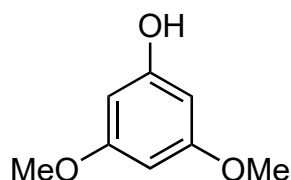
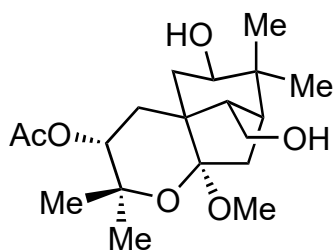


Total Synthesis of (+)-Melicolone K Enabled by a Late-Stage Programmed C–H Functionalization

Ziqi Jia, Peijie Sun, Tianzhe Wang, Yidian Sheng, Chenlong Zhu, Jun Xuan,* and Hanfeng Ding*
J. Am. Chem. Soc. **2026**, *148*, 2, 2119–2125

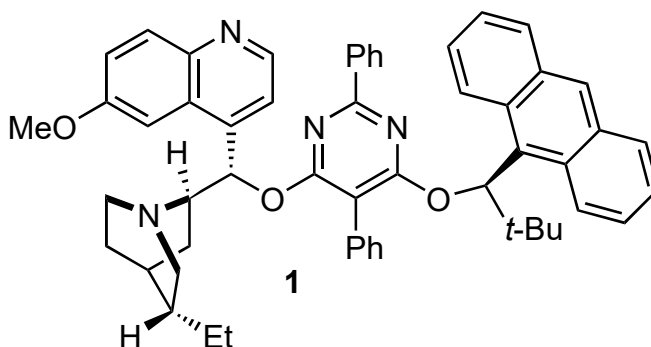


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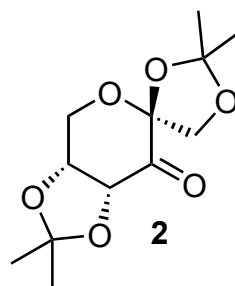


A

- 1) Pd(OAc)₂, PPh₃, Ti(Oi-Pr)₄, allyl alcohol (xs), MS 4Å, 50 °C
- 2) Grubbs II, 2-methyl-2-butene (xs), 40 °C
- 3) **1**, K₂OsO₄·2H₂O, MeSO₂NH₂, K₂CO₃, K₃Fe(CN)₆
- 4) HClO₄(aq)
- 5) TsN₃, DBU, *then hv*, MeOH, *then p*-TSA
- 6) Ac₂O, Et₃N, DMAP
- 7) NaBH₄, CeCl₃·7H₂O
- 8) **2**, oxone, K₂CO₃, n-Bu₄NHSO₄, Na₂B₄O₇·10H₂O, Na₂EDTA
- 9) Cp₂TiCl₂, Zn



1



2

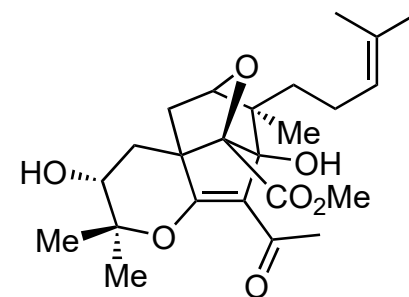
3) Name? Sharpless asymmetric dihydroxylation

5) hint: 6-membered lactone formed

Name? Wolff rearrangement

7) hint: acetyl group migration

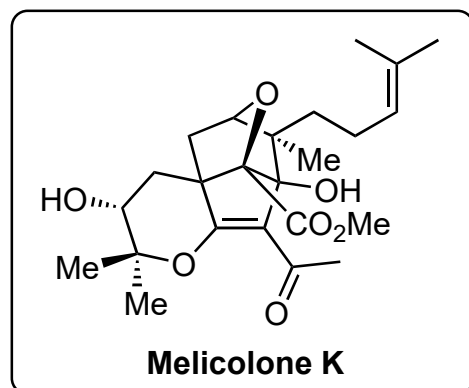
8) Name? Shi epoxidation



Melicolone K

A

10-19



- 10) PhSeCN, *n*-Bu₃P, 80 °C, *then* *m*-CPBA, NaHCO₃
- 11) H₂SO₄, MeOH, 90 °C
- 12) ClSO₂NH₂, pyridine
- 13) Rh₂(OAc)₄, PIDA, MgO
- 14) **3**, Pd(OAc)₂, quinoline, 100 °C, *then* HCOOH, Et₃N, 85 °C
- 15) Mg(OTf)₂, 150 °C, *then* Red-Al, *then* MeOH, TMSCl, imH
- 16) AcOH, NaNO₂, pyridine
- 17) NIS, AgNO₃, *then* Cu(MeCN)₄OTf, NMI, **4**, ABNO
- 18) **5**, Pd(dppf)Cl₂, CuI, LiCl, 110 °C
- 19) **6**, DBU, MnO₂, MeOH, *then* Cs₂CO₃, 70 °C

11) hint: ester remains

15) hint: 4 transformations in total

17) Name? Stahl oxidation

18) Name? Stille coupling

19) Name? Scheidt oxidation

