

7,19-Dimethyl-11,15-bis(pyridin-2-ylmethyl)-1,6,11,15,20,21-hexaaza-tricyclo[15.2.1.1^{6,9}]heneicosa-7,9(21),17(20),18-tetraene

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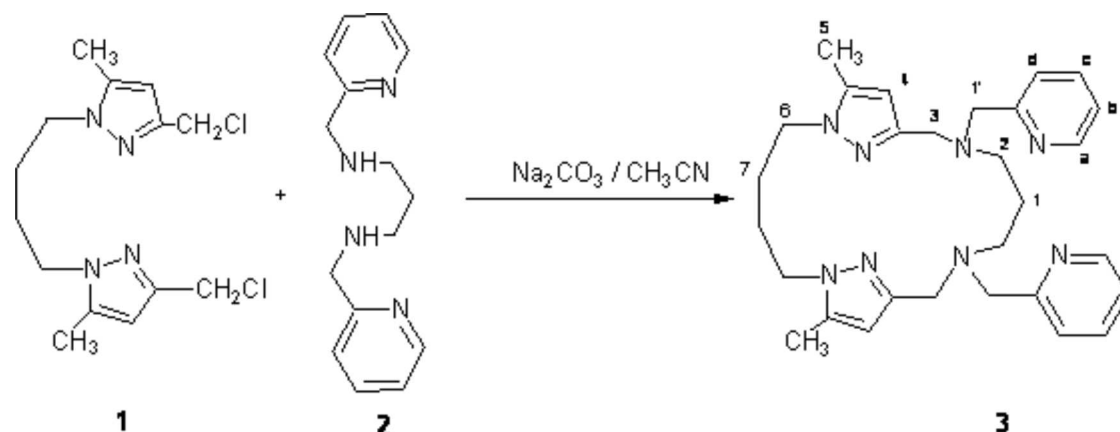
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Despite the numerous polydentate macrocyclic structures already described as neutral receptors for various substrates [1-3], the search for new receptor families is still important with a view to obtaining molecules capable of molecular recognition, transport, selective catalysis or biological models.

In this work, we were interested in mixed donor macrocycle incorporating sp³ and sp² nitrogens; some receptors of this type have been described to the cyclam family and are obtained from 2,6 disubstituted pyridines [4,5].



A suspension of sodium carbonate (12 g, 120 mmol) in acetonitrile (250 mL) was refluxed under magnetic stirring, then a solution of 1,4-bis(3-chloromethyl-5-methylpyrazolyl)butane **1** (2.1 g, 7 mmol) [1] and *N,N'*-bis(pyridin-2-ylmethyl)propane-1,3-diamine **2** (1.8 g, 7 mmol) [6] in acetonitrile (50 mL) was added dropwise. The solution was refluxed under stirring for two hours, filtered and the solvent was removed in vacuum, the residue was purified on alumina column with (CH₂Cl₂/MeOH: 95/5) as eluent to give the 2.70 g (70% yield) macrocycle **3** as an oily substance.

¹H-NMR (250 MHz; CDCl₃): δ= 8.49 H^a; 7.60 H^c; 7.53 H^d; 7.10 H^b; 5.88 (s, 2H, H⁴); 4.00 (t, 4H, H⁶); 3.89 (s, 4H, H³); 3.51 (s, 4H, H^{1'}); 2.40 (t, 4H, H²); 2.24 (d, 6H, H⁵); 1.70 (t, 2H, H¹); 1.70 (m, 4H, H⁷).

MS (FAB; *m/z*): 499 [M+H]⁺.

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Sample Availability: Available from MDPI.

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