Total Synthesis of (+)-Melonine and (+)-N4-Oxy Melonine Enabled by an Intramolecular Alkene Diamination Reaction

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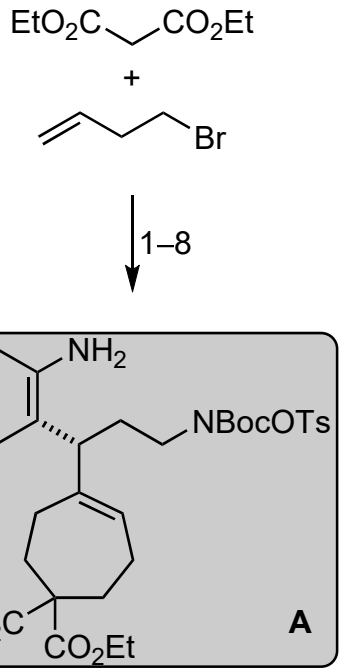
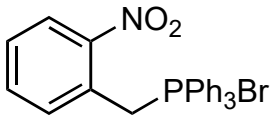


1) NaH
2) Grubbs II, *then* Oxone, $NaHCO_3$, 0 °C
3) DMP
4) **1**, NEt_3
5) **(*S*)-2**, BH_3·THF, -20 °C
6) PivOH, $MeC(OMe)_3$, 80 °C, *then* 120 °C
7) DIBAL-H (2 eq), *then* Zn, NH_4Cl
8) BocNHOTs, DIAD, PPh_3



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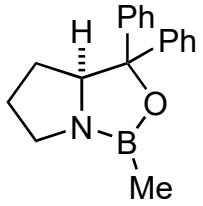

(*S*)-2

9) MsCl, pyridine
10) TFA, 75 °C
11) $AlMe_3$, 40 °C
12) $LiBH_4$
13) TPAP, NMO, 4 Å MS
14) $CH_2(ZnI)_2$, *then* $RhCl(PPh_3)_3$, H_2
15) Red-Al, 95 °C

6) Name of the reaction?
Johnson-Claisen rearrangement

10) hint: through an aziridinium intermediate