Total Synthesis of Alkaloid (±)-G.B 13

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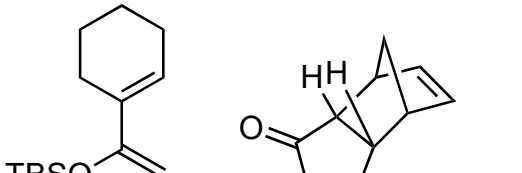
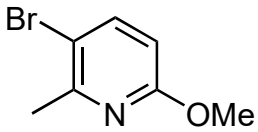


A

1) Cat. $Yb(tmhd)_3$, 110 °C
2) Flash vacuum pyrolysis (600 °C, 3 mbar)



1

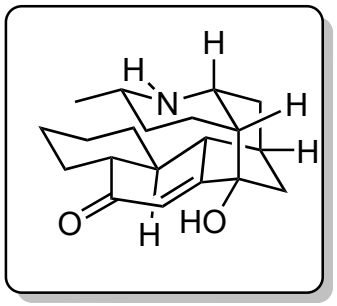
3) **1**, LDA –78 °C *then* **A**
4) HCl, THF/MeOH *then* K_2CO_3
5) SO3•pyr, DMSO/pyridine
then KH_2PO_4/NaOH buffer
6) H_2, cat PtO_2, Na_2CO_3
7) $B(pin)_2$, cat. $Pd_2(dba)•CHCl_3$,
cat. Py_3HBF_4, KOAc
8) DMP
9) Et_3N, SiO_2
10) Cat. $[Rh(cod)(MeCN)_2]BF_4$, Et_3N (2 equiv)

1) How would you synthesise the dienophile?

2) Classify the reaction

4) Hint: K_2CO_3 for epimerization
5) Hint: This reaction is usually done with a chromium species
9) Hint: for epimerization

5) Name of the reaction
6) Name of the catalyst
8)Please draw the mechanism



B

11) NaSEt
12) Tf_2O, pyr
13) $AlMe_3$, cat $Pd(Ph_3)_4$
14) cat. Rh/Al_2O_3, H_2 69 bar
15) BnOCOCl, aq $NaHCO_3$/PhMe
16) IBX, TsOH DMSO/PhH
17) TMSI, CH_2Cl_2