**Ethyl 6-formyl-8-methoxy-2-oxo-2H-chromene-4-carboxylate**

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A mixture of vanillin 1 (0.5g, 3.3mmol) and triphenylphosphine (0.86g, 3.3mmol) was dissolved in CH$_2$Cl$_2$. The reaction mixture was cooled in ice bath to -5 ºC. Dimethylacetylenedicarboxylate 2 (0.56g, 3.3mmol) in CH$_2$Cl$_2$ was added dropwise over a period of 10 min under stirring. The reaction mixture was then refluxed for 4-5 hours, the solvent was removed under reduced pressure and the solid mass was purified by recrystallization from ethanol to give the desired product as yellow crystals (0.45g, 50%).

M.p. 118 $^\circ$C (recrystallized from EtOH, uncorrected).

UV $\lambda_{max}$ (nm; EtOH)/$\epsilon$ (dm$^3$.mol$^{-1}$.cm$^{-1}$) 335/15875

IR (cm$^{-1}$, KBr) 2980, 2863 (C-H, aldehydic), 1725 (C=O), 1600 (C=C).

$^1$H-NMR (400 MHz; CDCl$_3$; Me$_4$Si) d$_{H}$ 9.99 (s, 1H, CHO), 8.44 (d, 1H, J = 1.3 Hz, H-3), 7.62 (d, 1H, J=1.3 Hz, H-5), 7.08 (s, 1H, H-7), 4.5 (q, 2H, J = 7.0 Hz, CH$_2$O), 4.02 (s, 3H, CH$_3$O), 1.47 (t, 3H, J = 7.0 Hz, CH$_3$).

$^{13}$C-NMR (100 MHz; CDCl$_3$; Me$_4$Si) d 13.85, 56.22, 62.67, 110.33, 116.29, 120.26, 123.33, 128.19, 132.44, 141.67, 147.83, 158.31, 163.02, 190.31.

Anal.Calc. for C$_{14}$H$_{12}$O$_6$ (276.241): C 60.87, H 4.38; found : C 60.61, H 4.23.
References


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