Supporting Information

Indium-catalyzed Addition of Active Methylene Compounds to 1-Alkynes

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General. All reactions were carried out in a dry reaction vessel under argon or nitrogen atmosphere unless otherwise noted. Flash column chromatography was performed with silica gel 60 (spherical, neutral, 140-325 mesh). All ¹H NMR spectra (400 MHz) and ¹³C NMR spectra (100 MHz) were measured on a JEOL AL-400 for a CDCl₃ solution in the presence of tetramethylsilane as an internal standard and reported in ppm (δ). IR spectra recorded on a React IR 1000 Reaction Analysis System equipped with DuraSample IR (ASI Applied System) are reported in cm⁻¹. Anhydrous tetrahydrofuran (THF) was purchased from Kanto Chemical Co. and degassed and dried over molecular sieves in a storage flask. The water content of the solvent was confirmed with a Karl-Fischer Moisture Titrator (MKC-210, Kyoto Electronics Company) to be less than 10 ppm.

Materials. Unless otherwise noted, materials were purchased from Tokyo Kasei Co., Aldrich Inc., and other commercial suppliers and were used after appropriate purification (distillation or recrystallization) before use. In(OTf)₃ was purchased from Aldrich Inc. and used as it was.

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Screening of the metal triflates for the alkenylation reaction of ethyl 2-methyl-3-oxobutanoate with phenylacetylene.

Table 1

entry	metal triflate	product yield (%) ^a
1	Mg(OTf) ₂	not detected
2	CuOTf	not detected
3	Cu(OTf) ₂	not detected
4	Sc(OTf) ₃	not detected
5	La(OTf) ₃	not detected
6	Nd(OTf) ₃	not detected
7	Dy(OTf) ₃	not detected
8	Ho(OTf) ₃	not detected
9	Yb(OTf) ₃	not detected
10	Lu(OTf) ₃	not detected
11	Sn(OTf) ₂	trace
12	Zn(OTf) ₂	not detected
13	Hg(OTf) ₂	3
14	Ga(OTf) ₃	14
15	In(OTf) ₃	100

^aThe Product yield was determined by the analysis of ¹H NMR with an internal standard (bromoform).

As shown in the table 1, the coupling reactions of ethyl 2-methyl-3-oxobutanoate and phenyl acetylene were carried out with 0.5-mol% amount of a metal triflate under the conditions shown above. The yields were determined by the analysis of ¹H NMR spectra with an internal standard (bromoform). In(OTf)₃ showed the highest reactivity for the alkenylation reaction among the metal triflates examined (Entry 15).

A representative procedure for the alkenylation reaction at a 0.1-mol scale

A 0.025-M THF solution of In(OTf)₃ (2.0 mL, 28.1 mg, 0.05 mol%) was added to an oven-dried round bottomed flask under an argon atmosphere and the solvent was removed *in vacuo* with

careful heating below 60 °C. Ethyl 2-methyl-3-oxobutanoate (100 mmol, 14.5 mL, 14.5 g) and phenylacetylene (120 mmol, 13.2 mL, 12.3 g, 1.2 eq) were added to the reaction vessel. The reaction mixture was stirred at 140 °C for 10 hours. Following bulb-to-bulb distillation (120 °C at 6.7 Pa) from the reaction vessel gave the alkenylation product (22.7 g, 92 %).

A representative procedure of the alkenylation of β -ketoesters (4 mmol scale) and physical properties of the alkenylated β -ketoesters

Ethyl 2-acetyl-2-methyl-3-phenyl-3-butenate

A THF solution of In(OTf)₃ (0.01 M, 200 μ L, 1.124 mg, 0.05 mol%) was added to a dried reaction vessel under argon atmosphere. Then THF was removed in vacuo with careful heating below 60 °C. Ethyl 2-methyl-3-oxobutanoate (4 mmol, 576 μ L, 576 mg) and phenylacetylene (4.8 mmol, 527 μ L, 490 mg, 1.2 eq.) were added to the reaction vessel. The reaction mixture was stirred at 140 °C for 10 hours and then cooled to room temperature. Flash column chromatography (silica gel 20 g, eluent; hexane/ethyl acetate = 95/5) of the reaction mixture gave the alkenylation product in 99 % yield (973.3 mg); ¹H NMR (CDCl₃, 400 MHz) δ 1.20 (t, *J* = 7.2 Hz, 3H, OCH₂CH₃), 1.52 (s, 3H, CCH₃), 2.29 (s, 3H, COCH₃), 4.18 (m, 2H, OCH₂CH₃), 5.28 (s, 1H, CC=CHH), 5.44 (s, 1H, CC=CHH) 7.18-7.31 (m, 5H, arom); ¹³C NMR (CDCl₃, 100 MHz) δ 13.8, 21.8, 27.2, 61.5, 65.8, 118.7, 127.5, 127.7 (2C), 128.0 (2C), 140.3, 147.9, 171.7, 205.2; IR (cm⁻¹) 2987, 1710, 1239, 1092, 1021, 915; Anal. Calcd. for C₁₅H₁₈O₃: C, 73.15; H, 7.37. Found: C, 73.32; H, 7.46.

Ethyl 2-acetyl-2-methyl-3-(4-trifluoromethylphenyl)-3-butenate

¹H NMR (CDCl₃, 400 MHz) δ 1.19 (t, *J* = 7.2 Hz, 3H, OCH₂CH₃), 1.54 (s, 3H, CCH₃), 2.28 (s, 3H, COCH₃), 4.16 (m, 2H, OCH₂CH₃), 5.37 (s, 1H, CC=CHH), 5.46 (s, 1H, CC=CHH), 7.31 (d, *J* = 8 Hz, 2H, arom), 7.54 (d, *J* = 8 Hz, 2H, arom); ¹³C NMR (CDCl₃, 100 MHz) δ 13.5, 21.0, 26.9, 61.5, 65.5,

119.9, 124.9 (q, $^3J_{C-F}$ = 4 Hz, 2C), 125.3 (q, $^1J_{C-F}$ = 270 Hz), 127.9 (2C), 129.5 (q, $^2J_{C-F}$ = 32 Hz), 144.2, 146.8, 171.3, 204.4; IR (cm $^{-1}$) 2989, 1713, 1324, 1243, 1165, 1111, 1065, 1017, 849; Anal. Calcd. for C₁₆H₁₇F₃O₃: C, 61.14; H, 5.45; F, 18.13; O, 15.27. Found: C, 61.16; H, 5.59.

Ethyl 2-acetyl-2-methyl-3-(4-methoxycarbonylphenyl)-3-butenate

^1H NMR (CDCl₃, 400 MHz) δ 1.19 (t, J = 7.2 Hz, 3H, OCH₂CH₃), 1.53 (s, 3H, CCH₃), 2.28 (s, 3H, COCH₃), 3.91 (s, 3H, PhCO₂CH₃), 4.13-4.18 (m, 2H, OCH₂CH₃), 5.35 (s, 1H, CC=CHH), 5.48 (s, 1H, CC=CHH), 7.27 (d, J = 9.6 Hz, 2H, arom), 7.95 (d, J = 8.4 Hz, 2H, arom); ^{13}C NMR (CDCl₃, 100 MHz) δ 13.8, 21.2, 27.1, 51.9, 61.6, 65.5, 119.7, 127.7 (2C), 129.1, 129.2 (2C), 144.9, 147.1, 166.4, 171.2, 204.4; IR (cm $^{-1}$) 2989 1713, 1609, 1436, 1275, 1241, 1185, 1106, 1019, 967, 920, 863 782, 716; Anal. Calcd. for C₁₇H₂₀O₅: C, 67.09; H, 6.62; O, 26.29. Found: C, 66.86; H, 6.82.

Ethyl 2-acetyl-2-methyl-3-(4-methoxyphenyl)-3-butenate

^1H NMR (CDCl₃, 400 MHz) δ 1.22 (t, J = 7.2 Hz, 3H, OCH₂CH₃), 1.51 (s, 3H, CCH₃), 2.27 (s, 3H, COCH₃), 3.79 (s, 3H, PhOCH₃), 4.18 (q, J = 7.2 Hz, 2H, OCH₂CH₃), 5.21 (s, 1H, CC=CHH), 5.38 (s, 1H, CC=CHH), 6.79-6.82 (m, 2H, arom), 7.11-7.13 (m, 2H arom); ^{13}C NMR (CDCl₃, 100 MHz) δ 13.9, 21.3, 27.4, 55.2, 61.5, 65.9, 113.4 (2C), 117.8, 128.9 (2C), 132.6, 147.4, 158.9, 171.7, 205.6; IR (cm $^{-1}$) 2987, 1710, 1607, 1511, 1241, 1181, 1092, 1028, 835; Anal. Calcd. for C₁₆H₂₀O₄: C, 69.54; H, 7.30; O, 23.16. Found: C, 69.43; H, 7.48.

Ethyl 2-acetyl-2-methyl-3-methylene-nonanoate

^1H NMR (CDCl_3 , 400 MHz) δ 0.883 (t, $J = 7.2$ Hz, 3H, $\text{CH}_2\text{CH}_2\text{CH}_3$), 1.24-1.33 (m, 9 H, OCH_2CH_3 , $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$), 1.31-1.51 (m, 2H, $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$), 1.50 (s, 3H, CCH_3), 1.98-2.04 (m, 2H, $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$), 2.22 (s, 3H, CH_3CO), 4.18-4.24 (m, 2H, OCH_2CH_3), 4.99 (s, 1H, $\text{CC}=\text{CHH}$), 5.13 (t, $J = 1.6$ Hz, 1H, $\text{CC}=\text{CHH}$); ^{13}C NMR (CDCl_3 , 100 MHz) δ 13.8, 13.9, 19.6, 22.5, 26.9, 28.3, 29.1, 31.6, 32.7, 61.2, 66.3, 112.9, 147.3, 171.8, 205.3; IR (cm^{-1}) 2931, 1713, 1355, 1245, 1119, 1092, 1023; Anal. Calcd. for $\text{C}_{15}\text{H}_{26}\text{O}_3$: C, 70.83; H, 10.30. Found: C, 70.88; H, 10.42.

Ethyl 2-acetyl-2-methyl-3-methylene-4-benzyloxy-butanoate

^1H NMR (CDCl_3 , 400 MHz) δ 1.24 (t, $J = 7.2$ Hz, 3H, OCH_2CH_3), 1.56 (s, 3H, CCH_3), 2.22 (s, 3H, COCH_3), 4.09 (s, 2H, $\text{C}=\text{CH}_2\text{O}$), 4.16 (q, $J = 7.2$ Hz, 2H, OCH_2CH_3), 4.47 (s, 2H, PhCH_2O), 5.16 (s, 1H, $\text{CC}=\text{CHH}$), 5.46 (t, $J = 1.2$ Hz, 1H, $\text{CC}=\text{CHH}$), 7.26-7.34 (m, 5H arom); ^{13}C NMR (CDCl_3 , 100 MHz) δ 13.9, 19.7, 27.0, 61.4, 63.9, 71.4, 72.5, 116.5, 127.6 (2C), 128.3 (3C), 137.9, 143.7, 171.5, 204.8; IR (cm^{-1}) 2943, 1711, 1455, 1355, 1243, 1090, 1075, 1021, 916; Anal. Calcd. for $\text{C}_{17}\text{H}_{22}\text{O}_4$: C, 70.32; H, 7.64. Found: C, 70.10; H, 7.52.

Ethyl 2-acetyl-2-methyl-3-methylene-7-methoxy-heptanoate

^1H NMR (CDCl_3 , 400 MHz) δ 1.28 (t, $J = 7.2$ Hz, 3H, OCH_2CH_3), 1.51 (s, 3H, CCH_3), 1.51-1.60 (m, 4H, $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OCH}_3$), 1.99-2.05 (m, 2H, $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OCH}_3$), 2.21 (s, 3H, COCH_3), 3.32 (s, 3H, $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OCH}_3$), 3.38 (distorted t, $J = 6$ Hz, 2H, $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OCH}_3$), 4.18-4.24 (m, 2H, OCH_2CH_3), 5.00 (s, 1H, $\text{CC}=\text{CHH}$), 5.14 (s, 1H, $\text{CC}=\text{CHH}$); ^{13}C NMR (CDCl_3 , 100 MHz) δ 13.9, 19.7, 24.9, 27.0, 29.4, 32.5, 58.5, 61.3, 66.3, 72.5, 113.2, 146.8, 171.6, 205.2; IR (cm^{-1}) 2939, 1713, 1449, 1355, 1243, 1115, 1092, 1021, 901; Anal. Calcd. for $\text{C}_{14}\text{H}_{24}\text{O}_4$: C, 65.60; H, 9.44; O, 24.97. Found: C, 65.41; H, 9.62.

Ethyl 2-acetyl-2-methyl-3-(1-hexenyl)-3-butenate

^1H NMR (CDCl_3 , 400 MHz) δ 1.25-1.29 (m, 3H, OCH_2CH_3), 1.53 (s, 3H, CCH_3), 1.52-1.65 (m, 4H, $-\text{C}=\text{CHCH}_2\text{CH}_2\text{CH}_2\text{CH}_2-$), 2.04-2.07 (m, 4H, $-\text{C}=\text{CHCH}_2\text{CH}_2\text{CH}_2\text{CH}_2-$), 2.28 (s, 3H, COCH_3), 4.17-4.23 (m, 2H, OCH_2CH_3), 4.93 (s, 1H, $\text{CC}=\text{CHH}$), 5.25 (s, 1H, $\text{CC}=\text{CHH}$), 5.55-5.60 (m, 1H, $-\text{C}=\text{CHCH}_2\text{CH}_2\text{CH}_2\text{CH}_2-$); ^{13}C NMR (CDCl_3 , 100 MHz) δ 13.9, 20.9, 21.8, 22.8, 25.5, 27.4, 28.3, 61.3, 65.3, 114.6, 126.5, 136.5, 149.7, 172.0, 206.1; IR (cm^{-1}) 2933, 1711, 1449, 1355, 1235, 1111, 1090, 1023, 907, 855, 807; Anal. Calcd. for $\text{C}_{15}\text{H}_{22}\text{O}_3$: C, 71.97; H, 8.86; O, 19.17. Found: C, 72.01; H, 8.84.

Ethyl 2-acetyl-2-benzyl-3-methylene-7-methoxy-heptanoate

^1H NMR (CDCl_3 , 400 MHz) δ 1.13 (t, $J = 7.2$ Hz, 3H, OCH_2CH_3), 1.46-1.59 (m, 4H, $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OCH}_3$), 1.84-1.88 (m, 1H, $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OCH}_3$), 2.07-2.16 (m, 1H, $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OCH}_3$), 2.16 (s, 3H, COCH_3), 3.10 (d, $J = 13.6$ Hz, 1H, PhCH_2), 3.34 (s, 3H, $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OCH}_3$), 3.35 (distorted t, $J = 12$ Hz, 2H, $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OCH}_3$), 3.58 (d, $J = 13.6$ Hz, 1H, PhCH_2), 3.98-4.07 (m, 2H, OCH_2CH_3), 5.21 (brs, 1H, $\text{CC}=\text{CHH}$), 5.22 (distorted t, $J = 3.6$ Hz, 1H, $\text{CC}=\text{CHH}$), 7.13-7.26 (m, 5H, arom); ^{13}C NMR (CDCl_3 , 100 MHz) δ 13.8, 24.8, 28.1, 29.4, 32.5, 39.7, 58.5, 61.0, 71.9, 72.5, 115.1, 126.5, 127.8 (2C), 130.2 (2C), 137.0, 145.3, 170.0, 203.3; IR (cm^{-1}) 2937, 1713, 1455, 1355, 1260, 1221, 1177, 1117, 1082, 1054, 1034, 907, 700; Anal. Calcd. for $\text{C}_{20}\text{H}_{28}\text{O}_4$: C, 72.26; H, 8.49; O, 19.25. Found: C, 72.01; H, 8.60.

Ethyl 2-benzoyl-2-methyl-3-methylene-7-methoxy-heptanoate

^1H NMR (CDCl_3 , 400 MHz) δ 1.09 (t, $J = 7.2$ Hz, 3H, OCH_2CH_3), 1.55-1.57 (m, 4H,

CH₂CH₂CH₂CH₂OCH₃), 1.70 (s, 3H, CCH₃), 2.14-2.19 (m, 2H, CH₂CH₂CH₂CH₂OCH₃), 3.29 (s, 3H, CH₂CH₂CH₂CH₂OCH₃), 3.34 (distorted t, *J* = 12 Hz, 2H, CH₂CH₂CH₂CH₂OCH₃), 4.11-4.14 (m, 2H, OCH₂CH₃), 5.18 (t, *J* = 1.6 Hz, 1H, CC=CHH) 5.22 (brs, 1H, CC=CHH), 7.26-7.39 (m, 2H, arom), 7.47-7.49 (m, 1H, arom), 7.87-7.89 (m, 2H, arom); ¹³C NMR (CDCl₃, 100 MHz) δ 13.7, 22.7, 25.1, 29.4, 32.8, 58.5, 61.2, 64.3, 72.5, 113.2, 127.9 (2C), 129.0 (2C), 132.3, 136.1, 148.1, 171.9, 197.8; IR (cm⁻¹) 2939, 1737, 1686, 1449, 1245, 1221, 1109, 966; Anal. Calcd. for C₁₉H₂₆O₄: C, 71.67; H, 8.23; O, 20.10. Found: C, 71.60; H, 8.22.

Ethyl 2-oxo-1-(1-phenylethenyl)-cyclopentanecarboxylate

¹H NMR (CDCl₃, 400 MHz) δ 1.20 (t, *J* = 7.2 Hz, 3H, OCH₂CH₃), 1.75-1.81 (m, 1H, -COCH₂CH₂CH₂C-), 1.88-1.95 (m, 1H, -COCH₂CH₂CH₂C-), 2.08-2.15 (m, 1H, -COCH₂CH₂CH₂C-), 2.33-2.43 (m, 2H, -COCH₂CH₂CH₂C-), 2.61-2.68 (m, 1H, -COCH₂CH₂CH₂C-), 4.17-4.26 (m, 2H, OCH₂CH₃), 5.28 (s, 1H, CC=CHH), 5.48 (s, 1H, CC=CHH), 7.23-7.33 (m, 5H, arom); ¹³C NMR (CDCl₃, 100 MHz) δ 13.8, 18.9, 33.8, 37.1, 61.8, 66.7, 118.9, 127.5 (2C), 127.6, 128.1 (2C), 139.7, 144.7, 170.2, 212.1; IR (cm⁻¹) 2981, 1748, 1717, 1245, 1225, 1135, 1094 1025; Anal. Calcd. for C₁₆H₁₈O₃: C, 74.39; H, 7.02; O, 18.58. Found: C, 74.22; H, 7.18.

Ethyl 2-oxo-1-(1-phenylethenyl)-cyclohexanecarboxylate

¹H NMR (CDCl₃, 400 MHz) δ 1.22 (t, *J* = 7.2 Hz, 3H, OCH₂CH₃), 1.53-1.65 (m, 2H, -COCH₂CH₂CH₂CH₂C-), 1.81-1.89 (m, 2H, -COCH₂CH₂CH₂CH₂C-), 2.04-2.10 (m, 1H, -COCH₂CH₂CH₂CH₂C-), 2.35-2.42 (m, 1H, -COCH₂CH₂CH₂CH₂C-), 2.51-2.67 (m, 2H, -COCH₂CH₂CH₂CH₂C-), 4.16-4.25 (m, 2H, OCH₂CH₃), 5.21 (s, 1H, CC=CHH), 5.47 (s, 1H, CC=CHH), 7.20-7.32 (m, 5H, arom); ¹³C NMR (CDCl₃, 100 MHz) δ 13.9, 21.6, 27.4, 35.1, 40.5, 61.6, 68.0, 119.7, 127.4, 127.9 (2C), 128.2 (2C), 140.5, 147.2, 171.4, 207.7; IR (cm⁻¹) 2943, 1727, 1708, 1231, 1204, 1133, 1090, 1044, 1028, 908, 775, 702; Anal. Calcd. for C₁₇H₂₀O₃: C, 74.97; H, 7.40; O, 17.62. Found: C, 74.79; H, 7.40.

A representative procedure of the alkenylation of β -diketones (1 mmol scale) and physical properties of the alkenylated compounds

3-Acetyl-2-phenyl-1-penten-4-one

To phenylacetylene (5 mmol, 549 μL , 511 mg, 5 eq), *n*-BuLi (0.025 mmol, 1.51 M in hexane, 17 μL , 2.5 mol%) was added at 0 $^{\circ}\text{C}$. After 30 minutes, In(OTf)₃ (0.025 mmol, 14 mg, 2.5 mol%) and Et₃N (0.025 mmol, 3.5 μL , 2.5 mg, 2.5 mol%) were added. Then 2,4-pentanedione (1 mmol, 103 μL , 100 mg) was added at room temperature. The reaction mixture was stirred at 100 $^{\circ}\text{C}$ for 24 hours and then quenched with a pH 6.88 phosphate buffer solution. The aqueous layer was extracted with ether (3 times, 10 mL). The combined organic layers were dried over Na₂SO₄. Removal of solvent and following flash column chromatography (silica gel 10 g, eluent; hexane/ethyl acetate = 95/5) gave the alkenylated compound in 97 % yield (197 mg); ¹H NMR (400 MHz, CDCl₃) δ 1.98 (s, 6H, COCH₃), 5.23 (d, *J* = 1.2 Hz, 1H, CC=CHH), 5.90 (d, *J* = 1.6 Hz, 1H, CC=CHH), 7.29-7.44 (m, 5H, arom); ¹³C NMR (100 MHz, CDCl₃) δ 23.5 (2C), 113.8, 118.3, 125.8 (2C), 128.3, 128.7 (2C), 139.6, 143.5, 191.2 (2C); IR (cm⁻¹) 3083, 1598, 1574, 1493, 1391, 1243, 910.

2-Acetyl-2-methyl-3-phenyl-3-penten-2-one

¹H NMR (CDCl₃, 400 MHz) δ 1.38 (s, 3H, CCH₃), 2.29 (s, 6H, COCH₃), 5.25 (s, 1H, CC=CHH), 5.54 (s, 1H, CC=CHH), 7.09-7.31 (m, 5H, arom); ¹³C NMR (CDCl₃, 100 MHz) δ 19.7, 27.3 (2C), 70.8, 119.7, 127.5 (2C), 127.8, 128.3 (2C), 139.6, 147.9, 207.7 (2C); IR (cm⁻¹) 2989, 1715, 1700, 1355, 1212, 1086, 965, 917, 779, 700; Anal. Calcd. for C₁₄H₁₆O₂: C, 77.75; H, 7.46; O, 14.80. Found: C, 77.54; H, 7.59.

A procedure for the coupling reaction with a silyl acetylene and physical properties of the alkenylation compound

Ethyl 2-acetyl-2-methyl-4-(dimethylphenylsilyl)-3-(*E*)-butenoate (**8**)

In(OTf)₃ (0.05 mmol, 28 mg, 5 mol%), Et₃N (0.05 mmol, 7 μL, 5 mg, 5 mol%), ethyl 2-methyl-3-oxobutanoate (1 mmol, 145 μL, 145 mg) and dimethylphenylsilylacetylene (1.2 mmol, 212 μL, 192 mg, 1.2 eq) were placed to a reaction vessel. The reaction mixture was stirred under an inert gas atmosphere at 100 °C for 18 hours and quenched with a pH 6.88 phosphate buffer solution. The aqueous layer was extracted with ether (3 times, 10 mL). The combined organic layers were dried over Na₂SO₄. Removal of solvent and following flash column chromatography (silica gel 15 g, eluent; hexane/ethyl acetate = 95/5) gave alkenylated product **8** in 80 % yield (243.6 mg); ¹H NMR (CDCl₃, 400 MHz) δ 0.36 (s, 6H, Si(CH₃)₂C₆H₅), 1.26 (t, *J* = 7.2 Hz, 3H, OCH₂CH₃), 1.47 (s, 3H, CCH₃), 2.14 (s, 3H, COCH₃), 4.18-4.23 (m, 2H, OCH₂CH₃), 5.95 (d, *J* = 19.6 Hz, 1H, CH=CHSi), 6.61 (d, *J* = 19.6 Hz, 1H, CH=CHSi), 7.34-7.36 (m, 3H, Si(CH₃)₂C₆H₅), 7.47-7.49 (m, 2H, Si(CH₃)₂C₆H₅); ¹³C NMR (CDCl₃, 100 MHz) δ -2.77 (2C), 13.9, 19.3, 26.6, 61.5, 64.1, 127.8 (2C), 129.1, 130.6, 133.7 (2C), 137.9, 144.5, 171.7, 203.2; IR (cm⁻¹) 2960 1742, 1715, 1248, 1200, 1164, 1100, 843, 822, 731, 698; Anal. Calcd. for C₁₇H₂₄O₃Si, C, 67.06; H, 7.95. Found: C, 66.86; H, 8.02.

The geometry of the olefinic double bond was confirmed as *trans* by NOE experiments and the value of the coupling constant between Ha and Hb.