

Supporting Information

Volumetric Properties and Viscosity *B*-Coefficients for the Ternary systems Epigallocatechin gallate+ *M*Cl + H₂O (*M* = Li, Na, K) at Temperatures (288.15 to 308.15) K

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Table S1. Limiting Partial Molar Volumes (V_ϕ^0) and Experimental Slopes (S_V) of EGCG in LiCl / NaCl / KCl aqueous solutions at $T = (288.15 \text{ to } 308.15) \text{ K}$

$m(\text{salt})$ /mol·kg ⁻¹	$V_\phi^0 / \text{cm}^3 \cdot \text{mol}^{-1}$					$S_V / \text{cm}^3 \cdot \text{kg} \cdot \text{mol}^{-2}$				
	288.15K	293.15K	298.15K	303.15K	308.15K	288.15K	293.15K	298.15K	303.15K	308.15K
H ₂ O										
0	295.65±0.03	296.80±0.02	297.90±0.04	299.00±0.05	300.03±0.03	-65.05±3.02	-54.14±2.74	-42.45±2.34	-36.61±2.12	-32.29±2.27
LiCl										
0.1	308.42±0.05	309.42±0.07	310.33±0.03	311.08±0.03	311.60±0.04	-162.49±3.32	-162.71±3.03	-150.40±2.54	-134.70±2.39	-115.78±2.57
0.2	316.64±0.06	317.54±0.06	318.28±0.04	319.09±0.04	319.99±0.05	-263.79±3.25	-254.30±3.07	-243.23±2.39	-234.51±2.59	-223.20±2.48
0.3	330.49±0.07	331.02±0.05	331.89±0.07	332.50±0.05	333.47±0.06	-471.10±2.02	-462.59±2.82	-450.63±3.34	-434.00±3.24	-426.66±2.49
0.4	330.65±0.05	331.01±0.02	332.05±0.08	333.08±0.02	333.96±0.03	-575.99±3.85	-561.91±3.43	-552.37±3.44	-549.45±3.44	-523.13±3.34
0.5	341.06±0.03	341.86±0.03	342.50±0.09	342.92±0.03	343.44±0.05	-598.93±3.74	-593.70±3.76	-590.99±3.62	-582.89±3.74	-545.79±3.66
NaCl										
0.1	310.96±0.03	311.89±0.04	312.97±0.07	313.84±0.06	314.43±0.04	-165.60±3.11	-155.44±3.06	-147.07±2.14	-138.43±2.38	-122.99±2.32
0.2	321.25±0.02	322.40±0.03	323.49±0.06	324.30±0.05	325.07±0.03	-310.56±3.03	-302.60±3.48	-300.22±2.39	-280.07±2.56	-254.93±2.46
0.3	335.43±0.06	336.37±0.05	337.33±0.03	338.28±0.04	339.27±0.05	-535.41±3.52	-523.95±3.59	-514.84±2.59	-495.04±2.58	-486.18±2.75
0.4	350.18±0.05	350.77±0.03	351.31±0.02	352.26±0.02	353.34±0.02	-747.48±3.45	-734.29±3.68	-721.54±2.96	-712.00±2.96	-706.50±2.59
0.5	361.77±0.06	362.53±0.05	363.55±0.04	364.57±0.04	365.29±0.04	-960.27±3.86	-925.74±3.75	-915.41±3.49	-901.12±3.54	-861.22±3.64
KCl										
0.1	311.01±0.02	311.83±0.04	312.50±0.03	313.08±0.06	314.02±0.04	-286.25±2.02	-246.29±3.15	-232.17±2.01	-184.19±2.04	-177.33±2.17
0.2	321.79±0.03	322.69±0.06	323.08±0.02	324.14±0.07	324.91±0.03	-572.16±2.82	-565.08±3.43	-542.50±2.49	-541.60±2.35	-522.65±2.02
0.3	340.24±0.08	340.91±0.04	341.53±0.04	342.16±0.04	342.52±0.04	-766.37±3.42	-747.58±3.02	-732.51±2.33	-717.12±2.68	-698.04±2.19
0.4	361.60±0.05	361.79±0.02	362.05±0.04	363.06±0.02	364.01±0.07	-1006.69±3.59	-982.09±3.51	-963.22±3.24	-960.57±2.39	-951.26±3.04
0.5	369.85±0.04	370.89±0.03	371.69±0.06	372.66±0.03	373.31±0.06	-1194.57±3.72	-1184.11±3.84	-1171.25±3.74	-1162.46±3.64	-1146.85±5.64

m (salt) is the molality of LiCl / NaCl / KCl in aqueous solutions, respectively. The standard uncertainties (u) are u

(m) = 0.0005 mol·kg⁻¹; $u(T) = 0.01 \text{ K}$. The combined expanded uncertainty (U_c) is $U_c(V_\phi^0) = 0.08 \text{ cm}^3 \cdot \text{mol}^{-1}$, U_c

(S_V) = 3.89 cm³ · kg · mol⁻² (0.95 level of confidence).

Table S2. Apparent Molar Isobaric Expansions (E_ϕ^0) and Helper's Constant ($\frac{\partial^2 V_\phi^0}{\partial T^2}_p$) of EGCG in Different Molalities of LiCl / NaCl / KCl Aqueous Solutions at $T = (288.15 \text{ to } 308.15) \text{ K}$. \square

T / K	$10^6 \cdot E_\phi^0 / \text{m}^3 \cdot \text{mol}^{-1} \cdot \text{K}^{-1}$	$(\frac{\partial^2 V_\phi^0}{\partial T^2})_p$	$10^6 \cdot E_\phi^0 / \text{m}^3 \cdot \text{mol}^{-1} \cdot \text{K}^{-1}$	$(\frac{\partial^2 V_\phi^0}{\partial T^2})_p$	$10^6 \cdot E_\phi^0 / \text{m}^3 \cdot \text{mol}^{-1} \cdot \text{K}^{-1}$	$(\frac{\partial^2 V_\phi^0}{\partial T^2})_p$	
H ₂ O		H ₂ O		H ₂ O		H ₂ O	
288.15	0.63 \pm 0.04		0.63 \pm 0.04		0.63 \pm 0.04		
293.15	0.63 \pm 0.04		0.63 \pm 0.04		0.63 \pm 0.04		
298.15	0.63 \pm 0.04	0	0.63 \pm 0.04	0	0.63 \pm 0.04	0	
303.15	0.63 \pm 0.04		0.63 \pm 0.04		0.63 \pm 0.04		
308.15	0.63 \pm 0.04		0.63 \pm 0.04		0.63 \pm 0.04		
	<i>m</i> (LiCl=0.1000mol·kg ⁻¹)		<i>m</i> (NaCl=0.1000mol·kg ⁻¹)		<i>m</i> (KCl=0.1000mol·kg ⁻¹)		
288.15	0.33 \pm 0.04		0.52 \pm 0.05		0.24 \pm 0.04		
293.15	0.30 \pm 0.05		0.50 \pm 0.04		0.24 \pm 0.04		
298.15	0.27 \pm 0.03	-0.006	0.48 \pm 0.05	-0.004	0.24 \pm 0.04	0	
303.15	0.24 \pm 0.04		0.46 \pm 0.03		0.24 \pm 0.04		
308.15	0.21 \pm 0.05		0.44 \pm 0.04		0.24 \pm 0.04		
	<i>m</i> (LiCl=0.2000mol·kg ⁻¹)		<i>m</i> (NaCl=0.2000mol·kg ⁻¹)		<i>m</i> (KCl=0.2000mol·kg ⁻¹)		
288.15	0.05 \pm 0.04		0.23 \pm 0.05		0.20 \pm 0.04		
293.15	0.05 \pm 0.04		0.20 \pm 0.04		0.20 \pm 0.04		
298.15	0.05 \pm 0.04	0	0.17 \pm 0.04	-0.006	0.20 \pm 0.04	0	
303.15	0.05 \pm 0.04		0.14 \pm 0.04		0.20 \pm 0.04		
308.15	0.05 \pm 0.04		0.11 \pm 0.03		0.20 \pm 0.04		
	<i>m</i> (LiCl=0.3000mol·kg ⁻¹)		<i>m</i> (NaCl=0.3000mol·kg ⁻¹)		<i>m</i> (KCl=0.3000mol·kg ⁻¹)		
288.15	0.25 \pm 0.05		0.04 \pm 0.04		0.55 \pm 0.05		
293.15	0.24 \pm 0.04		0.04 \pm 0.04		0.54 \pm 0.04		
298.15	0.23 \pm 0.03	-0.002	0.04 \pm 0.04	0	0.53 \pm 0.04	-0.002	
303.15	0.22 \pm 0.04		0.04 \pm 0.04		0.52 \pm 0.03		
308.15	0.21 \pm 0.04		0.04 \pm 0.04		0.51 \pm 0.04		
	<i>m</i> (LiCl=0.4000mol·kg ⁻¹)		<i>m</i> (NaCl=0.4000mol·kg ⁻¹)		<i>m</i> (KCl=0.4000mol·kg ⁻¹)		
288.15	0.16 \pm 0.04		0.21 \pm 0.04		0.02 \pm 0.04		
293.15	0.16 \pm 0.04		0.21 \pm 0.04		0.02 \pm 0.04		
298.15	0.16 \pm 0.04	0	0.21 \pm 0.04	0	0.02 \pm 0.04	0	
303.15	0.16 \pm 0.04		0.21 \pm 0.04		0.02 \pm 0.04		
308.15	0.16 \pm 0.04		0.21 \pm 0.04		0.02 \pm 0.04		
	<i>m</i> (LiCl=0.5000mol·kg ⁻¹)		<i>m</i> (NaCl=0.5000mol·kg ⁻¹)		<i>m</i> (KCl=0.5000mol·kg ⁻¹)		
288.15	0.32		0.34 \pm 0.04		0.61 \pm 0.04		
293.15	0.30 \pm 0.04		0.34 \pm 0.04		0.60 \pm 0.05		
298.15	0.28 \pm 0.03	-0.004	0.34 \pm 0.04	0	0.59 \pm 0.03	-0.002	
303.15	0.26 \pm 0.03		0.34 \pm 0.04		0.58 \pm 0.04		
308.15	0.24 \pm 0.04		0.34 \pm 0.04		0.57 \pm 0.04		

m is the molality of LiCl / NaCl / KCl in aqueous solutions, respectively. The standard uncertainties (u) are $u(m) = 0.0005 \text{ mol}\cdot\text{kg}^{-1}$, $u(T) = 0.01 \text{ K}$, the combined expanded uncertainty (U_c) is $U_c(10^6 \cdot E_\varphi^0) = 0.05 \text{ m}^3\cdot\text{mol}^{-1}\cdot\text{K}^{-1}$ (0.95 level of confidence).

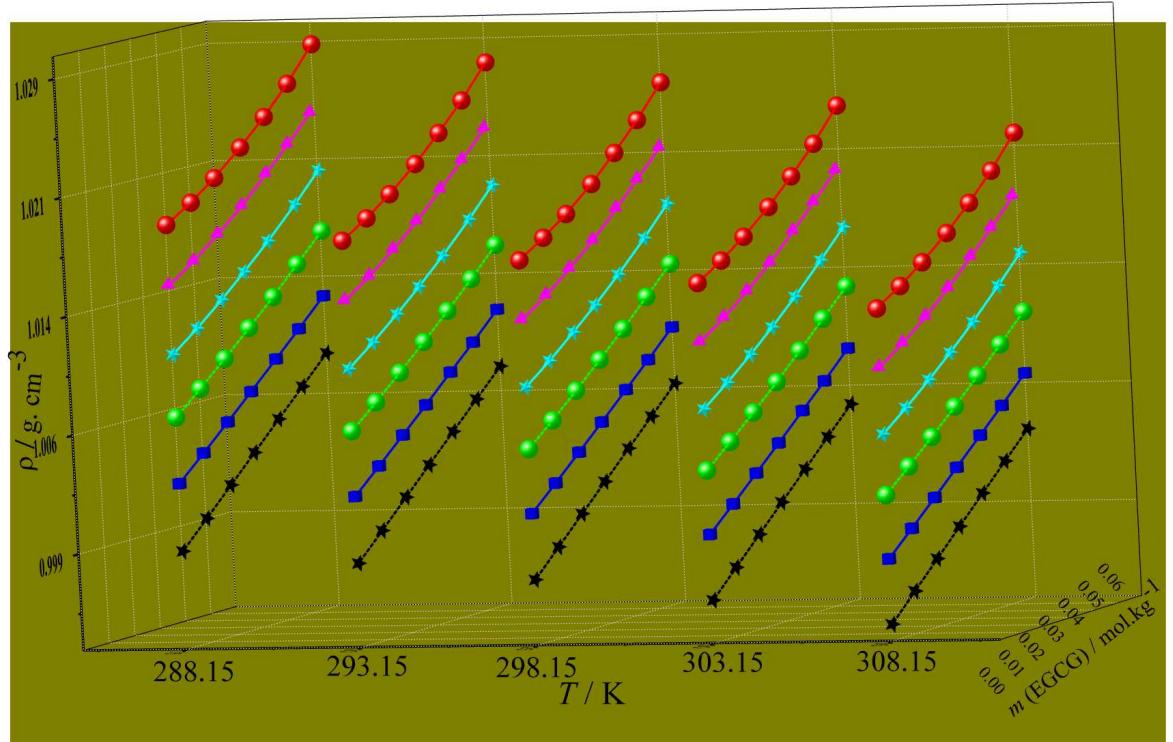


Figure S1. Densities (ρ) of EGCG in different concentrations of NaCl solutions. m (NaCl): ●, 0.5 mol·kg⁻¹; ▲, 0.4 mol·kg⁻¹; ★, 0.3 mol·kg⁻¹; ●, 0.2 mol·kg⁻¹; ■, 0.1 mol·kg⁻¹; ★, 0 mol·kg⁻¹. (Since the tendency of LiCl/KCl was very close to NaCl, densities (ρ) of EGCG in different concentrations of LiCl/KCl can be omitted.)

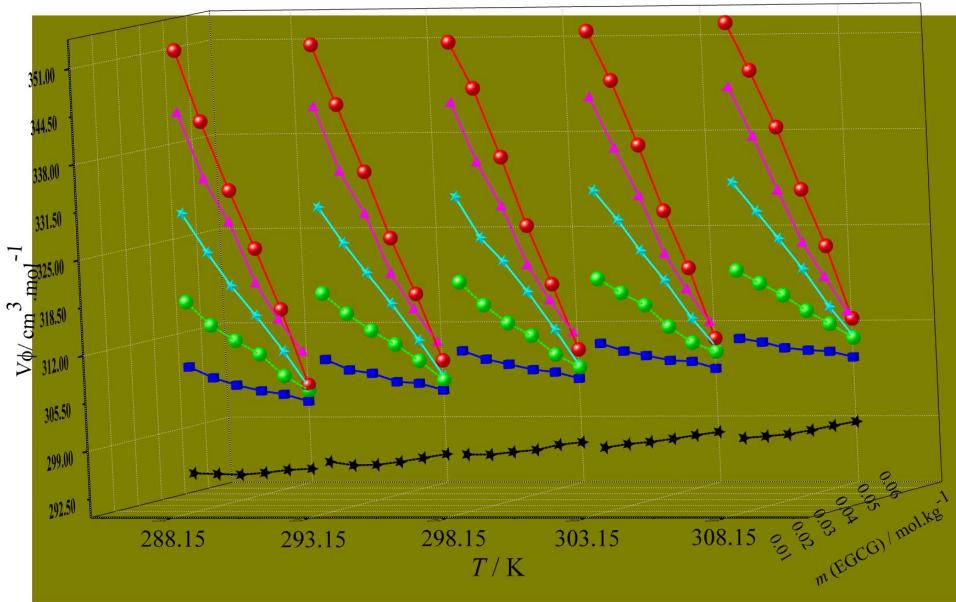


Figure S2. The apparent molar volumes (V_ϕ) of EGCG in different concentrations of NaCl solutions. m (NaCl): ●, 0.5 mol·kg⁻¹; ▲, 0.4 mol·kg⁻¹; ★, 0.3 mol·kg⁻¹; ●, 0.2 mol·kg⁻¹; ■, 0.1 mol·kg⁻¹; ★, 0 mol·kg⁻¹. (Since the tendency of LiCl/KCl was very close to NaCl, the apparent molar volumes (V_ϕ) of EGCG in different concentrations of LiCl/KCl can be omitted.)

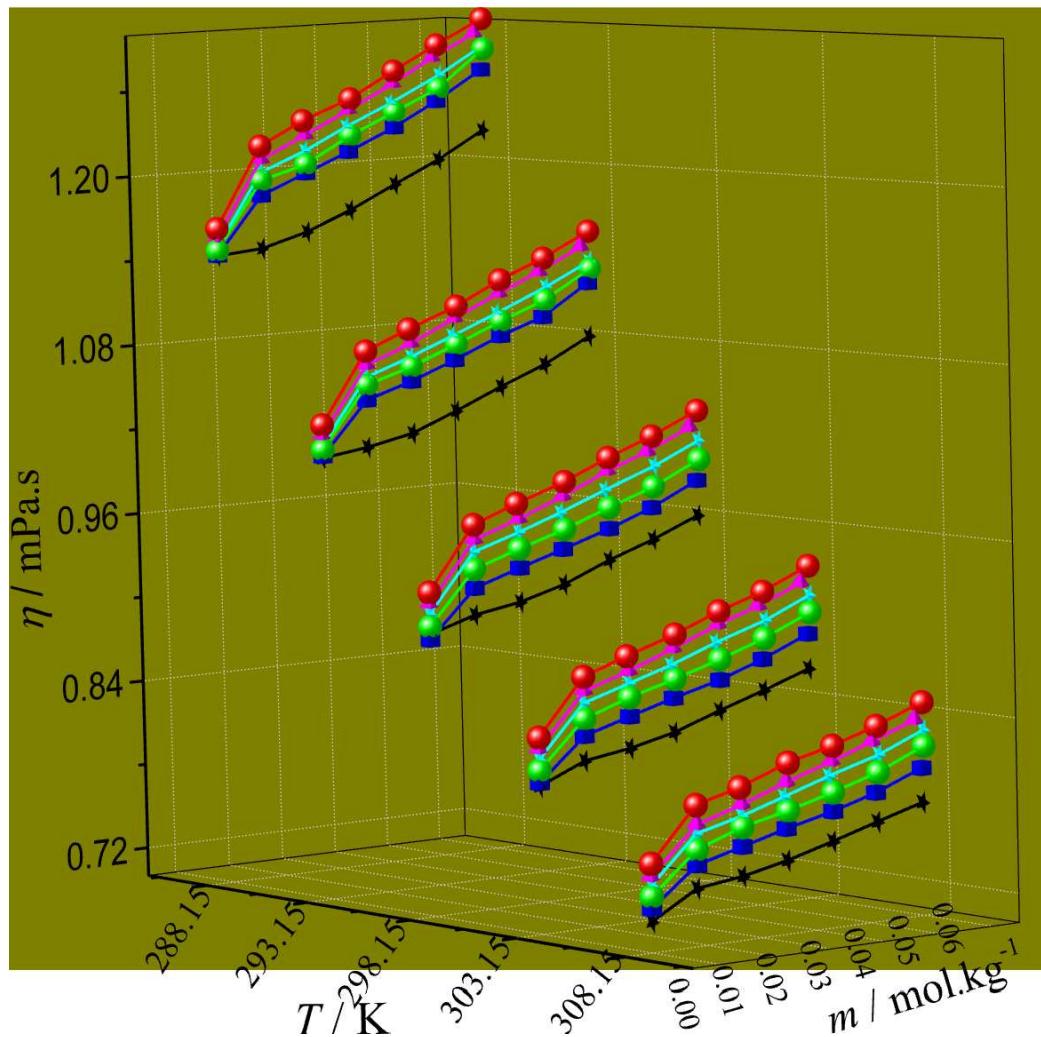


Figure S3. Viscosities (η) of EGCG in different concentrations of NaCl solutions. m (NaCl): ●, 0.5 mol·kg⁻¹; ▲, 0.4 mol·kg⁻¹; ★, 0.3 mol·kg⁻¹; ●, 0.2 mol·kg⁻¹; ■, 0.1 mol·kg⁻¹; ★, 0 mol·kg⁻¹. (Since the tendency of LiCl/KCl was very close to NaCl, viscosities (η) of EGCG in different concentrations of LiCl/KCl can be omitted.)