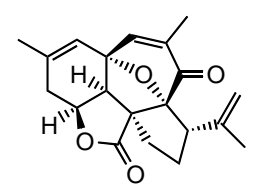


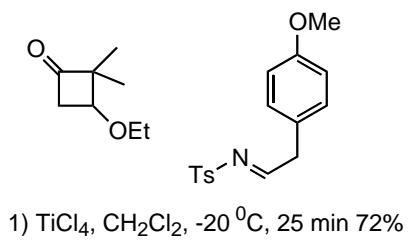
(-)-bipinnatin

- 1) VO(acac)₂, tBuOOH, DCM, -20 °C, 4 h
 - 2) Ac₂O, Et₃N, DMAP, DCM, 2.5 h
(30%, 2 steps)
-
- 3) DBU, MeCN, reflux, 1.2 h 10%



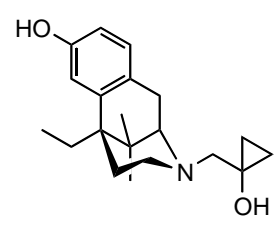
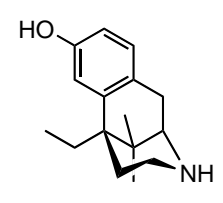
(+)-intricarene

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Org. Biomol. Chem. **2009**, 7, 4448-4457.



1) TiCl₄, CH₂Cl₂, -20 °C, 25 min 72%

- 2) Pd/C, H₂, EtOH, r.t., 140h 84%
 - 3) EtMgCl, ZnCl₂, LiCl, THF, 0 °C
-
- 4) Sodium naphthalenide, DME, 96%
 - 5) 85% H₃PO₄, 135 °C, 78h, 68%



(±)-Bremazocine

Org. Lett. **2010**, ASAP
 J. Matsuo, H. Ishibashi. et al