

## **Biophysical properties of DNA in hydrated ionic liquids**

### **ABSTRACT**

The biophysical properties and behavior of natural calf thymus DNA in hydrated 1-ethyl-3-butylimidazolium bromide ionic liquid ([C2bim]Br) have been studied using spectroscopy technique. The effect of ionic liquid concentration and temperature towards the duplex B-DNA conformation were determined. The presence of ionic liquid causes higher duplex DNA stability with the DNA melting temperature of  $\sim 56^{\circ}\text{C}$  without any addition of buffer solutions. The electrostatic attraction between ionic liquid's cation and DNA phosphates groups was found play a main role in stabilizing native DNA structure. Understanding of the biophysical properties of DNA in this ionic media could be used as a platform for future development of specific solvent for nucleic acid nanotechnology.

**Keyword:** DNA; Ionic liquids; Biophysical properties; 1-ethyl-3-butylimidazolium bromide