

Supporting Information for:

A simple and eco-friendly approach for the synthesis of 2-imino and 2-oxo-2*H*-chromene-3-carboxamides

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Table 3 Analytical data for compounds **3**.





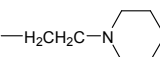
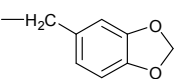
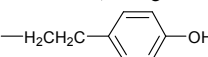

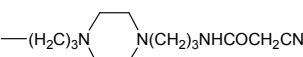
Compd 3	R ₁	R ₂	Elemental analysis	mp (°C)
a			Found: C, 57.52 ; H, 7.68 ; N, 25.46. Calc. For C ₈ H ₁₃ N ₃ O: C, 57.48 ; H, 7.78 ; N, 25.15.	115-117
b			Commercially available	-----
c	H	-CH ₂ CH ₂ OCH ₃	Found: C, 50.63 ; H, 6.97 ; N, 19.44. Calc. For C ₆ H ₁₀ N ₂ O ₂ : C, 50.70 ; H, 7.04 ; N, 19.72.	84-86
d	H	-CH ₂ CH ₂ OH	Found: C, 46.24 ; H, 6.12 ; N, 21.49. Calc. For C ₅ H ₈ N ₂ O ₂ .0.07H ₂ O: C, 46.42 ; H, 6.30 ; N, 21.66.	59-62
e	H	-CH ₂ (CH ₂) ₂ OH	Oil	Oil
f	H	-CH ₂ (CH ₂) ₄ OH	Oil	Oil
g	H	-CH(CH ₂ CH ₃)CH ₂ OH	Found: C, 53.60 ; H, 7.78 ; N, 18.28. Calc. For C ₇ H ₁₂ N ₂ O ₂ : C, 53.85 ; H, 7.69 ; N, 17.95.	91-93
h	H		Found: C, 63.19 ; H, 7.73 ; N, 18.17. Calc. For C ₈ H ₁₂ N ₂ O: C, 63.16 ; H, 7.90 ; N, 18.42.	87-90
i	H		Found: C, 65.8 ; H, 8.22 ; N, 16.63. Calc. For C ₉ H ₁₄ N ₂ O: C, 65.06 ; H, 8.43 ; N, 16.87.	133-135
j	H	-CH ₂ CH(OH)CH ₂ OH	Found: C, 45.44 ; H, 6.26 ; N, 17.73. Calc. For C ₆ H ₁₀ N ₂ O ₃ : C, 45.57 ; H, 6.33 ; N, 17.72.	139-143
k	H	-C(CH ₂ OH) ₃	Found: C, 44.70 ; H, 6.36 ; N, 15.03. Calc. For C ₇ H ₁₂ N ₂ O ₄ : C, 44.68 ; H, 6.38 ; N, 14.89.	84-86
l	H	-CH ₂ CH(Ph)OH	Found: C, 64.77 ; H, 5.99 ; N, 13.46. Calc. For C ₁₁ H ₁₂ N ₂ O ₂ : C, 64.71 ; H, 5.88 ; N, 13.72.	105-107
m	H		Found: C, 60.22 ; H, 8.52 ; N, 20.80. Calc. For C ₁₀ H ₁₇ N ₃ O: C, 60.42 ; H, 8.76 ; N, 21.15.	60-63
n	H		Found: C, 60.60 ; H, 4.59 ; N, 13.03. Calc. For C ₁₁ H ₁₀ N ₂ O ₃ : C, 60.55 ; H, 4.59 ; N, 12.84.	139-142
o	H		Found: C, 64.15 ; H, 6.22 ; N, 13.56. Calc. For C ₁₁ H ₁₂ N ₂ O ₂ .0.15H ₂ O: C, 63.86 ; H, 5.95 ; N, 13.55.	142-144
p	H	-CH ₂ CH(OCH ₂ CH ₃) ₂	Found: C, 53.89 ; H, 8.15 ; N, 14.04. Calc. For C ₉ H ₁₆ N ₂ O ₃ : C, 54.00 ; H, 8.00 ; N, 14.00.	59-61
q	H		Found: C, 66.06 ; H, 8.75 ; N, 11.71. Calc. For C ₁₃ H ₁₈ N ₂ O.H ₂ O: C, 66.10 ; H, 8.47 ; N, 11.86.	215-218
r	H	-(CH ₂) ₂ NHCOCH ₂ CN	Found: C, 49.28 ; H, 5.24 ; N, 28.59. Calc. For C ₈ H ₁₀ N ₄ O ₂ : C, 49.48 ; H, 5.16 ; N, 28.87.	189-191
s	H	-(CH ₂) ₃ NHCOCH ₂ CN	Found: C, 51.83 ; H, 5.79 ; N, 26.84. Calc. For C ₉ H ₁₂ N ₄ O ₂ : C, 51.92 ; H, 5.77 ; N, 26.92.	166-168
t	H		Found: C, 56.67 ; H, 7.80 ; N, 24.52. Calc. For C ₁₆ H ₂₆ N ₆ O ₂ .0.25H ₂ O: C, 56.72 ; H, 7.83 ; N, 24.82.	168-171
u	H	-(CH ₂) ₃ O(CH ₂) ₄ O(CH ₂) ₃ NHCOCH ₂ CN	Found: C, 56.32 ; H, 7.69 ; N, 16.50. Calc. For C ₁₆ H ₂₆ N ₄ O ₂ .0.16H ₂ O: C, 56.32 ; H, 7.72 ; N, 16.43.	99-102

Table 4 Analytical data for compounds **5** and **6**.

Compound 4		Compound 3	Product 5	Product 6		
R ₃	R ₄		Elemental analysis	Elemental analysis		
			mp (°C)	mp (°C)		
H	OCH ₃	3c	Found: C, 60.34 ; H, 5.74 ; N, 10.08. Calc. For C ₁₄ H ₁₆ N ₂ O ₄ .0.1H ₂ O: C, 60.48 ; H, 5.76 ; N, 10.08.	159-161	-	-
H	OCH ₃	3d	Found: C, 59.35 ; H, 5.46 ; N, 10.82. Calc. For C ₁₃ H ₁₄ N ₂ O ₄ : C, 59.54 ; H, 5.34 ; N, 10.69.	160-162	-	-
H	OCH ₃	3e	Found: C, 58.75 ; H, 5.89 ; N, 9.61. Calc. For C ₁₄ H ₁₆ N ₂ O ₄ .0.5H ₂ O: C, 58.95 ; H, 5.96 ; N, 9.82.	132-134	-	-
H	OCH ₃	3f	Found: C, 63.19 ; H, 6.46 ; N, 8.79. Calc. For C ₁₆ H ₂₀ N ₂ O ₄ .0.01H ₂ O: C, 62.97 ; H, 6.62 ; N, 9.18.	122-125	-	-
H	OCH ₃	3g	Found: C, 60.48 ; H, 6.16 ; N, 9.13. Calc. For C ₁₅ H ₁₈ N ₂ O ₄ .0.4H ₂ O: C, 60.56 ; H, 6.33 ; N, 9.42.	147-150	-	-
H	OCH ₃	3h	Found: C, 67.02 ; H, 6.34 ; N, 10.10. Calc. For C ₁₆ H ₁₈ N ₂ O ₃ : C, 67.13 ; H, 6.29 ; N, 9.79.	128-130	-	-
H	OCH ₃	3i	Found: C, 64.20 ; H, 7.06 ; N, 9.17. Calc. For C ₁₇ H ₂₀ N ₂ O ₃ .0.9H ₂ O: C, 64.52 ; H, 6.89 ; N, 8.86.	101-103	-	-
H	OCH ₃	3j	Found: C, 54.24 ; H, 5.73 ; N, 8.76. Calc. For C ₁₄ H ₁₆ N ₂ O ₅ .H ₂ O: C, 54.19 ; H, 5.81 ; N, 9.03.	92-95	Found: C, 57.36 ; H, 5.42 ; N, 5.05. Calc. For C ₁₄ H ₁₅ NO ₆ : C, 57.34 ; H, 5.12 ; N, 4.78.	188-189
H	OCH ₃	3k	Found: C, 55.48 ; H, 5.54 ; N, 8.39. Calc. For C ₁₅ H ₁₈ N ₂ O ₆ .0.1H ₂ O: C, 55.59 ; H, 5.62 ; N, 8.65.	201-293	-	-
H	OCH ₃	3l	Found: C, 67.05 ; H, 5.42 ; N, 8.14. Calc. For C ₁₉ H ₁₈ N ₂ O ₄ .0.1H ₂ O: C, 67.10 ; H, 5.36 ; N, 8.24.	159-160	-	-
H	OCH ₃	3n	Found: C, 63.85 ; H, 4.82 ; N, 8.10. Calc. For C ₁₉ H ₁₆ N ₂ O ₅ .0.2H ₂ O: C, 64.12 ; H, 4.61 ; N, 7.87.	236-238	-	-
H	OCH ₃	3o	Found: C, 67.27 ; H, 5.28 ; N, 7.96. Calc. For C ₁₉ H ₁₈ N ₂ O ₄ : C, 67.46 ; H, 5.32 ; N, 8.28.	156-158	-	-
H	OCH ₃	3p	Found: C, 57.49 ; H, 6.96 ; N, 8.09. Calc. For C ₁₇ H ₂₂ N ₂ O ₅ 1.1H ₂ O: C, 57.66 ; H, 6.84 ; N, 7.91.	101-103	Found: C, 60.28 ; H, 6.52 ; N, 4.57. Calc. For C ₁₇ H ₂₁ NO ₆ .0.2NH ₃ : C, 60.28 ; H, 6.38 ; N, 4.96.	104-105
H	OCH ₃	3s	Found: C, 60.95 ; H, 5.27 ; N, 11.30. Calc. For C ₂₅ H ₂₄ N ₄ O ₆ .0.9H ₂ O: C, 60.95 ; H, 5.24 ; N, 11.38.	201-203	-	-
H	OCH ₃	3t	Found: C, 60.99 ; H, 6.69 ; N, 13.63. Calc. For C ₃₂ H ₃₈ N ₆ O ₆ .1.5H ₂ O: C, 61.05 ; H, 6.52 ; N, 13.35.	167-169	-	-
H	OCH ₃	3u	Found: C, 60.91 ; H, 6.62 ; N, 9.16. Calc. For C ₃₂ H ₃₈ N ₄ O ₈ .1.3H ₂ O: C, 61.01 ; H, 6.45 ; N, 8.90.	69-72	-	-
H	OH	3j	-	-	Found: C, 55.52 ; H, 4.74 ; N, 4.92. Calc. For C ₁₃ H ₁₃ NO ₆ : C, 55.91 ; H, 4.66 ; N, 5.02.	200-202
H	H	3c	Found: C, 63.31 ; H, 5.71 ; N, 11.24. Calc. For C ₁₃ H ₁₄ N ₂ O ₃ : C, 63.39 ; H, 5.74 ; N, 11.38.	91-94	Found: C, 63.03 ; H, 5.33 ; N, 5.74. Calc. For C ₁₃ H ₁₃ NO ₄ : C, 63.14 ; H, 5.31 ; N, 5.67.	118-122
H	H	3g	Found: C, 64.01 ; H, 6.17 ; N, 10.45. Calc. For C ₁₄ H ₁₆ N ₂ O ₃ .0.1H ₂ O: C, 64.09 ; H, 6.18 ; N, 10.45.	94-98	Found: C, 64.13 ; H, 5.69 ; N, 5.31. Calc. For C ₁₄ H ₁₅ NO ₄ : C, 64.35 ; H, 5.80 ; N, 5.36.	119-123
H	H	3j	-	-	Found: C, 59.00 ; H, 4.97 ; N, 5.34. Calc. For C ₁₃ H ₁₃ NO ₅ : C, 59.30 ; H, 4.99 ; N, 5.32.	178-182
H	H	3t	-	-	Found: C, 57.53 ; H, 6.42 ; N, 9.65. Calc. For C ₃₀ H ₃₂ N ₄ O ₆ .0.4NH ₃ .4H ₂ O: C, 57.86 ; H, 6.62 ; N, 9.90.	193-199
Cl	H	3c	Found: C, 55.36 ; H, 4.86 ; N, 10.04. Calc. For C ₁₃ H ₁₃ N ₂ O ₃ Cl: C, 55.62 ; H, 4.63 ; N, 9.98.	163-166	-	-
Cl	H	3j	-	-	Found: C, 52.15 ; H, 4.20 ; N, 4.95. Calc. For C ₁₃ H ₁₂ NO ₃ Cl: C, 52.44 ; H, 4.03 ; N, 4.71.	184-186
Cl	H	3g	Found: C, 55.91 ; H, 4.91 ; N, 9.09. Calc. For C ₁₄ H ₁₅ N ₂ O ₃ Cl.0.3H ₂ O: C, 56.02 ; H, 5.20 ; N, 9.34.	105-107	-	-
Br	H	3c	Found: C, 47.84 ; H, 3.93 ; N, 8.56. Calc. For C ₁₃ H ₁₃ N ₂ O ₃ .Br: C, 48.02 ; H, 4.00 ; N, 8.62.	176-178	Found: C, 47.74 ; H, 3.53 ; N, 4.47. Calc. For C ₁₃ H ₁₂ NO ₄ .Br: C, 47.87 ; H, 3.68 ; N, 4.30.	203-205
Br	H	3j	-	-	Found: C, 45.31 ; H, 3.64 ; N, 4.36. Calc. For C ₁₃ H ₁₂ NO ₅ .Br: C, 45.64 ; H, 3.51 ; N, 4.09.	189-191
Br	H	3l	-	-	Found: C, 55.84 ; H, 3.79 ; N, 4.02. Calc. For C ₁₈ H ₁₄ NO ₄ .Br: C, 55.68 ; H, 3.61 ; N, 3.61.	178-181
Br	H	3p	Found: C, 49.75 ; H, 4.89 ; N, 7.33. Calc. For C ₁₆ H ₁₉ N ₂ O ₄ .Br.0.01H ₂ O: C, 49.91 ; H, 4.99 ; N, 7.28.	138-141	-	-