

3-[Benzyl-(1,5-dimethyl-1H-pyrazol-3-ylmethyl)-amino]-propionitrile

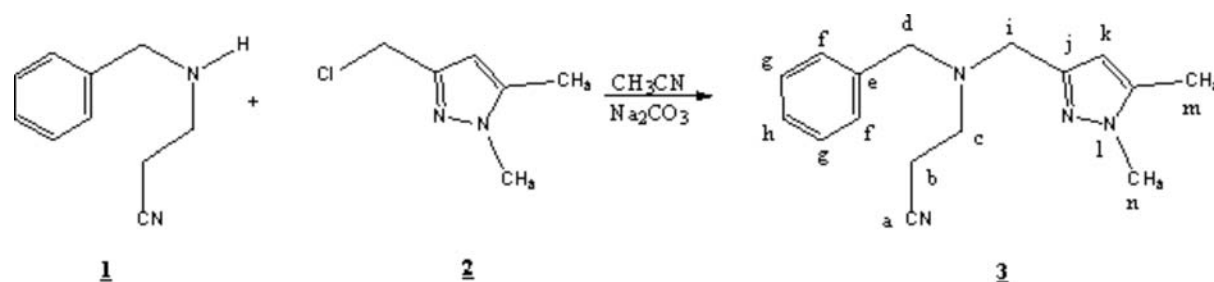
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The products of aza-type *Michael* addition, i.e., β -amino carbonyl compounds and their derivatives, are often used as peptide analogs or precursors of optically active amino acids, amino alcohols, diamines, and lactams [1]. Moreover, β -amino carbonyl functionalities are ubiquitous motifs in natural products such as alkaloids and polyketides [2]. Herein, we report the synthesis of new product using aza-type *Michael* reactions under mild conditions.



To a mixture of 3-chloromethyl-1,5-dimethylpyrazole **1** [3] (0.51 g, 3.53 mmol) and sodium carbonate (1.5 g, 14.12 mmol) in 32 mL of acetonitrile was added slowly 3-(benzylamino)propionitrile **2** [4] (0.56 g, 3.53 mmol). The mixture was stirred at room temperature for four days. The solid material (Na_2CO_3 , NaCl) was filtered and the filtrate was concentrated under reduced pressure to give the title compound **3** as yellow oil (85%).

¹H-NMR (300 MHz, CDCl_3): δ = 7.24–7.40 (CH_{arom} , 5H, m); 6.02 (CH_{pyr} , 1H, s); 3.68 (N-CH_3 , 3H, s); 3.66 ($\text{N-CH}_2\text{-C}$, 2H, s); 3.62 ($\text{C}_6\text{H}_5\text{-CH}_2$, 2H, s); 2.76–2.81 ($\text{CH}_2\text{-CH}_2\text{-CN}$, 2H, t, $J = 7.66$ Hz); 2.42–2.47 (N-CH_2 , t, $J = 7.66$ Hz); 2.24 (CH_3 , 3H, s).

¹³C-NMR (CDCl_3 , 75 MHz): δ = 147.91(j); 139.85(l); 138.93(e); 129.29 and 129.19 (f); 128.79(g); 127.65(h); 119.37(a); 105.64(k); 58.67(d); 51.22(i); 48.82(c); 36.28(n); 16.63(b); 11.64(m).

EI-MS (70 eV, m/z): 228; 173 (2.4); 119; 95(4.7); 91 (37.3).

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