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

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### Apoptosis Induced by a Kind of N -Phosphoryl Branched Dipeptide

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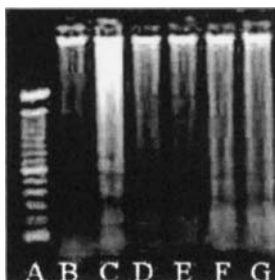
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## APOPTOSIS INDUCED BY A KIND OF N-PHOSPHORYL BRANCHED DIPEPTIDE

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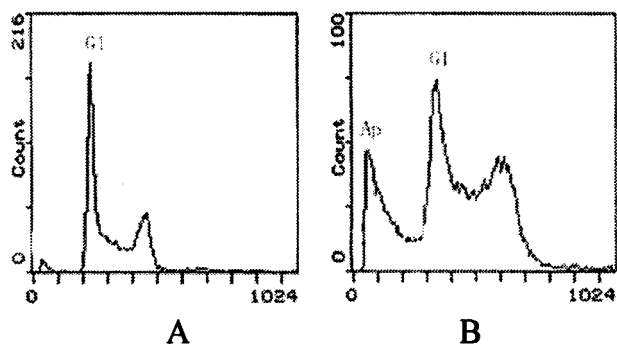
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Phosphorus plays a crucial role in life chemistry.<sup>1</sup> Some N-phosphoryl amino acids and N-phosphoryl peptides have important biological activities.<sup>2,3</sup> Now we synthesize N-phosphoryl leucyl-lysine methyl ester ((DIPP-Leu)<sub>2</sub>-Lys-OCH<sub>3</sub>), a kind of N-phosphoryl branched peptide, that can induce apoptosis in K562 cell lines and its IC<sub>50</sub> is 21.4 μg/ml. Morphologic changes can be observed under the optics microcopy, DNA fragmentation into 180 bps is detected by agarose gel electrophoresis (Figure 1): (A) marker (B) negative ctr. (C) positive ctr: cis-platinum (D-G) (DIPP-Leu)<sub>2</sub>-Lys-OMe of different concentrations: 50, 100, 200, 400 μg/ml and the “Ap” peak which is considered to be the marker of apoptosis can also be seen in flow cytometry (Figure 2): (A) untreated (B) treated with 100 μg/ml of (DIPP-Leu)<sub>2</sub>-Lys-OMe.



**FIGURE 1** Agarose gel electrophoresis of DNA extracted from K562 cells treated with (DIPP-L-Leu)<sub>2</sub>-L-Lys-OCH<sub>3</sub>.

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**FIGURE 2** DNA content frequency histograms of K562 cells treated with (DIPP-L-Leu)2-L-Lys-OCH<sub>3</sub>.

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