AN ESTIMATION OF THE POTENTIAL ACTIVITY OF NEWLY-
SYNTHESIZED ACYCLIC ORGANOPHOSPHOROUS COMPOUNDS

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Aminophosphonates are very important considering their biological activity.
Among them one can find herbicides, pesticides, neuromodulators, inhibitors of
proteases and others. The aminophosphonates investigated in this study are
acyclic compounds with hydrocarbon chains of different lengths substituted at
the nitrogen, carbon and phosphorus atoms. Thus, they included a variety of
compounds of different polarity and lipophilicity. The role of those factors was
determined by their ability to destroy planar lipid membranes (BLMs). The
general structure of the aminophosphonates and their particular substituents are
as follows:

\[
\begin{array}{c}
\text{HN} \\
\text{R}_4 \\
\text{O} \\
\end{array} 
\begin{array}{c}
\text{C} \\
\text{R}_2 \\
\text{R}_1 \\
\text{P} \\
\text{O} \\
\text{R}_3 \\
\end{array} 
\]

<table>
<thead>
<tr>
<th>Compound no.</th>
<th>R₁</th>
<th>R₂</th>
<th>R₃</th>
<th>R₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CH₃</td>
<td>C₃H₇</td>
<td>C₄H₉</td>
<td>C₄H₉</td>
</tr>
<tr>
<td>2</td>
<td>CH₃</td>
<td>CH₃</td>
<td>i-C₃H₇</td>
<td>C₆H₁₇</td>
</tr>
<tr>
<td>3</td>
<td>CH₃</td>
<td>CH₃</td>
<td>C₄H₉</td>
<td>C₁₄H₂₉</td>
</tr>
<tr>
<td>4</td>
<td>CH₃</td>
<td>C₄H₉</td>
<td>i-C₃H₇</td>
<td>C₁₀H₂₁</td>
</tr>
<tr>
<td>5</td>
<td>CH₃</td>
<td>C₄H₉</td>
<td>C₄H₉</td>
<td>C₆H₁₁</td>
</tr>
</tbody>
</table>

It was found that the most active compounds were those with iso-propyl
substituents at their phosphorus atom (compounds 2 and 4). The results
obtained may be helpful in the rational synthesis of new compounds for
biological application as herbicides.

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