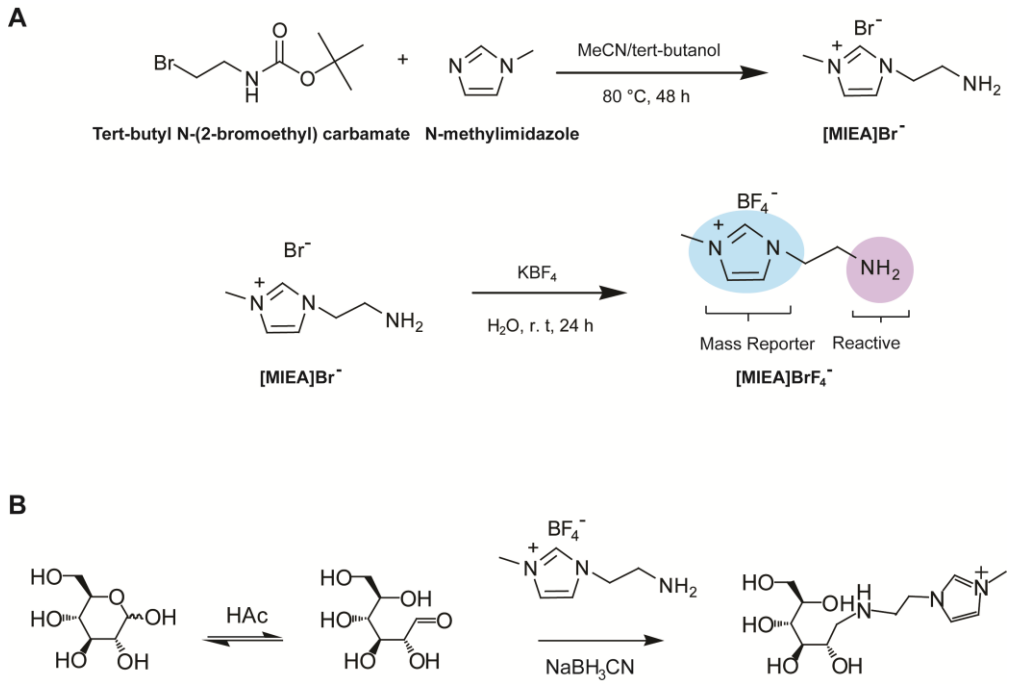
Methylimidazolium N-ethylamine-based ionic liquid: Synthesis and application as a Novel ionizing label of carbohydrates

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Abstract: The synthesis of novel low-viscosity methylimidazolium N-ethylamine (MIEA) was achieved successfully with good yield, using N-methylimidazole and tert-butyl N-(2-bromoethyl) carbamate as starting materials. Due to the prerequisite for the sensitive analysis of carbohydrates by mass spectrometric techniques, the MIEA is a suitable reagent for reductive amination of the carbonyl group in carbohydrates with ionizing labels. This work illustrates that MIEA represents one of the important multifunctional oligosaccharide label for glycan reporting and identification using UPLC/ESI-QTOF and by MALDI-TOF mass spectrometry. The reductive amination process is investigated with exemplified by labelling N-glycans from the model glycoproteins such: RNase B, horseradish peroxidase (HRP), and Bovine lactoferrin. Moreover, we also produced MIEA glycan profiles which are comparable to the corresponding 2-AB labelled glycan derivatives, as observed that in the result obtained. The principal factors that affect MIEA – label of glycan were showed improved ESI ionization efficiency over the respective 2-AB derivatives. Experimentally, this phenomenon clarified with detection sensitivity in the low picomole and high femtomole range.

Key words; ionic liquids, synthesis, carbohydrates, N-Glycans, analysis



Scheme: The synthetic route of [MIEA][BF4-] and derivation of glycoses and aminoglycosides