Microwave-assisted nucleophilic degradation of organophosphate pesticides in Propylene Carbonate

Daniela Millán¹,²*, Mabel Rojas¹, Paulina Pavez¹ and Ricardo A.Tapia¹

¹Facultad de Química. Pontificia Universidad Católica de Chile. Casilla 306, Santiago 6094411, Chile.
²Universidad Bernardo O’Higgins, Laboratorio de Bionanotecnología, General Gana 1702, Santiago, Chile

Table S1: Pseudo-first-order rate constants ($k_{obs}$) and second-order rate constant ($K_2$) for the degradation of pesticides 1-5 in PC at room temperature.

<table>
<thead>
<tr>
<th></th>
<th>10³ $k_{obs}$/min⁻¹</th>
<th></th>
<th>10³ $K_2$/M⁻¹min⁻¹</th>
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<tbody>
<tr>
<td></td>
<td>Bmim[Ala]</td>
<td>Piperidine</td>
<td>Bmim[Ala]</td>
</tr>
<tr>
<td>Malathion (1)</td>
<td>65.1±4.00</td>
<td>70±4</td>
<td>162.7±10</td>
</tr>
<tr>
<td>Fenitrothion (2)</td>
<td>1.60±0.04</td>
<td>30±1</td>
<td>4.0±0.20</td>
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<tr>
<td>Paraoxon (3)</td>
<td>0.58±0.05</td>
<td>--</td>
<td>1.5±0.08</td>
</tr>
<tr>
<td>Diazinon (4)</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Parathion (5)</td>
<td>--</td>
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</tbody>
</table>

--- not reaction observed. Values are mean and standard deviation (±S.D.) of three independent experiments.
**Figure S1:** Stacked $^{31}$P-NMR plot for the reaction of fenitrotion with Bmim[Ala] in propylene carbonate at 25°C.
Figure S2: Stacked $^{31}$P-NMR plot for the reaction of malathion with Bmim[Ala] in propylene carbonate at 25°C.
**Figure S3:** Stacked $^{31}$P-NMR plot for the reaction of paraoxon with Bmim[Ala] in propylene carbonate at 25°C.

**Figure S4:** Stacked $^{31}$P-NMR plot for the reaction of fenitrothion with piperidine in propylene carbonate at 25°C.
**Figure S5:** Stacked $^{31}$P-NMR plot for the reaction of malathion with piperidine in propylene carbonate at $25^\circ$C.

**Figure S6:** ESI-MS/MS(−) of the compound 6 of $m/z$ 157, from a reaction of malathion with piperidine in PC.
Scheme S1: Reaction route to identify product 8

Figure S7: $^{31}$P-NMR plot for product 8 obtained from the reaction of $O,O$-dimethyl chlorothiophosphate with piperidine in PC at 25°C.
Figure S8: Stacked $^{31}$P-NMR plot for the reaction of diazinon with Bmim[Ala] in propylene carbonate at different temperatures under MW heating.

Figure S9: ESI-MS/MS(−) of the compound 4a of $m/z$ 168.9, from a reaction of 4 with piperidine in PC.
**Figure S10**: Stacked $^{31}$P-NMR plot for the reaction of diazinon with piperidine in propylene carbonate at different temperatures under MW heating.

**Figure S11**: Stacked $^{31}$P-NMR plot for the reaction of parathion with Bmim[ALa] in propylene carbonate at different temperatures under MW heating.
Figure S12: Stacked $^{31}$P-NMR plot for the reaction of parathion with piperidine in propylene carbonate at different temperatures under MW heating.
Figure S13: GC-MS chromatogramme and mass spectrum of compound 17b from the reaction of parathion with piperidine in PC.
**Figure S14:** Stacked $^{31}$P-NMR plot for the reaction of paraoxon with piperidine in propylene carbonate at different temperatures under MW heating.

**Figure 15:** Plot log % vs time(min) to obtain observed first-order rate constant $k_{obs}$ for the reaction of fenitrothion with piperidine at 25°C.
Figure 16: Plot log % vs time(min) to obtain observed first-order rate constant $k_{obs}$ for the reaction of malathion with piperidine at 25°C.