

## Phosphorus, Sulfur, and Silicon and the Related Elements

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### Synthesis and Biological Activity of A-Hydroxyphosphonates

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## Synthesis and Biological Activity of $\alpha$ -Hydroxyphosphonates

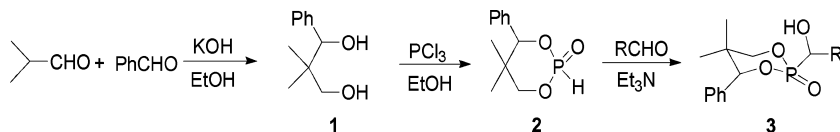
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*Ten  $\alpha$ -hydroxyphosphates were synthesized and the preliminary bioassay indicated that these compounds exhibited certain herbicidal activities.*

**Keywords**  $\alpha$ -hydroxyphosphonates; synthesis; herbicidal activity

Some hydroxyphosphonates and its derivatives have shown good biological and pharmaceutical activities. In continuation of our work, a number of  $\alpha$ -hydroxyphosphonates have been synthesized. **1** and **2** was prepared according to the literature procedures. **2** was reacted with various aldehydes by the Pudovik reaction to form the title compounds **3** in good yields (80–90%). Triethylamine was used as catalyst. The best reaction time was 2–3 h and the temperature was 25°C. All 10 compounds were confirmed by  $^1\text{H}$  NMR, IR and element analysis, and one was examined by the single crystal X-ray diffraction. The results of preliminary bioassay indicated that the title compounds exhibited certain herbicidal activities. Some  $\alpha$ -hydroxyphosphonates and its derivatives have shown good biological and pharmaceutical activities.<sup>1–3</sup> **1** and **2** was prepared according to the literature procedures.<sup>4,5</sup>

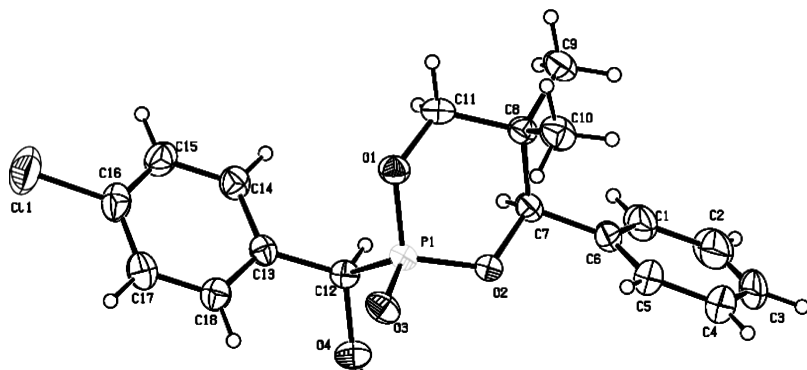


**SCHEME 1**

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R=alkyl, Ph, substituted Ph, Furfuryl



**SCHEME 2**

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