Supplementary Material

Synthesis of New N-Norbornylimide Substituted Amide Derivatives: Their Reductive Heck and Domino Heck Reactions

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Table S1. List of the synthesized compound structure.

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<tr>
<th>Entry</th>
<th>Compound Name</th>
<th>Compound Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2-(4-Azabicyclo[2.2.1]hept-8-ene-3-endo,5-endo-dicarboximide-4-yl)-3-methyl pentanoyl chloride</td>
<td><img src="image" alt="Compound Structure" /></td>
</tr>
<tr>
<td>5</td>
<td>N-4-Azabicyclo[2.2.1]hept-8-ene-3-endo,5-endo-dicarboximide-4-yl 2-(4-azabicyclo[2.2.1]hept-8-ene-3-endo,5-endo-dicarboximide-4-yl)-3-methylpentanamide</td>
<td><img src="image" alt="Compound Structure" /></td>
</tr>
<tr>
<td>6a</td>
<td>N-[8-Phenyl-4-azabicyclo[2.2.1]heptane-3-endo,5-endo-dicarboximide-4-yl] 2-(8-phenyl-4-azabicyclo[2.2.1]heptane-3-endo,5-endo-dicarboximide-4-yl)-3-methylpentanamide</td>
<td><img src="image" alt="Compound Structure" /></td>
</tr>
<tr>
<td>6b</td>
<td>N-[8-(4-Chlorophenyl)-4-azabicyclo[2.2.1]heptane-3-endo,5-endo-dicarboximide-4-yl] 2-(8-(4-chlorophenyl)-4-azabicyclo[2.2.1]heptane-3-endo,5-endo-dicarboximide-4-yl)-3-methylpentanamide</td>
<td><img src="image" alt="Compound Structure" /></td>
</tr>
<tr>
<td>6c</td>
<td>N-[8-Morpholino-4-azabicyclo[2.2.1]heptane-3-endo,5-endo-dicarboximide-4-yl] 2-(8-morpholino-4-azabicyclo[2.2.1]heptane-3-endo,5-endo-dicarboximide-4-yl)-3-methylpentanamide</td>
<td><img src="image" alt="Compound Structure" /></td>
</tr>
<tr>
<td>6d</td>
<td>N-[8-(2-Thienyl)-4-azabicyclo[2.2.1]heptane-3-endo,5-endo-dicarboximide-4-yl] 2-(8-(2-thienyl)-4-azabicyclo[2.2.1]heptane-3-endo,5-endo-dicarboximide-4-yl)-3-methylpentanamide</td>
<td><img src="image" alt="Compound Structure" /></td>
</tr>
</tbody>
</table>
6e  \( N\)-[8-(3-bromomethylphenyl)-4-azabicyclo[2.2.1]heptane-3-\textit{endo},5-\textit{endo}-dicarboximide-4-yl] 2-(8-(3-bromomethylphenyl)-4-azabicyclo[2.2.1]heptane-3-\textit{endo},5-\textit{endo}-dicarboximide-4-yl)-3-methylpentanamide

7a  \( N\)-[8-phenyl-4-azabicyclo[2.2.1]heptane-3-\textit{endo},5-\textit{endo}-dicarboximide-4-yl]-2-(4-azabicyclo[2.2.1]hept-8-ene-3-\textit{endo},5-\textit{endo}-dicarboximide-4-yl)-3-methylpentanamide

8  8-(3,4-difluorophenyl)-4-azabicyclo[2.2.1]heptane-3-\textit{endo},5-\textit{endo}-dicarboximide

9a  \( N\)-[9-phenylethynl-8-phenyl-4-azabicyclo[2.2.1]heptane-3-\textit{endo},5-\textit{endo}-dicarboximide-4-yl]-2-(4-azabicyclo[2.2.1]hept-8-ene-3-\textit{endo},5-\textit{endo}-dicarboximide-4-yl)-3-methylpentanamide

9b  \( N\)-[9-phenylethynl-8-(4-chlorophenyl)-4-azabicyclo[2.2.1]heptane-3-\textit{endo},5-\textit{endo}-dicarboximide-4-yl]-2-(4-azabicyclo[2.2.1]hept-8-ene-3-\textit{endo},5-\textit{endo}-dicarboximide-4-yl)-3-methylpentanamide
Figure S1. FTIR Spectrum of Compound 4 (ATR).

Figure S2. $^1$H NMR Spectrum of Compound 4 (CDCl$_3$).
Figure S3. APT Spectrum of Compound 4 (CDCl₃).

Figure S4. GC-MS Spectrum of Compound 4.
Figure S5. FTIR Spectrum of Compound 5 (ATR).

Figure S6. $^1$H NMR Spectrum of Compound 5 (CDCl$_3$).
Figure S7. APT Spectrum of Compound 5 (CDCl₃).

Figure S8. QTof Spectrum of Compound 5.
Figure S9. FTIR Spectrum of Compound 6a (ATR).

Figure S10. $^1$H NMR Spectrum of Compound 6a (CDCl$_3$).
**Figure S11.** APT Spectrum of Compound 6a (CDCl$_3$).

**Figure S12.** QTof Spectrum of Compound 6a.
Figure S13. FTIR Spectrum of Compound 6b (ATR).

Figure S14. $^1$H NMR Spectrum of Compound 6b (CDCl$_3$).
Figure S15. APT Spectrum of Compound 6b (CDCl₃).

Figure S16. QTof Spectrum of Compound 6b.
**Figure S17.** FTIR Spectrum of Compound 6c (ATR).

**Figure S18.** $^1$H NMR Spectrum of Compound 6c (CDCl$_3$).
**Figure S19.** APT Spectrum of Compound 6c (CDCl₃).

**Figure S20.** QTof Spectrum of Compound 6c.
Figure S21. FTIR Spectrum of Compound 6d (ATR).

Figure S22. $^1$H NMR Spectrum of Compound 6d (CDCl$_3$).
Figure S23. APT Spectrum of Compound 6d (CDCl₃).

Figure S24. QTof Spectrum of Compound 6d.
**Figure S25.** FTIR Spectrum of Compound 6e (ATR).

**Figure S26.** $^1$H NMR Spectrum of Compound 6e (CDCl$_3$).
Figure S27. APT Spectrum of Compound 6e (CDCl₃).

Figure S28. QTof Spectrum of Compound 6e.
Figure S29. FTIR Spectrum of Compound 7a (ATR).

Figure S30. $^1$H NMR Spectrum of Compound 7a (CDCl$_3$).
Figure S31. APT Spectrum of Compound 7a (CDCl₃).

Figure S32. QTof Spectrum of Compound 7a.
Figure S33. FTIR Spectrum of Compound 8 (ATR).

Figure S34. $^1$H NMR Spectrum of Compound 8 (CDCl$_3$).
Figure S35. APT Spectrum of Compound 8 (CDCl₃).

Figure S36. GC-MS Spectrum of Compound 8.
Figure S37. FTIR Spectrum of Compound 9a (ATR).

Figure S38. $^1$H NMR Spectrum of Compound 9a (CDCl$_3$).
Figure S39. APT Spectrum of Compound 9a (CDCl₃).

Figure S40. QTof Spectrum of Compound 9a.
Figure S4.1. FTIR Spectrum of Compound 9b (ATR).

Figure S4.2. $^1$H NMR Spectrum of Compound 9b (CDCl$_3$).
Figure S43. APT Spectrum of Compound 9b (CDCl₃).

Figure S44. QTof Spectrum of Compound 9b.