.000023	0.002933	0.000624	0.0214
328.15	-6.007505	2.822753	-3.860000	0.905712	0.003149	0.000023	0.002631	0.000639	0.0219
333.15	-6.007505	2.943220	-3.860000	0.850416	0.002588	0.000023	0.002709	0.000631	0.0209
338.15	-6.007505	2.957110	-3.860000	0.844147	0.002125	0.000390	0.002429	0.000247	0.0212
343.15	-6.007505	3.104115	-5.64428	0.422423	0.001546	0.000351	0.007458	0.000737	0.0218

Table SI.13 Experimental dynamic viscosity (η) for binary mixtures of choline lactate + ethanol as a function of temperature (T) and composition (X).

X_1	1.0000	0.8961	0.7989	0.7004	0.6001	0.4997	0.3990	0.2987	0.2013	0.1004	0.0000[a]
T (K)	η (mPa ·s)										
293.15	818.0800	552.7000	365.2600	225.4000	132.4800	73.4770	39.3540	17.7550	8.5793	3.6025	1.1441
298.15	559.2500	387.5100	263.7500	165.1000	101.5000	57.1070	31.9360	14.7280	7.3570	3.2074	1.0405
303.15	393.2500	277.4200	193.1900	123.8900	78.0580	45.1890	25.9570	12.3650	6.3508	2.8529	0.9486
308.15	283.9300	203.6900	144.7900	94.9030	61.0120	36.3450	21.3790	10.4920	5.5245	2.5483	0.8669
313.15	209.9500	152.9400	110.7900	74.0850	48.5680	29.6510	17.8310	8.9896	4.8409	2.2863	0.7940
318.15	158.6600	117.2000	86.3390	58.8240	39.2690	24.5120	15.0490	7.7729	4.2702	2.0590	0.7287
323.15	122.2900	91.5680	68.4330	47.4510	32.2210	20.5090	12.8350	6.7786	3.7921	1.8616	0.6700
328.15	95.9390	72.6670	55.0730	38.7980	26.7630	17.3350	11.1010	5.9517	3.3869	1.6849	0.6172
333.15	76.4910	58.6000	44.9477	32.1270	22.4910	14.8030	9.6667	5.2547	3.0408	1.5248	0.5696
338.15	61.8990	47.9010	37.1480	26.9050	19.0770	12.7580	8.4454	4.6604	2.7474	1.3803	0.5265
343.15	50.7610	39.7320	31.0570	22.7640	16.3550	11.0890	7.4590	4.1450	2.4985	1.2650	0.4873

[a]**Data from NIST**

Table SI. 14 Fitting parameters of the VFT equation for the fitting of viscosity (η) (mPa·s) (equation 6) in function of the temperature (T) at different concentrations (X) including standard deviation (σ) for the binary system choline lactate + ethanol.

X_1	A (mPa·s)	B (K)	T_0 (K)	σ
1	0.0802	1069.0	-177.3	0.4788
0.9	0.06424	1106.0	-171.4	4.5132
0.8	0.05025	1150.0	-163.8	0.2722
0.7	0.08897	947.5	-172.3	0.3083
0.6	0.04064	1148.0	-151.3	0.3223
0.5	0.07998	889.5	-162.8	0.0358
0.4	0.05589	957.7	-147.2	0.0981
0.3	0.04948	900.2	-140.1	0.0133
0.2	0.03575	939.8	-121.7	0.0050
0.1	0.00646	1607.0	-39.2	0.0102
0	0.00461	1521.0	-17.4	0.0033

Table SI.15 Experimental values of viscosity deviation ($\Delta\eta$) of the binary mixtures composed of choline lactate + ethanol as a function of temperature (T) and composition (X).

	Choline Lactate (1) + ethanol(2)										
X_1	1.0000	0.8961	0.7989	0.7004	0.6001	0.4997	0.3990	0.2987	0.2013	0.1004	0.0000
T (K)	$\Delta\eta$ (mPa·s)										
293.15	0.0000	-180.5004	-288.5342	-347.9260	-358.9073	-335.8899	-287.7475	-227.4078	-157.0140	-79.5619	0.0000
298.15	0.0000	-113.7420	-183.2441	-226.9104	-234.5220	-222.8708	-191.8301	-153.0497	-106.0511	-53.8773	0.0000
303.15	0.0000	-75.0699	-121.1682	-151.8265	-158.3107	-151.7926	-131.5199	-105.7640	-73.5680	-37.4827	0.0000
308.15	0.0000	-50.8297	-82.2160	-104.2213	-109.7211	-105.9685	-92.4301	-74.9258	-52.3230	-26.7381	0.0000
313.15	0.0000	-35.2787	-57.0987	-73.2018	-77.7405	-75.6582	-66.4162	-54.2793	-38.0562	-19.5070	0.0000
318.15	0.0000	-25.0509	-40.5610	-52.5198	-56.2343	-55.1349	-48.6943	-40.1298	-28.2501	-14.5259	0.0000
323.15	0.0000	-18.0857	-29.3992	-38.4017	-41.4332	-40.9345	-36.3614	-30.2193	-21.3600	-11.0191	0.0000
328.15	0.0000	-13.3681	-21.6968	-28.5826	-31.0568	-30.9145	-27.5496	-23.1381	-16.4186	-8.5026	0.0000
333.15	0.0000	-10.0028	-16.2755	-21.6179	-23.6390	-23.7045	-21.1955	-17.9926	-12.8118	-6.6673	0.0000
338.15	0.0000	-7.6214	-12.4090	-16.6068	-18.2791	-18.4363	-16.5687	-14.1980	-10.1334	-5.3079	0.0000
343.15	0.0000	-5.8056	-9.5940	-12.9350	-14.3016	-14.5201	-13.0875	-11.3591	-8.1089	-4.2698	0.0000

Table SI.16 Coefficients of the Redlich-Kister equation for the fitting of the viscosity deviation ($\Delta\eta$) of the binary mixtures composed of choline lactate + ethanol.

				Choline Lactate (1) + ethanol (2)					
T (K)	b_1	b_2	b_3	b_4	c_1	c_2	c_3	c_4	σ
293.15	-0.0007	158.0491	665.2783	912.1425	-4.5936	-3.0304	-2.6571	-2.7349	0.9611
298.15	-0.0004	127.6314	461.3618	609.1927	-2.9920	-1.9189	-1.6594	-1.7350	0.7195
303.15	-0.0004	80.2341	289.0426	434.8154	-2.0027	-1.1769	-0.9768	-1.2441	0.8119
308.15	-0.0003	57.8642	187.4631	309.4012	-1.3752	-0.7586	-0.5916	-0.8810	0.6221
313.15	-0.0003	41.6752	120.1714	225.6552	-0.9658	-0.4951	-0.3527	-0.6430	0.4951
318.15	-0.0002	34.3998	77.9004	161.5017	-0.6924	-0.3408	-0.2116	-0.4595	0.4218
323.15	-0.0002	27.0240	48.8300	121.6241	-0.5059	-0.2349	-0.1195	-0.3453	0.3297
328.15	-0.0002	19.9786	28.1737	96.2692	-0.3758	-0.1600	-0.0593	-0.2744	0.2785
333.15	-0.0001	17.7495	15.0188	72.7267	-0.2835	-0.1187	-0.0228	-0.2056	0.2323
338.15	-0.0001	16.0532	5.6750	55.6388	-0.2172	-0.0905	0.0015	-0.1567	0.1930
343.15	-0.0001	14.9889	1.2460	45.3161	-0.1686	-0.0724	0.0122	-0.1248	0.1613

Table SI.17 Fitting parameters of Antoine equation (9) for the studied entrainers in binary mixtures with water and their correspondent deviations.

Entrainer	Entrainer Mole fraction	A	B (K)	C (K)	AADp (%)
Choline Chloride	0.0708	22.1330	3200.88	-73.0148	0.86
	0.1998	22.1667	3201.21	-80.9387	1.85
Choline lactate	0.1938	22.0486	3201.17	-80.1894	3.32
LC (2:1)	0.1961	22.2587	3200.99	-76.0793	0.93

Table SI.18 Fitting parameters of Antoine equation (9) for the studied entrainers in binary mixtures with ethanol and their correspondent deviations.

Entrainer	Entrainer Mole fraction	A	B (K)	C (K)	AADp (%)
Choline Lactate	0.2000	25.740	4993.85	0	0.29
LC (2:1)	0.1999	25.747	4993.86	$1.3 \cdot 10{-5}$	0.48

$$AAD_p = (1/N) \sum_i^N \left| \frac{P_i^{exp} - P_i^{cal}}{P_i^{exp}} \right| \cdot 100 \, \%(N, number\ of\ data\ points)$$

Table SI.19 Binary interaction parameters and deviations found for the correlation with e-NRTL model of the VLE data of the ternary system composed by choline lactate + ethanol + water.

i component	j component	$\alpha_{i,j}$	$\Delta g_{i,j}$ (J·mol^{-1})	$\Delta g_{j,i}$ (J·mol^{-1})	AARD (y)
		$X_{IL} = 0.20$			
Water (1)	Ethanol (2)	0.33	5744.1	-311.48	
Water (1)	Choline lactate (3)	0.70	8974.9	-2009.3	0.078
Ethanol (2)	Choline lactate (3)	0.80	7289.2	-1869.1	
		$X_{IL} = 0.15$			
Water (1)	Ethanol (2)	0.33	5744.1	-311.48	
Water (1)	Choline lactate (3)	1.36	8974.9	-2009.3	0.010
Ethanol (2)	Choline lactate (3)	0.94	7289.2	-1869.1	
		$X_{IL} = 0.10$			
Water (1)	Ethanol (2)	0.33	5744.1	-311.48	
Water (1)	Choline lactate (3)	1.36	8974.9	-2009.3	0.009
Ethanol (2)	Choline lactate (3)	1.10	7289.2	-1869.1	

$$AARD(y) = \sum_{i=1}^{n} \left| y_i^{cal} / y_i^{exp} - 1.0 \right| / n$$