

Short Note

(2*E*)-3-(4-Dimethylaminophenyl)-1-(2,5-dimethylfuran-3-yl)-prop-2-en-1-one

Abdullah M. Asiri ^{1,2,*} and Salman A. Khan ¹

¹ Chemistry Department, Faculty of Science, King Abdul Aziz University, P.O. Box 80203, Jeddah, Saudi Arabia

² The Center of Excellence for Advanced Materials Research, King Abdul Aziz University, Jeddah, P.O. Box 80203, Saudi Arabia

* Author to whom correspondence should be addressed; E-Mail: aasiri2@kau.edu.sa; Tel.: +966 2 6952292; Fax: +966 2 6952292.

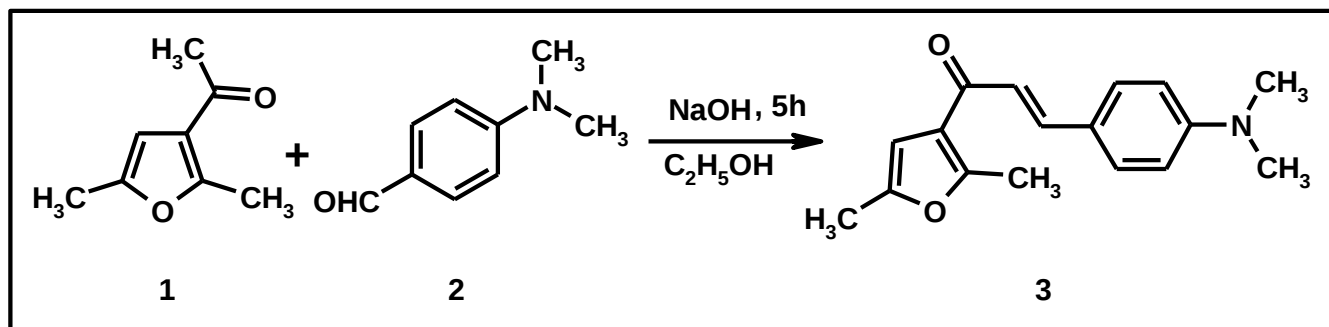
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Abstract: The title compound, (2*E*)-3-(4-dimethylaminophenyl)-1-(2,5-dimethylfuran-3-yl)-prop-2-en-1-one (**3**) was synthesized in high yield by reaction of 3-acetyl-2,5-dimethylfuran and 4-dimethylaminobenzaldehyde in the presence of 30% NaOH solution. The compound was fully characterized from its IR, ¹H NMR, ¹³C NMR, GC-MS data and elemental analysis.

Keywords: chalcone; condensation; 4-dimethylaminobenzaldehyde

Chalcones are characterized by the α,β -unsaturated carbonyl system [1], which is important in elucidating the mechanism of transamination and racemisation reactions in biological systems. Chalcones have been studied as antimalarial [2], antifungal [3], anticancer [4], antioxidant [5], tyrosinase inhibitory [6], antiinflammatory [7] and antibacterial agents [8]. Beyond these very important applications in biological chemistry, chalcones have attracted some attention in the field of material sciences including non-linear optics (NLO) [9], optical limiting [10], electrochemical sensing [11] and Langmuir film [12]. They are also used as intermediates for the formation of various heterocyclic compounds such as pyrimidines, pyrazolines, pyrazoles, thiazines [13]. These observations led us to synthesize a new chalcone from 3-acetyl-2,5-dimethylfuran and 4-dimethylaminobenzaldehyde.

Figure 1. Synthesis of compound (3).



A solution of 3-acetyl-2,5-dimethylfuran (0.46 g, 0.0033 mol) and 4-dimethylaminobenzaldehyde (0.5 g, 0.0033 mol) in an ethanolic solution of NaOH (3.0 g in 10 mL of ethanol) was stirred for 16 h at room temperature. The solution was poured into ice-cold water of pH ~2 (pH adjusted by HCl). The semi-solid separated was collected.

Yellow solid; yield: 86%; semi-solid.

GC-MS m/z (rel. int.%): 270 (58) $[M+1]^+$.

IR (KBr) $\nu_{\max}$ cm⁻¹: 3061 (Ar-H), 2903 (C-H), 1640 (C=O), 1559 (C=C).

¹H NMR (Bruker, 600 MHz, CDCl₃): δ (ppm) 7.63 (d, 2H, J = 8.0 Hz), 6.72 (d, 2H, J = 8.0 Hz), 7.55 (d, 1H, C=CH, J = 15.4 Hz), 7.21 (d, 1H, CH=C, J = 15.4 Hz), 6.74 (s, 1H, Ar-H), 3.17 (s, NCH₃), 3.04 (s, NCH₃), 2.26 (s, CH₃), 2.08 (s, CH₃).

¹³C NMR (150 MHz, CDCl₃): δ (ppm) 184, 156, 152, 150, 142, 130, 124, 122, 123, 119, 112, 113, 105, 40, 39, 14, 13.

Anal. calcd. for C₁₇H₁₉NO₂: C, 75.81, H, 7.11, N, 5.20. Found: C, 75.76, H, 7.09, N, 7.16.

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