Supporting Information

General

Solvents were dried by storage over 4 A activated molecular sieves. All other reagents were used as obtained from commercial sources or purified according to standard procedures. IR spectra were run at room temperature as KBR pellets on a Perkin-Elmer 1650 FTIR spectrophotometer between 4000 and 400 cm^{-1}. UV-Vis spectra were recorded on a Perkin-Elmer Lambda 2 spectrophotometer. Mass spectral data was obtained via flow injection and detected using a Finnegan Mat TSQ700 scanning mass spectral detector. ^{1}H NMR spectra were recorded on a Jeol GSX400 at ambient temperature operating at 400mHz and are referenced to internal TMS or residual protio solvent. Analytical thin layer chromatography was carried out on Whatman 0.25mm silica gel G/UV plates previously treated with pH 9 0.25M Na_2EDTA and eluted with $CHCl_3/CH_3OH/Acetone/NH_4OH$ (10:22:53:15). Preparative chromatography was carried out using pretreated Analtech 1.0mm preparative TLC plates using the same solvent system. All compounds were neutralized using aqueous sodium bicarbonate and the corresponding hydrochloride salts prepared by bubbling HCl(g) through a methanolic solution containing the title compound.

7-iodosancycline and 7,9-diiodosancyline

30.0ml of concentrated sulfuric acid was added to 1.00g of sancycline hydrochloride hemihydrate with stirring and the solution cooled to $0^{o}C$. 1.09g of N-iodosuccinimide was added portionwise to the brown solution over one hour and the reaction mixture monitored by HPLC and TLC. The reaction mixture was poured into 250ml of ice water, extracted three times with butanol, and the solvent removed under reduced pressure. The crude residue was purified by preparative TLC (multiple runs) yielding 787mg (61%) of 7-iodosancycline and 291mg (22%) of 7,9-diiodosancycline as yellow and brown crystals respectively.

MS (FAB) 587 amu for 7-iodosancycline
MS (FAB) 667 amu for 7,9-diiodosancycline

^{1}H NMR (Methanol d-4, 400MHz) δ 7.89 (d, J=8.86Hz, 1H), 6.67 (d, 8.87Hz, 1H), 3.56 (s, 1H), 3.03 (s, 2H), 2.84 (s, 6H), 2.46 (m, 2H), 1.63 (m, 4H) 0.95 (m, 2H).

^{1}H NMR (Methanol d-4, 400MHz) δ 8.35 (s, 1H), 3.78 (s, 1H), 3.33 (s, 2H), 2.88 (s, 7H), 2.41 (m, 2H), 1.41 (m, 5H).

General Coupling Procedure

7-phenylsancycline

200mg of 7-iodosancycline (0.37mmol), 30mg $Pd(PPh_3)_2Cl_2$, 10mg $AsPh_3$, and 6mg of CuI is dissolved in 25ml of toluene with stirring. 0.050ml of phenyl tri-n-butyltin is added and the solution refluxed for 6 hours under nitrogen. The solution is cooled to room temperature, filtered, the solvent removed and the crude residue purified by preparative thin layer chromatography. Yield 167mg (96%).

MS (FAB) 491amu.

^{1}H NMR (Methanol d-4, 400MHz) δ 7.59 (dd, J=7.10Hz, 1.48Hz, 3H), 7.42 (t, J=7.11Hz, 2H), 7.35 (d, J=8.05Hz, 1H), 7.06 (d, 8.03Hz, 1H).

IR(KBr) 3344, 3032, 2866, 2766, 2666, 1667, 1617, 1572, 1450, 1361, 1300, 1200, 1050, 704, 494 cm^{-1}.

UV-Vis λ = 220, 263, 353 nm.

7-(4-chlorophenyl)sancycline

200mg of 7-iodosancycline (0.37mmol), 25mg of $Pd(OAc)_2$, and 64mg of 4-chlorophenylboronic acid are dissolved in 15ml of methanol with stirring. The solution is allowed to stir at room temperature under nitrogen for 16hours, filtered, and the solvent removed. The crude residue is purified by preparative TLC. Yield 81mg (42%).

MS (FAB) 525amu

^{1}H NMR (Methanol d-4, 400MHz) δ 7.35 (d, J=8.53Hz, 1H), 7.27 (td, J=6.33, 2.09 Hz, 2H), 7.19 (td, J=6.36, 2.08 Hz, 2H), 6.94 (d, J=8.53Hz, 1H) 3.52 (s, 2H), 2.92 (s, 7H), 1.52 (m, 4H), 0.95 (m, 2H).

IR(KBr) 3355, 3020, 2861, 2669, 1666, 1615, 1573, 1450, 1361, 1303, 1199, 1050, 708, 501 cm^{-1}.

UV-Vis λ = 217, 274, 336 nm.

7-(4-fluorophenyl)sancycline

MS (FAB) 509amu

^{1}H NMR (Methanol d-4, 400MHz) δ 7.41 (d, J=8.61Hz, 1H), 7.30 (td, J=6.87, 2.16 Hz, 2H), 7.16 (td, J=6.84, 2.11Hz, 2H), 6.89 (d, J=8.59Hz, 1H) 3.56 (s, 2H), 2.91 (s, 7H), 1.52 (m, 4H), 0.95 (m, 2H).

IR(KBr) 3352, 3031, 2765, 2667, 1671, 1611, 1563, 1362, 1293, 1207, 1050, 499 cm^{-1}.

UV-Vis λ = 215, 268, 351 nm.

7-(4-nitrophenyl)sancycline

MS (FAB) 536amu

^{1}H NMR (Methanol d-4, 400MHz) δ 8.28 (d, J=8.50 Hz, 2H), 7.52 (d, J=8.52 Hz, 2H), 7.42 (d, J=8.64 Hz, 1H), 6.93 (d, J=8.65 Hz, 1H), 3.51 (s, 2H), 2.73 (s, 7H), 1.50 (m, 5H), 0.92 (m, 2H).

IR(KBr) 3348, 3030, 2865, 2768, 1670, 1523, 1355, 1191, 708 cm^{-1}.

UV-Vis λ = 222, 282, 343 nm.

7-(4-N,N-dimethylaminophenyl)sancycline

MS (FAB) 534amu

^{1}H NMR (Methanol d-4, 400MHz) δ 7.58 (d, J=7.31Hz, 1H), 7.31 (d, J=8.08, 2H), 6.89 (d, J=7.30, 1H), 6.79 (d, J=8.08, 1H), 3.51 (s, 2H), 2.89 (s, 7H), 2.84 (s, 6H),1.50 (m, 5H), 0.92 (m, 2H).

IR(KBr) 3342, 3143, 3021, 2674, 1663, 1320, 1304, 1050, 993, 843 cm^{-1}.

UV-Vis λ = 236, 244, 374 nm.

7-ethylenylsancycline

MS (FAB) 471amu

^{1}H NMR (Methanol d-4, 400MHz) δ 7.65 (d, J= 8.79Hz, 1H), 6.80 (d, J=8.76Hz, 1H), 5.56 (d, J=18.42Hz, 1H), 5.25 (d, J=12.15Hz, 1H), 3.84 (s, 1H), 3.19 (m, 2H), 2.98 (s, 6H), 2.82 (m , 1H), 2.32 (m, 2H), 0.92 (m, 1H).

IR(KBr) 3352, 3031, 2873, 2660, 1643, 1604, 1450, 1213, 978, 906, 888 cm^{-1}.

UV-Vis λ = 229, 255, 359 nm.

7-ethynylsancycline

MS (FAB) 469amu

^{1}H NMR (Methanol *d-4*, 400MHz) δ 7.63 (d, J=8.01Hz, 1H), 6.97 (d, J=8.04Hz, 1H), 4.10 (s, 1H), 3.36 (m, 3H), 2.86 (s, 7H), 2.63 (m, 3H), 1.50 (m, 2H), 0.95 (m, 2H).

IR(KBr) 3359, 3274, 3022, 2873, 2163, 1651, 1603, 1570, 1291, 832, 819, 504 cm^{-1}.

UV-Vis λ = 224, 262, 351 nm.