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Synthesis of Functionalized Arenopyrans and Arenylsulfanes via Reaction of Nitroallylic Acetates with Arenols and Arenethiols

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We have noticed several errors in our previous manuscript[1] and would like to provide corrections:

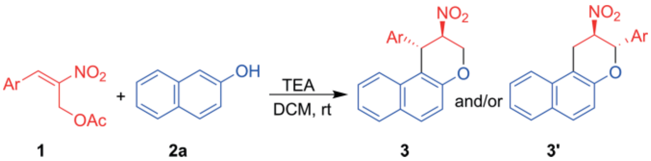
1. Abstract, line 5: “involving an S_N2' reaction“ should read “involving an S_N2/S_N2' reaction”

2. Page 2, column 2, paragraph 2: The description of entries 3–6 in Table 2 should read:

Besides dihydronaphthopyran **3a** bearing a furyl group which was synthesized in excellent yield (86 %, entry 1), dihydronaphthopyran **3b** was synthesized in moderate yield by treating β-naphthol **2a** with appropriate MBH acetate **1b** (entry 2). In the case of MBH acetates **1c**–**f**, a reversal of regioselectivity leading to S_N2 products **3′** as the major or exclusive products was observed (entries 3–6). In the case of **1c** and **1d**, the minor S_N2' products (< 20 %) **3c** and **3d**, respectively, could be isolated and characterized (entries 3–4).

Moreover, the reaction in Table 2 and footnote are updated:

Table 2. Scope of MBH-acetate.[a]



Entry	Ar	1	Time /h	% Yield (**3**)[b]	% Yield (**3′**)[b]
1	2-Furyl	**1a**	12	86[c]	–
2	4-OMeC_6H_4	**1b**	2.5	61[d]	–[e]
3	4-MeC_6H_4	**1c**	10	15	53[d]
4	C_6H_5	**1d**	9	18	50[d]
5	3-OMeC_6H_4	**1e**	4	–[e]	36[d]
6	3,4-(OCH_2O)-C_6H_3	**1f**	4	–[e]	48[d]
7	2-$NO_2C_6H_4$	**1g**	9	–[f]	–[f]
8	4-Br-C_6H_4	**1h**	6	–[f]	–[f]
9	4-Cl-C_6H_4	**1i**	6	–[f]	–[f]

[a] 2-Naphthol **2a** (0.36 mmol), MBH-acetate **1** (0.4 mmol, 1.1 equiv.), NEt_3 (1.08 mmol, 3 equiv.) in DCM (6 mL). [b] After silica gel column chromatography, *dr* ≥ 95:05 (*trans*/*cis*) except in the case of **3a**. [c] *dr* = 90:10 (*trans*/*cis*). [d] 5–10 % of 2-naphthol was recovered. [e] Formation 10–20 % of this regioisomer was observed which could not be isolated in pure form.[f] Complex mixture.

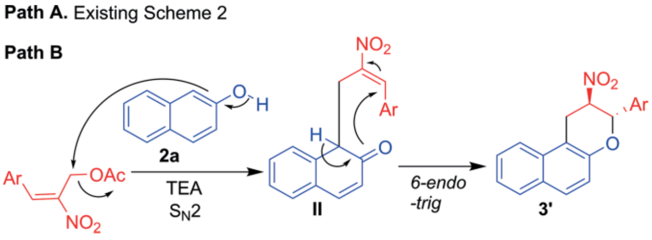
3. Page 4, column 2, paragraph 1, line 5: Scheme 2 should read:

Scheme 2, Path A,

followed by the sentence:

In the alternative pathway (Path B), the carbon-centred nucleophile reacts with the hard centre of the electrophile in an S_N2 fashion.

In addition, **Path B** should be added to the original Scheme 2 as follows:



Scheme 2. Proposed mechanistic outline for the formation of arenopyrans.

4. Experimental Section

Following are the experimental data for minor products **3c** and **3d** (Table 2, Entries 3–4):

2-Nitro-1-(*p*-tolyl)-2,3-dihydro-1*H*-benzo[*f*]chromene (3c): Pinkish white solid; yield 10 mg, 15 %; m.p. 61–63 °C; IR (neat, cm^{-1}) 2923 (w), 1625 (w), 1551 (s), 1511 (w), 1470 (w), 1355 (w), 1241 (m), 1226 (m), 815 (m), 747 (m); ^1H (500 MHz, $CDCl_3$) δ = 7.76–7.78 (m, 1H), 7.74 (d, J = 9.0 Hz, 1H), 7.48–7.51 (m, 1H), 7.30–7.33 (m, 2H), 7.09–7.16 (m, 5H), 5.45–5.47 (unresolved m, 1H), 4.89 (dt, J = 12.3, 2.0 Hz, 1H), 4.84–4.86 (m, 1H), 4.35 (dd, J = 12.3, 1.6 Hz, 1H), 2.31 (s, 3H); ^{13}C NMR ($CDCl_3$, 125 MHz) δ = 21.2, 40.1, 61.7, 84.1, 111.0, 118.5, 123.0, 124.0, 127.1, 128.6, 128.8, 129.9, 130.1, 130.2, 132.4, 137.8, 138.7, 151.6; HRMS (ES+) cacld for $C_{20}H_{17}NO_3Na$ (MNa^+) 342.1101, found 342.1106.

2-Nitro-1-phenyl-2,3-dihydro-1*H*-benzo[*f*]chromene (3d):[28] Pinkish white solid; yield 11 mg, 18 %; m.p. 132–134 °C (lit[28] Not reported); IR (neat, cm^{-1}) 2922 (w), 1625 (m), 1551 (s), 1470 (w), 1355 (w), 1226 (m), 747 (m), 704 (m); ^1H (500 MHz, $CDCl_3$) δ = 7.77–7.79 (m, 1H), 7.75 (d, J = 9.0 Hz, 1H), 7.46–7.50 (m, 1H), 7.32–7.35 (m, 2H), 7.31 (t, J = 3.2 Hz, 2H), 7.27–7.30 (m, 1H), 7.21–7.23 (m, 2H), 7.15 (d, J = 9.0 Hz, 1H), 5.50–5.51 (unresolved m, 1H), 4.90 (dt, J =

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12.0, 2.2 Hz, 1H), 4.87–4.89 (m, 1H), 4.36 (dd, *J* = 12.0, 1.2 Hz, 1H); ^{13}C NMR ($CDCl_3$, 125 MHz) δ = 40.5, 61.7, 84.0, 110.8, 118.5, 123.0, 124.0, 127.1, 128.0, 128.7, 128.8, 129.5, 130.0, 130.1, 132.3, 141.7, 151.7.

The Authors

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