Electronic Supplementary Material (ESI) for Toxicology Research.
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Cytotoxic effect of protic ionic liquids in HepG2 and HaCat human cells: *In vitro* and *In silico* studies

Bruna Varela Zanoni[a], Gabriela Brasil Romão[b], Rebecca S. Andrade[†,c], Regina Maria Barretto Cicarelli[d], Eliane Trovatti[a], Bruna Galdorfini Chiari-Andrèo[a,d] and Miguel Iglesias[b]

Electronic Supplementary Information (ESI). Densities (ρ) and ultrasonic velocities (u) for the studied protic ionic liquids at 293.15 – 323.15 K.

	2-HEAF		2-HEAA		2-HEAPr		2-HEAL	
T (K)	ρ (gcm^{-3})	u (ms^{-1})	ρ (gcm^{-3})	u (ms^{-1})	ρ (gcm^{-3})	u (ms^{-1})	ρ (gcm^{-3})	u (ms^{-1})
293.15	1.180528	1846.65	1.151193	1805.53	1.095838	1652.14	1.216421	1893.41
294.15	1.180031	1845.39	1.150626	1802.48	1.095190	1649.01	1.215862	1890.17
295.15	1.179610	1844.34	1.150058	1799.49	1.094542	1645.94	1.215294	1886.43
296.15	1.179075	1843.09	1.149493	1796.57	1.093893	1642.89	1.214732	1883.13
297.15	1.178624	1841.99	1.148926	1793.73	1.093243	1639.89	1.214167	1879.97
298.15	1.178172	1840.94	1.148360	1790.94	1.092595	1636.90	1.213607	1877.02
299.15	1.177731	1839.94	1.147795	1788.23	1.091945	1633.95	1.213039	1874.17
300.15	1.177279	1838.95	1.147230	1785.55	1.091295	1631.04	1.212499	1871.53
301.15	1.176849	1838.04	1.146665	1782.95	1.090645	1628.14	1.211958	1868.84
302.15	1.176383	1837.02	1.146097	1780.39	1.089995	1625.28	1.211419	1866.26
303.15	1.175979	1836.17	1.145532	1777.87	1.089342	1622.44	1.210877	1863.76
304.15	1.175513	1835.16	1.144964	1775.39	1.088690	1619.63	1.210332	1861.32
305.15	1.175115	1834.39	1.144400	1772.94	1.088039	1616.83	1.209830	1859.05
306.15	1.174658	1833.49	1.143833	1770.52	1.087384	1614.07	1.209316	1856.83
307.15	1.174268	1832.77	1.143266	1768.12	1.086732	1611.31	1.208761	1854.47
308.15	1.173895	1831.95	1.142700	1765.73	1.086076	1608.57	1.208263	1852.31
309.15	1.173441	1830.93	1.142132	1763.38	1.085421	1605.84	1.207806	1850.29
310.15	1.173119	1830.32	1.141564	1761.04	1.084763	1603.13	1.207351	1848.34
311.15	1.172668	1829.3	1.140997	1758.73	1.084107	1600.43	1.206778	1845.83
312.15	1.172388	1828.81	1.140427	1756.43	1.083451	1597.73	1.206338	1843.87
313.15	1.171993	1827.92	1.139857	1754.15	1.082794	1595.05	1.205850	1841.66
314.15	1.171620	1827.11	1.139288	1751.88	1.082156	1592.37	1.205416	1839.57
315.15	1.171268	1826.39	1.138715	1749.6	1.081521	1589.70	1.204997	1837.53
316.15	1.170911	1825.48	1.138145	1747.36	1.080889	1587.06	1.204612	1835.88
317.15	1.170554	1824.75	1.137574	1745.13	1.080255	1584.42	1.204195	1833.82
318.15	1.170225	1823.93	1.137001	1742.90	1.079613	1581.78	1.203817	1831.91
319.15	1.169933	1823.29	1.136428	1740.68	1.078979	1579.16	1.203367	1829.78
320.15	1.169622	1822.59	1.135854	1738.48	1.078335	1576.54	1.202960	1827.53
321.15	1.169395	1821.85	1.135281	1736.29	1.077694	1573.91	1.202652	1825.92
322.15	1.169158	1821.25	1.134715	1734.09	1.077054	1571.33	1.202263	1823.86
323.15	1.168853	1820.38	1.134162	1731.89	1.076409	1568.72	1.201960	1822.20

	2-HDEAA		2-HEACi		2-HDEACi		2-HDEAL	
T (K)	ρ (gcm^{-3})	u (ms^{-1})	ρ (gcm^{-3})	u (ms^{-1})	ρ (gcm^{-3})	u (ms^{-1})	ρ (gcm^{-3})	u (ms^{-1})
293.15	1.170531	1876.9	1.32694	2231.87	1.293960	2135.84	1.21727	1897.65
294.15	1.169924	1874.12	1.32645	2224.70	1.293469	2130.96	1.21658	1893.34
295.15	1.169314	1871.38	1.32596	2218.00	1.292983	2126.00	1.21587	1889.22
296.15	1.168703	1868.68	1.32547	2211.82	1.292508	2121.57	1.21516	1885.23
297.15	1.168095	1866.00	1.32498	2206.11	1.292001	2117.16	1.21445	1881.36
298.15	1.167483	1863.35	1.32449	2200.72	1.291540	2113.36	1.21375	1877.64
299.15	1.166870	1860.71	1.32400	2195.67	1.291037	2109.51	1.21308	1874.05
300.15	1.166255	1858.09	1.32350	2190.97	1.290576	2106.04	1.21246	1870.55
301.15	1.165640	1855.48	1.32300	2186.52	1.290113	2102.69	1.21183	1867.17
302.15	1.165025	1852.88	1.32250	2182.28	1.289651	2099.53	1.21120	1863.85
303.15	1.164406	1850.31	1.32200	2178.21	1.28919	2096.48	1.21058	1860.65
304.15	1.163786	1847.75	1.32149	2174.34	1.288727	2093.49	1.20995	1857.52
305.15	1.163165	1845.19	1.32098	2170.66	1.288274	2090.69	1.20932	1854.44
306.15	1.162541	1842.64	1.32047	2167.18	1.287847	2088.07	1.20869	1851.44
307.15	1.161916	1840.09	1.31995	2163.86	1.287386	2085.37	1.20807	1848.52
308.15	1.161291	1837.52	1.31942	2160.71	1.286973	2083.20	1.20744	1845.62
309.15	1.160666	1835.00	1.31889	2157.72	1.286504	2080.44	1.20665	1842.09
310.15	1.160061	1832.47	1.31835	2154.89	1.286115	2078.60	1.20618	1839.97
311.15	1.159468	1829.94	1.31781	2152.18	1.285687	2076.26	1.20555	1837.17
312.15	1.158873	1827.40	1.31727	2149.58	1.285292	2074.25	1.20492	1834.40
313.15	1.158262	1824.86	1.31671	2147.09	1.284880	2072.38	1.20429	1831.65
314.15	1.157663	1822.32	1.31616	2144.67	1.284479	2070.60	1.20366	1828.92
315.15	1.157057	1819.78	1.31560	2142.36	1.284101	2068.62	1.20303	1826.22
316.15	1.156449	1817.25	1.31503	2140.12	1.283737	2066.71	1.20239	1823.54
317.15	1.155841	1814.71	1.31453	2137.94	1.283431	2065.22	1.20176	1820.91
318.15	1.155231	1812.16	1.31405	2135.84	1.283090	2063.64	1.20113	1818.24
319.15	1.154619	1809.61	1.31357	2133.80	1.282695	2061.81	1.20049	1815.61
320.15	1.154002	1807.06	1.31308	2131.79	1.282376	2059.85	1.19986	1813.01
321.15	1.153391	1804.50	1.31260	2129.85	1.282069	2058.41	1.19922	1810.40
322.15	1.152776	1801.93	1.31212	2127.96	1.281773	2056.79	1.19858	1807.82
323.15	1.152155	1799.38	1.31164	2126.10	1.281506	2054.98	1.19794	1805.26

	2-HEAAd		2-HDEAMa		2-HDEAAd		2-HDEABe	
T (K)	ρ (gcm^{-3})	u (ms^{-1})	ρ (gcm^{-3})	u (ms^{-1})	ρ (gcm^{-3})	u (ms^{-1})	ρ (gcm^{-3})	u (ms^{-1})
293.15	1.196369	2028.38	1.283349	2133.42	1.22405	2030.3	1.20254	1925.80
294.15	1.195894	2025.10	1.282823	2125.77	1.223580	2026.16	1.20189	1915.39
295.15	1.195446	2021.94	1.282328	2119.00	1.223093	2021.85	1.20125	1905.25
296.15	1.195010	2019.09	1.281828	2112.77	1.222621	2017.94	1.20061	1895.39
297.15	1.194538	2016.33	1.281336	2106.95	1.222153	2014.13	1.19996	1889.26
298.15	1.194106	2013.74	1.280837	2101.14	1.221702	2010.54	1.19931	1878.58
299.15	1.193661	2011.22	1.280376	2095.86	1.221266	2007.13	1.19867	1868.28
300.15	1.193222	2008.88	1.279907	2090.92	1.220833	2003.89	1.19802	1858.62
301.15	1.192813	2006.67	1.279414	2086.14	1.220383	2000.67	1.19738	1849.51
302.15	1.192370	2004.43	1.278945	2081.59	1.219948	1997.65	1.19673	1840.93
303.15	1.191935	2002.30	1.278475	2077.31	1.219518	1994.69	1.19608	1832.79
304.15	1.191522	2000.27	1.278019	2073.24	1.219112	1991.96	1.19543	1824.84
305.15	1.191096	1998.28	1.277555	2069.35	1.218692	1989.25	1.19477	1817.48
306.15	1.190698	1996.59	1.277112	2065.74	1.218284	1986.50	1.19411	1810.63
307.15	1.190286	1994.68	1.276659	2062.21	1.217938	1983.96	1.19346	1804.08
308.15	1.189934	1993.10	1.276201	2058.71	1.217528	1981.23	1.19279	1797.97
309.15	1.189474	1991.29	1.275764	2055.83	1.217338	1978.50	1.19213	1792.14
310.15	1.189088	1989.47	1.275324	2052.47	1.217024	1976.17	1.19145	1786.51
311.15	1.188724	1988.15	1.274896	2049.57	1.216741	1973.53	1.19078	1781.10
312.15	1.188379	1986.49	1.274478	2046.50	1.216441	1971.18	1.19009	1775.86
313.15	1.187986	1984.84	1.274073	2043.86	1.216087	1968.87	1.18941	1770.91
314.15	1.187632	1983.17	1.273682	2041.53	1.215753	1966.86	1.18871	1766.16
315.15	1.187292	1981.74	1.273300	2038.65	1.215393	1964.44	1.18801	1761.64
316.15	1.186950	1980.38	1.272912	2036.24	1.215105	1962.24	1.18730	1757.25
317.15	1.186624	1978.84	1.272519	2033.69	1.214782	1960.09	1.18659	1752.96
318.15	1.186315	1977.51	1.272154	2031.40	1.214503	1958.24	1.18587	1748.81
319.15	1.185991	1975.83	1.271795	2028.83	1.214188	1955.63	1.18515	1744.79
320.15	1.185678	1974.53	1.271432	2026.79	1.213917	1953.33	1.18443	1740.86
321.15	1.185464	1973.34	1.271093	2024.51	1.213684	1951.26	1.18376	1737.02
322.15	1.185138	1971.83	1.270774	2022.36	1.213441	1948.97	1.18312	1733.30
323.15	1.184891	1970.50	1.270497	2020.28	1.213250	1946.78	1.18247	1729.66

	2-HDEASa	
T (K)	ρ (gcm^{-3})	ρ (gcm^{-3})
293.15	1.266557	1770.17
294.15	1.266087	1769.03
295.15	1.265619	1767.89
296.15	1.265148	1766.72
297.15	1.264678	1765.54
298.15	1.264208	1764.34
299.15	1.263736	1763.13
300.15	1.263265	1761.91
301.15	1.262795	1760.67
302.15	1.262324	1759.42
303.15	1.261851	1758.15
304.15	1.261381	1756.87
305.15	1.260910	1755.57
306.15	1.260437	1754.25
307.15	1.259964	1752.92
308.15	1.259491	1751.58
309.15	1.259018	1750.22
310.15	1.258545	1748.84
311.15	1.258071	1747.45
312.15	1.257596	1746.05
313.15	1.257122	1744.62
314.15	1.256646	1743.18
315.15	1.256167	1741.73
316.15	1.255690	1740.27
317.15	1.255217	1738.79
318.15	1.254740	1737.30
319.15	1.254261	1735.80
320.15	1.253783	1734.28
321.15	1.253303	1732.74
322.15	1.252824	1731.20
323.15	1.252343	1729.63