Taming Radical Pairs in the Crystalline Solid State: Discovery and Total Synthesis of Psychotriadine

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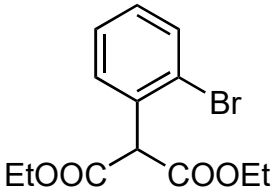
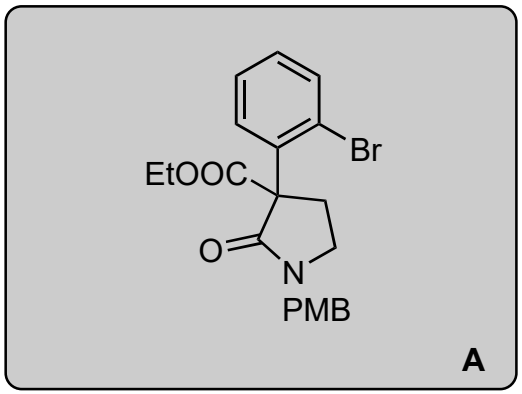
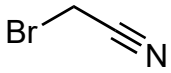


1–3

1) NaH, *then* **1**
2) $CoCl_2$, $NaBH_4$
3) NaH, *then* PMBCl



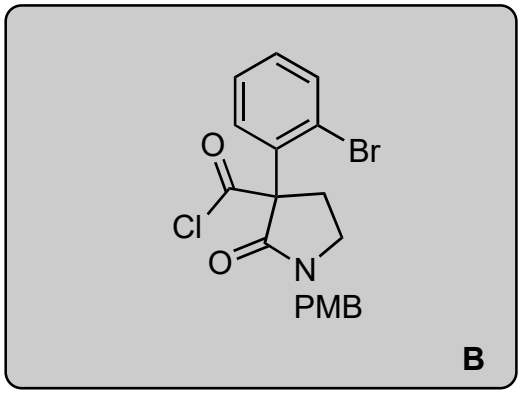
A



1

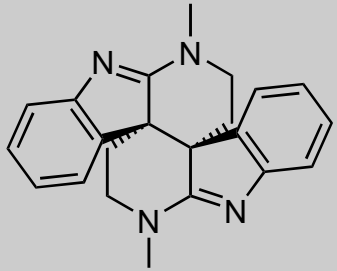
4–5

4) aq. NaOH
5) $(COCl)_2$, cat. DMF



B

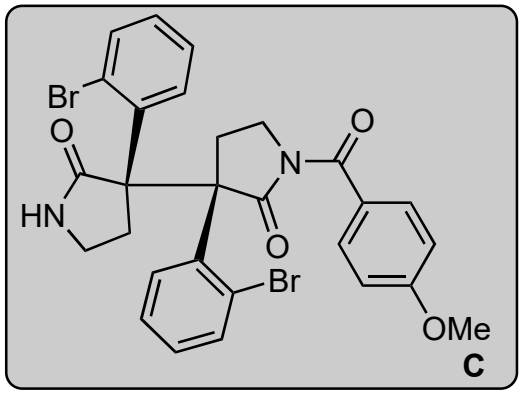
2) *Hint:* Chemoselective reduction. 5-membered ring forms too.



Psychotriadine

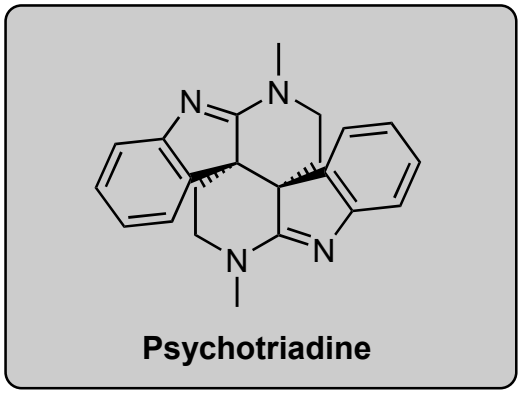
A

6–9



C

12–14



Psychotriadine

6) aq. NaOH *then* HCl, Δ
7) LiHMDS *then* **B**
8) CAN
9) 450 W Hg lamp (>290 nm), sodium dodecyl sulfate

10) NH_4OH
11) NaH *then* MeI
12) CuI, NaN_3, L-proline
13) $LiAlH_4$
14) TPAP, NMO

6) *Hint*: CO_2 is lost.

8) *Hint*: One protecting group is removed; the other, further oxidized.
9) *Hint*: See title. CO is lost.

13) *Hint*: transamidation happens after reduction.
14) Name of reaction? Ley–Griffith oxidation.