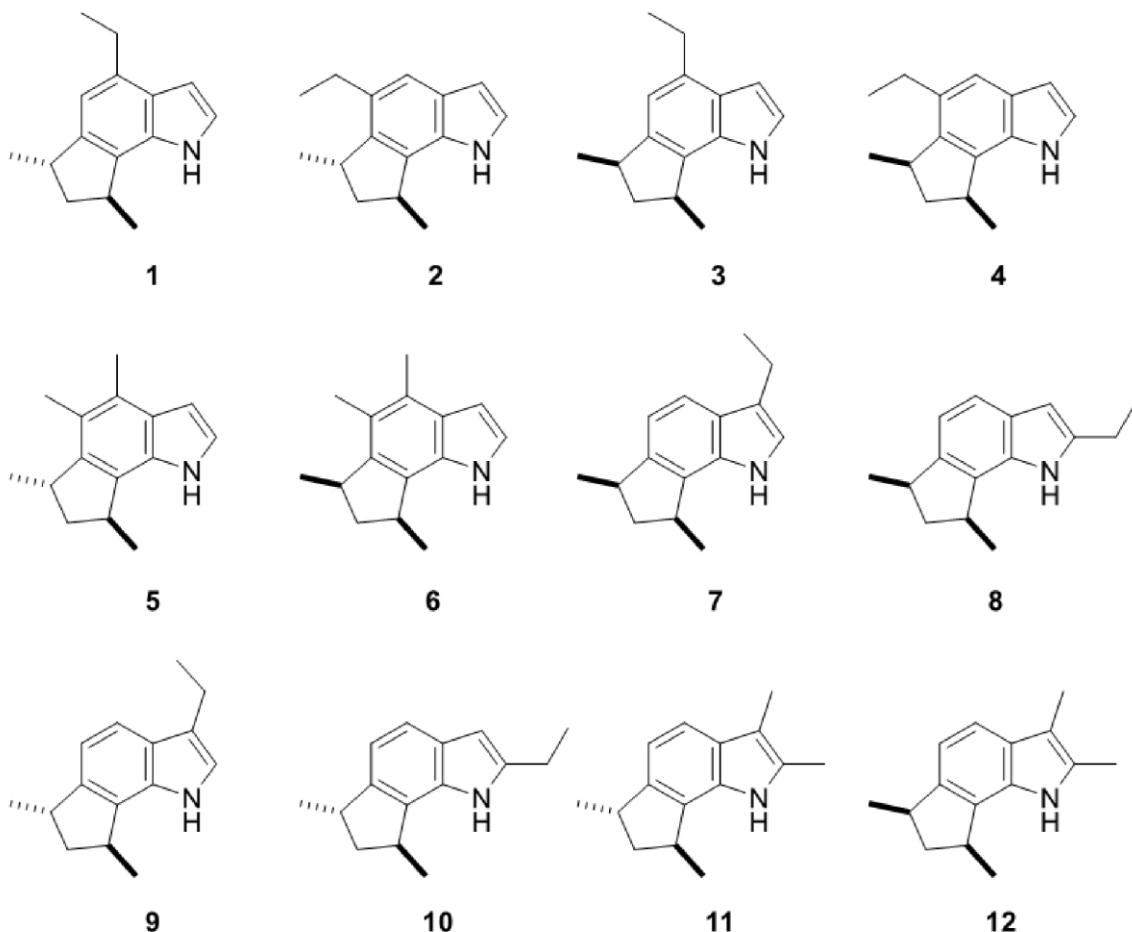


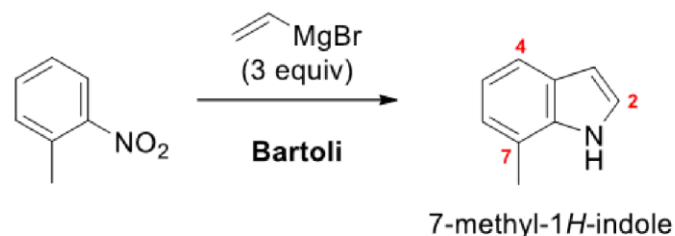
7-masala:

Qaysi biri (\pm)-Triketrin A?

Indol skeleti tabiatda keng tarqalganligiga qaramasdan, benzol halqasining turli pozitsiyalarida anelirlangan indollar kam uchraydi. Triketrinlar va boshqa unga o'xshash gerbindollar 6,7-anelirlangan indollarning yoki boshqacha aytganda polialkillangan siklopent[g]indol tabiiy birikmalarining ajoyib vakillari bo'lib hisoblanishadi. Triketrinlar dengiz g'ovaktanlilari *Trikentrion flabelliforme* dan ajratib olingan va antibakterial faollikni namoyon etadi. Triketrin A ning bo'lishi mumkin bo'lgan strukturalari quyida keltirilgan. Ushbu masalada biz ulardan qaysi biri triketrin A ekanligini aniqlaymiz.

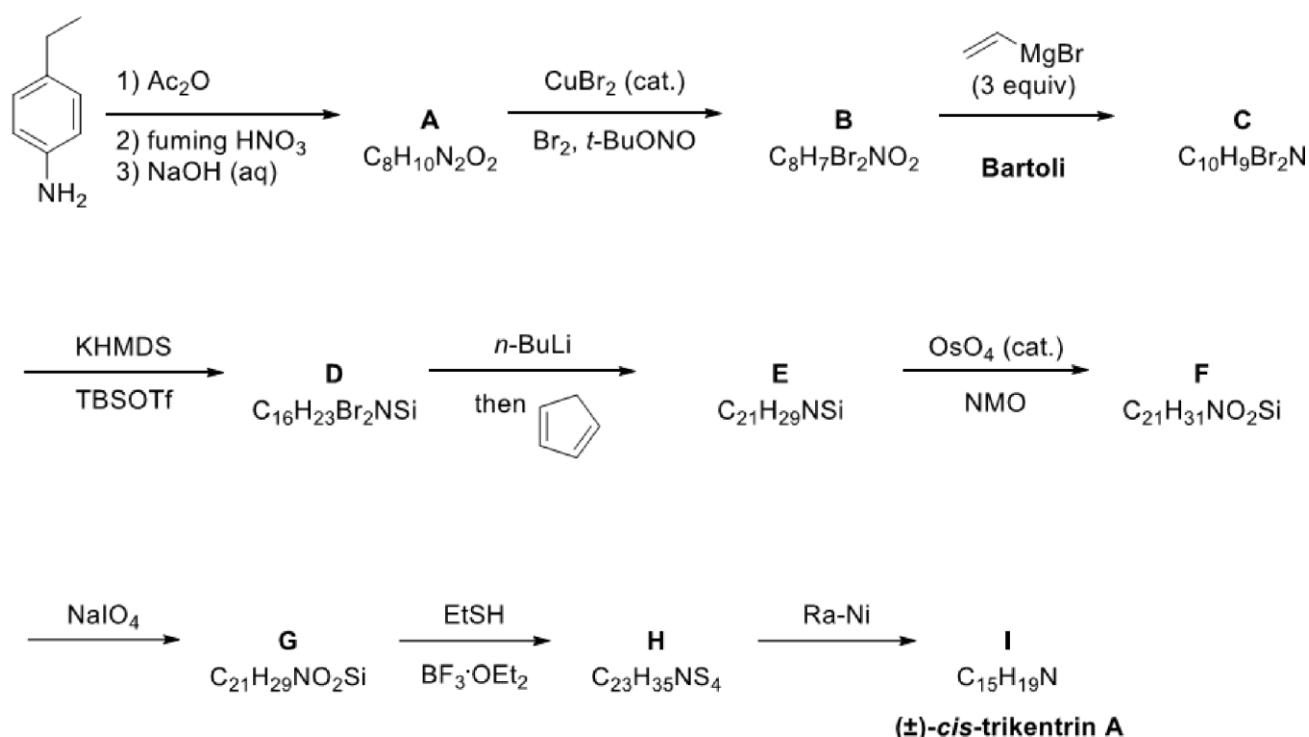


Triketrin A ni sintez qilishning bir nechta yo'li mavjud. Quyidagi ikkita usulda arinlarga asoslangan holda va gidrovinillash strategiyasi orqali triketrin A olinadi. Har ikkalasida ham Bartoli reaksiyasi yordamida *orto*-o'rinbosarli nitroarenlar Grinyar reagenti bilan ta'sirlashib o'rinbosar tutgan indollar hosil qilinadi. Bu 7-holatda o'rinbosar tutgan indollarni olishning eng qulay usulidir.



(±)-**Trikentrin A**: ^{13}C NMR (CDCl_3): δ 143.4–101.6 (8 signals), 44.8–15.1 (7 signals).

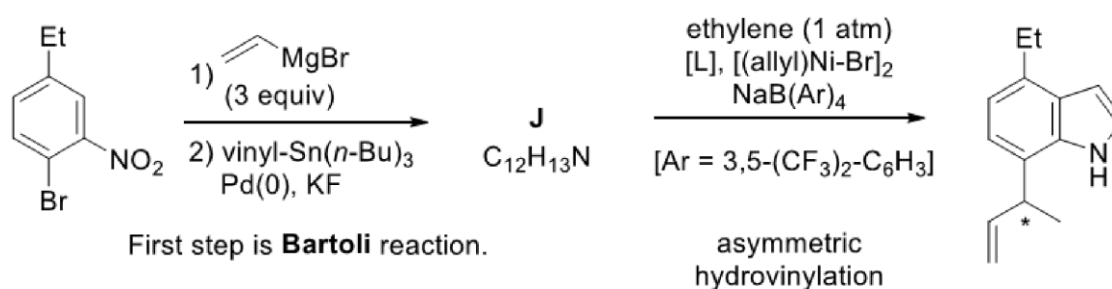
Aryne-based strategy



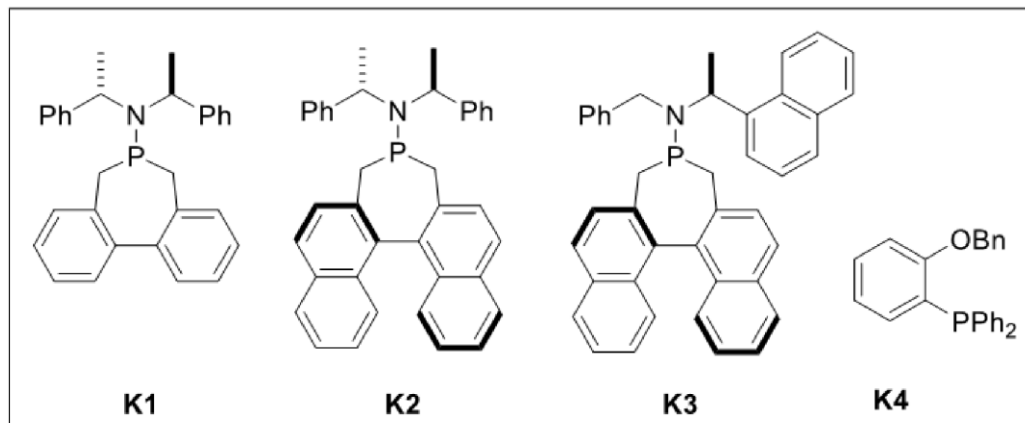
KHMDS = $(\text{Me}_3\text{Si})_2\text{NK}$; TBSOTf = $\text{CF}_3\text{SO}_3\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3$; NMO =

1. A-I ning strukturalarini chizing.
2. D→E bosqichida intermediat sifatida hosil bo'layotgan arinning strukturasini chizing.

Hydrovinylation strategy



ligand	yield (%) / ee%
K1	96 / 86
K2	95 / 87
K3	99 / 96
K4	90 / 0



3. Bromnitrobenzol Bartoli reaksiyasiga kirishib, ketidan vinilstannan bilan vinillanib 7-vinilindol **J** ga aylanadi. **J** ning strukturasi chizing.
4. Ikkinchi bosqichda **J** Ni(II)-katalizida assimmetrik gidrovinillanadi. Gidrovinillanishda ishlatiladiga ligandlar (**K1-K4**) yuqorida keltirilgan.

Diqqat: ee = enantiomerning ortiqchalik darajasi; % ee = % asosiy enantiomer - % ikkinchi enantiomer.

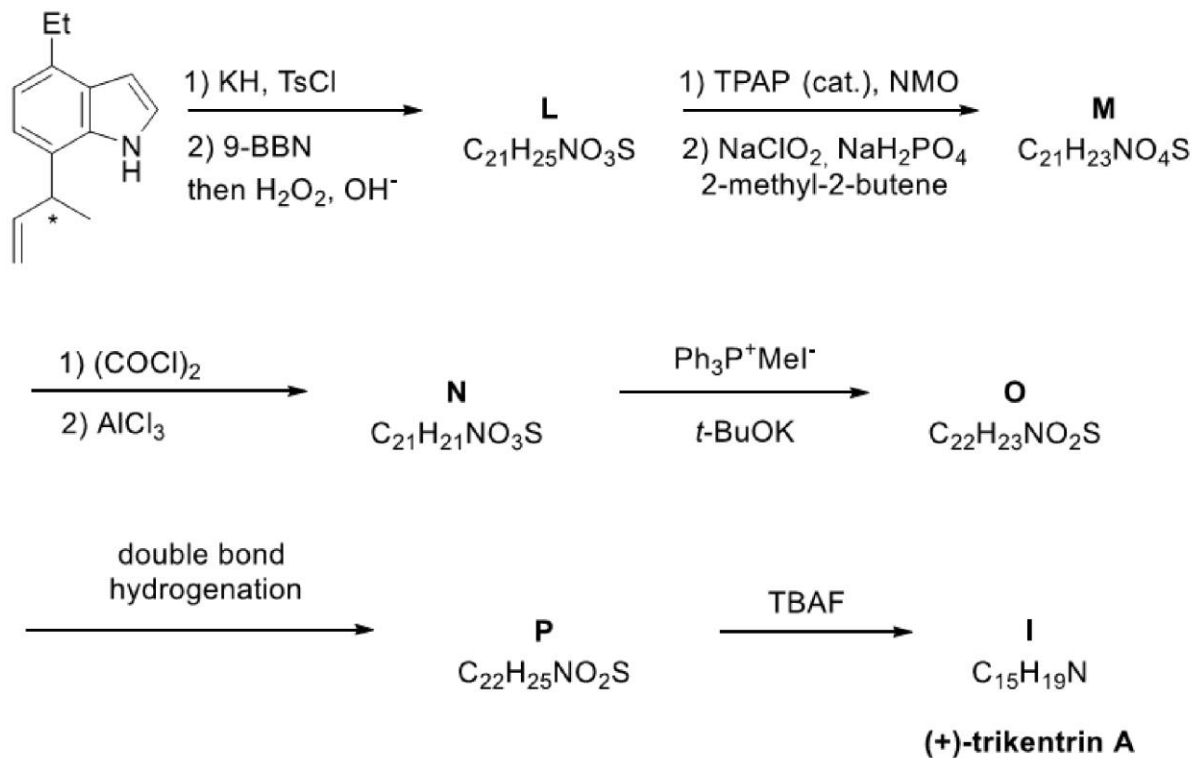
To`g`ri fikrlarni tanlang:

- Ligand **3** gave the best enantioselectivity.
- Ligand **4** gave a racemic mixture.
- Each of the ligands **K1-K4** is chiral.
- Each of the ligands **K1-K4** gave excellent yield (>95%) of the product.

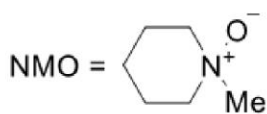
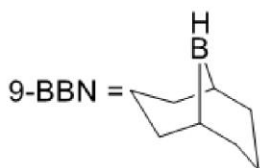
5. Gidrovinillanish bosqichi uchun to`g`ri fikrlarni tanlang:

- (allyl)₂Ni₂Br₂ or [(allyl)NiBr]₂ is a source of vinyl.
- In this Ni-allyl complex, each nickel has oxidation number +2.
- In this Ni-allyl complex, the electron count of Ni is 18.
- This complex has a square planar geometry.

6. **L-P** larning strukturalarini chizing. Gidrovinillanish mahsulotidagi assimmetrik uglerodning absolyut konfiguratsiyasi *S*. **Diqqat:** **M** birikmaning ¹³C YMR spektrida δ = 178.3 ppm da karbonil uglerodidan bitta signal aniqlanadi.



TsCl = *p*-toluenesulfonyl chloride ; TPAP = (C₃H₇)₄NRuO₄



TBAF = tetra-*n*-butylammonium fluoride

--- TAMOM ---

@olimpdep



Fan olimpiadalari bo'yicha
 iqtidorli o'quvchilar bilan ishlash
DEPARTAMENTI