

Synthesis and anti-microbial potencies of 1-(2-hydroxyethyl)-3-alkylimidazolium chloride ionic liquids: microbial viabilities at different ionic liquids concentrations

ABSTRACT

Three 1-(2-hydroxyethyl)-3-alkylimidazolium chloride room temperature ionic liquids (ILs) [2OHimCn][Cl]; (n=0, 1, 4) have been synthesized from the appropriate imidazole precursors and characterized by IR and NMR spectroscopies and elemental analysis. Their anti-microbial activities were investigated using the well-diffusion method. The viabilities of *Escherichia coli*, *Aeromonas hydrophila*, *Listeria monocytogenes* and *Salmonella enterica* as a function of IL concentrations were studied. The minimal inhibitory concentrations (MICs) and EC50 values for the present ILs were within the concentration range from 60 to 125 mM and 23 to 73 mM. The anti-microbial potencies of the present ILs were compared to a standard antibiotic, gentamicin. The finding affords additional perspective on the level of ILs toxicity to aquatic lifeforms and yet, this characteristic can be readily harnessed to detect microbial growth and activity.

Keyword: Alkylimidazolium chloride ionic liquids; Inhibition potential; Human pathogens; Microbial growth and viability