

G-quadruplex Recognition by Bis-Indole Carboxamides

*Jyotirmayee Dash, Pravin S. Shirude and Shankar Balasubramanian**

The University Chemical Laboratory, University of Cambridge, Lensfield Road, Cambridge CB2
1EW, UK, Fax: (+44) 1123-336-913; Tel: (+44) 1123-336347; E-mail: sb10031@cam.ac.uk

SUPPORTING INFORMATION for Chemical Communications

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1.0 Bis-indole: G-quadruplex General conformations

The bis-indole core of **1** can adopt alternative conformations due to the geometrical freedom in compound **1** (Figure 1). The strong stabilization potential of ligand **1** might be attributed due to the comparable size of (Chem 3D) bis-indole core of **1** with the G-quartet (Figure 2). The end to end total length of the central core of **1** as calculated from energy minimized Chem 3D (A) is 13.5 Å (B), which is equal to the distances of (13.6 Å) between the N₉ of the opposite guanine bases in the G-tetrad (C). Also the distances between other different carbons of the central core of **2** (9.3-12.8 Å) is similar to the distances (10.63-12.06 Å) between the two hydrogen atoms of the non-hydrogen-bonding G-NH₂ functional group of the opposite guanine bases in the G-tetrad.

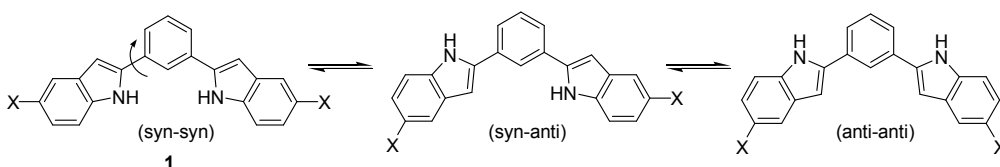


Figure 1: Different conformations of bis-indole core separated by a central benzene ring

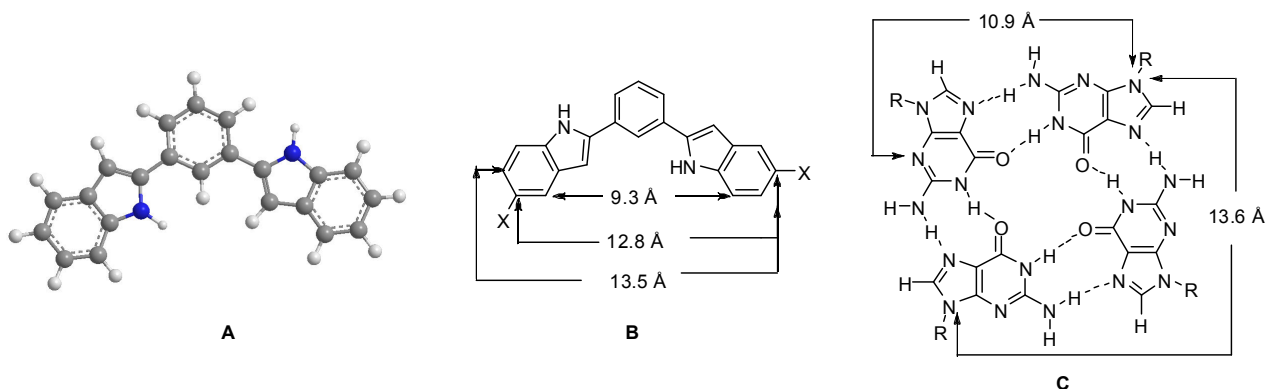


Figure 2. Energy minimized (Chem 3D Ultra 10.0, CambridgeSoft Corp., MA) of bis-indole core of **1** (A); Selected dimensions of A (B); dimensions of a G-quartet from X-ray structure.^[1]

2.0 General Methods

NMR spectra were acquired on Bruker DRX-500 instruments. Chemical shifts were relative to the deuterated solvent peak and are reported in parts per million (ppm). ^1H NMR spectra were recorded at 500 MHz in CD_3CN and data were reported as follows: chemical shift in parts per million from tetramethylsilane as an internal standard, multiplicity (s=singlet, d=doublet, t=triplet, q=quartet, m=multiplet or overlap of nonequivalent resonances), integration. ^{13}C NMR spectra were recorded at 125 MHz in CD_3CN and data were reported as follows: chemical shift in parts per million from tetramethylsilane with the solvent as an internal indicator (CDCl_3 δ 77.0 ppm), multiplicity with respect to proton (deduced from DEPT experiments, s=quaternary C, d=CH, t= CH_2 , q= CH_3). The high resolution mass spectra were recorded on Micromass Q-ToF spectrometer using electrospray ionisation technique.

The compounds **1** and **2** were purified by HPLC using a Varian Pursuit C18, 5 μ column (250 \times 21.2 mm) and a gradient elution with water/acetonitrile 90:10 (0.1%TFA) to 50:50 in 40 min at a flow rate of 12.0 mL/min.

The ligands (**1** and **2**) solutions were prepared in MQ water, for biophysical experiments.

