

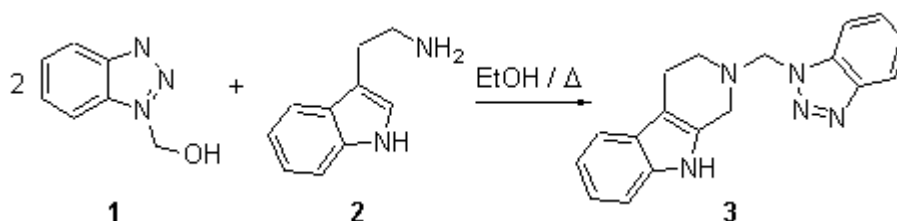
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## *N*-Benzotriazol-1-yl-methyl-1,2,3,4-tetrahydro-b-carboline

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Katritzky's well-established chemistry of benzotriazole [1] was applied to the synthesis of 1,2,3,4-tetrahydro-b-carboline, which have been traditionally prepared by Pictet-Spengler condensation<sup>2</sup>, Fischer cyclisation and other methods<sup>3</sup>. This facile reaction of 1-hydroxymethylbenzotriazole **1** with tryptamine **2** yielded very high quantities of crystalline *N*-benzotriazol-1-yl-methyl-1,2,3,4-tetrahydro-b-carboline **3**. Tryptamine **2** (1.02g, 6.34mmol) and 1-hydroxymethylbenzotriazole **1** (1.94g, 12.99mmol) were dissolved in ethanol (50mL) and refluxed for two hours. A crystalline solid dropped out of the solution while refluxing. The mixture was chilled and vacuum filtered to obtain a pale tan crystalline compound (1.70g, 89%), then recrystallised from ethanol to give *N*-benzotriazol-1-yl-methyl-1,2,3,4-tetrahydro-b-carboline **3** as a pale tan powder (1.581g, 82%)..

M.p. 200-202 °C. (EtOH, uncorrected).

<sup>1</sup>H-NMR (200 MHz; DMSO-d<sub>6</sub>; Me<sub>4</sub>Si): 10.76 (1H, s, NH), 8.13-8.07, 7.66-7.58, 7.48-7.44, 7.38-7.34, 7.30-7.26, 7.05-6.94 (8H, m, Ar), 5.87 (1H, s, NCH<sub>2</sub>Bt), 3.87 (2H, s, InCH<sub>2</sub>N), 3.02 (2H, s, CCH<sub>2</sub>N), 2.74 (2H, s, InCH<sub>2</sub>C)

<sup>13</sup>C-NMR (50 MHz; DMSO-d<sub>6</sub>): 21.3 (InCH<sub>2</sub>C), 46.7 (InCH<sub>2</sub>N), 48.3 (InCH<sub>2</sub>CH<sub>2</sub>N), 68.2 (NCH<sub>2</sub>Bt), 106.2, 117.6, 118.5, 120.7, 126.8, 136.2 (Ar), 111.1(C=CN), 111.4, 119.3, 124.2, 127.7, 132.2, 145.3 (Ar), 134.2 (C=CN).

Analysis cal. for C<sub>18</sub>H<sub>17</sub>N<sub>5</sub> (303.36): C 71.27, H 5.65, 23.09; Found: C 70.99, H 5.64; N, 22.83.

### References

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2. Abramovich, R.A.; Spenser, I.D. in *Advances in Heterocyclic Chemistry*, Ed: Katritzky, A.R., Academic Press, New-York, 1973, volume 3, 80-207.
3. Cox, E.D.; Cook, J.M. *Chem. Rev.* **1995**, 1797-1842.

*Sample Availability:* Available from the authors and MDPI.

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