

1-*N*-Phenyl-3-aminohydantoin

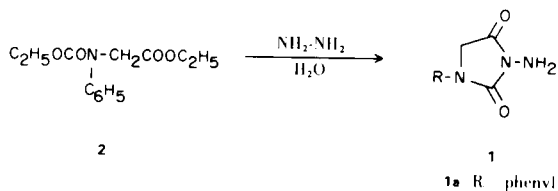
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Received February 1, 1971

Sir:

Although 3-*N*-aminohydantoin (2) and 5-substituted-3-*N*-aminohydantoin (3-6) are known there has been no report of the preparation of a 1-*N*-substituted-3-aminohydantoin 1. We now wish to report a synthesis of a representative of 1, 1-*N*-phenyl-3-aminohydantoin 1a.



Ethyl *N*-phenyl-*N*-carbethoxyglycinate 2 (0.07 mole, 17.5 g.) (7) and 85% hydrazine hydrate (0.07 mole, 3.5 ml.) were heated under reflux in 25 ml. of methanol for one hour. The hydantoin 1a precipitated from the reaction mixture. The flask was cooled and the solid 1a (74%, 10 g.) was collected on the Fuchner funnel and air dried; m.p. 218-219°; ir (nujol) 3448 (N-H), 1770, 1724 (C=O) cm^{-1} ; uv λ max (95% ethanol) 292 $\text{m}\mu$ (ϵ , 1280), 245 $\text{m}\mu$ (ϵ , 6000).

Anal. Calcd. for $\text{C}_9\text{H}_9\text{N}_3\text{O}_2$: C, 56.54; H, 4.74; N, 21.98. Found: C, 56.33; H, 4.89; N, 21.82.

Benzal derivative: m.p. 192-194°; ir (nujol) 1770, 1720 (C=O) cm^{-1} ; uv λ max (95% ethanol) 290 $\text{m}\mu$ (ϵ , 13,200), 250 $\text{m}\mu$ (ϵ , 19,900);

Anal. Calcd. for $\text{C}_{16}\text{H}_{13}\text{N}_3\text{O}_2$: C, 68.81; H, 4.69; N, 15.05. Found: C, 68.65; N, 4.72; N, 14.91.

In contrast to 3-aminohydantoin (8) which decomposes at the melting point, 1a decomposes above 245°.

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