# Green synthesis of 2,3,4,9-tetrahydro-1H-carbazoles/2,3-dimethylindoles catalyzed by [bmim (BF$_4$)] ionic liquid in methanol

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Mass Spectrum of 2,3,4,9-tetrahydro-1H-carbazole (3a)

Mass Calcd \( m/z = 171.2 \)
Found \( m/z = 172.2 \text{(M+1)} \)
$^1$H NMR Spectrum of 3-methyl-2,3,4,9-tetrahydro-1H-carbazole (3b)
$^{13}$C NMR Spectrum of 3-methyl-2,3,4,9-tetrahydro-1H-carbazole (3b)
Mass Spectrum of 3-methyl-2,3,4,9-tetrahydro-1H-carbazole (3b)

Mass Calcd $m/z = 185.2$

Found $m/z = 186.4$ (M+1)
$^1$H NMR Spectrum of 3-phenyl-2,3,4,9-tetrahydro-1H-carbazole (3c)
Mass Spectrum of 3-phenyl-2,3,4,9-tetrahydro-1H-carbazole (3c)
$^1$H NMR Spectrum of 6-methyl-2,3,4,9-tetrahydro-1H-carbazole (3d)
Mass Spectra of 6-methyl-2,3,4,9-tetrahydro-1H-carbazole (3d)

Mass Calcd $m/z = 185.2$
Found $m/z = 186.2(M+1)$
$^1$H NMR Spectrum of 6-methoxy-2,3,4,9-tetrahydro-1H-carbazole (3f)
Mass Spectrum of 6-methoxy-2,3,4,9-tetrahydro-1H-carbazole (3f)
$^1$H NMR Spectrum of 6-fluoro-2,3,4,9-tetrahydro-1H-carbazole (3g)
Mass Spectrum of 6-fluoro-2,3,4,9-tetrahydro-1H-carbazole (3g)
$^1$H NMR Spectrum of 5,7-difluoro-2,3,4,9-tetrahydro-1H-carbazole (3h)
Mass Spectrum of 5,7-difluoro-2,3,4,9-tetrahydro-1H-carbazole (3h)
$^1$H NMR Spectrum of 6-fluoro-3-methyl-2,3,4,9-tetrahydro-1H-carbazole (3j)
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