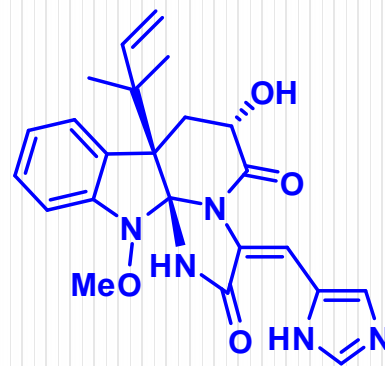


Asymmetric Total Synthesis of Neoxaline

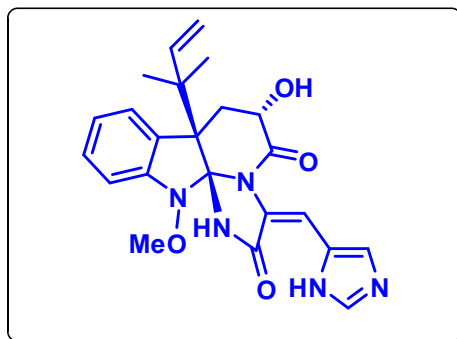
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JOURNAL OF THE AMERICAN CHEMICAL SOCIETY



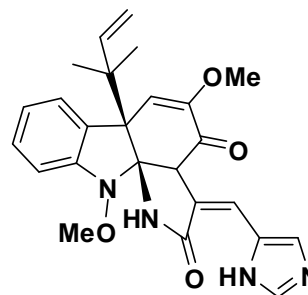
Sunazuka, T.; Omura, S et al. , *J. Am. Chem. Soc.* **2013**, *135*, 12568

Introduction

- It's a biologically active prenylated indole alkaloid and belongs to Oxaline family of natural products
- Isolated from a culture broth of *Aspergillus Japonicus* Fg-551 in 1979 by Omura group.
- It inhibits cell proliferation and arrest the cell cycle during the M phase but does not exhibit anti bacterial or anti fungal activities.



Neoxaline

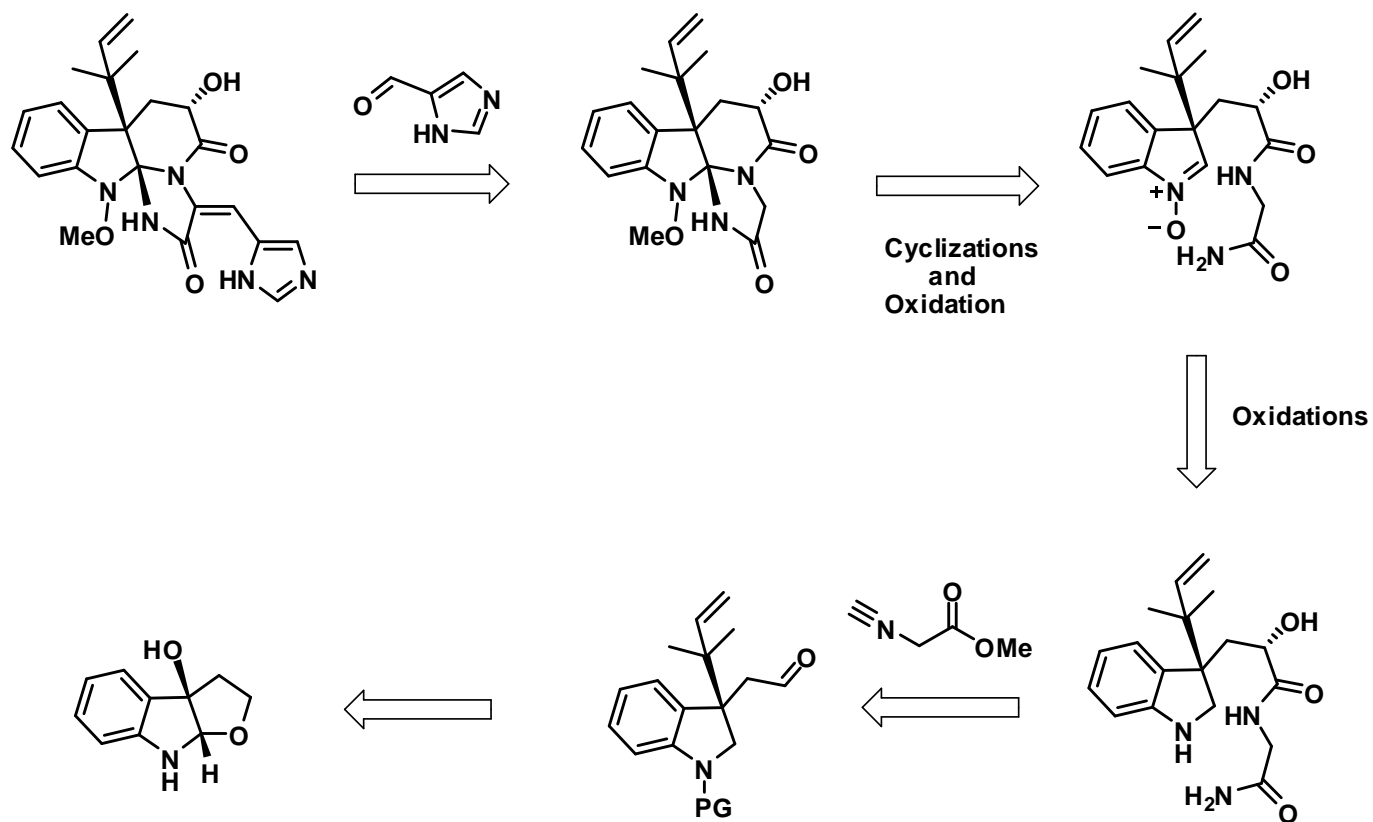


Oxaline

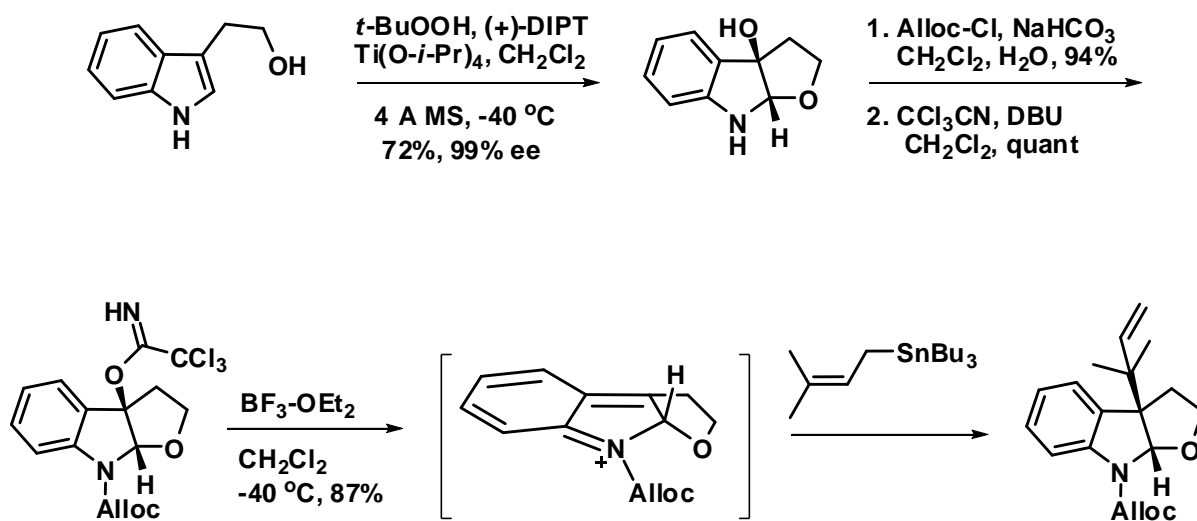
Typically Oxaline families have been isolated from *Penicillium* spp.

- Absolute configuration was predicted by comparison to other Oxaline family members of known absolute stereochemistry

Retrosynthetic Analysis of Neoxaline

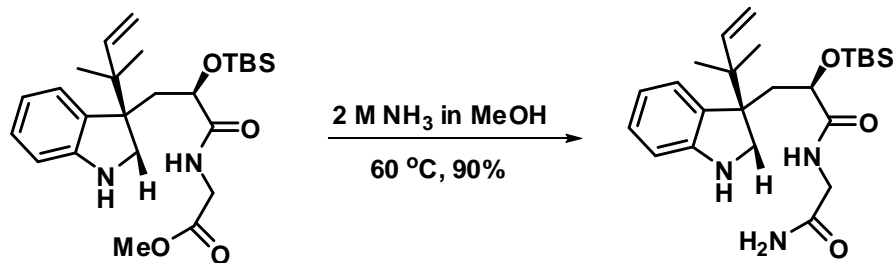
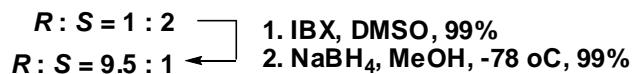
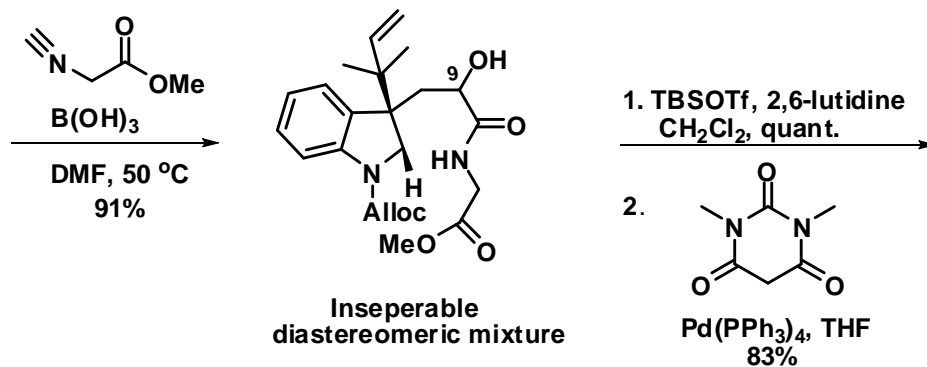
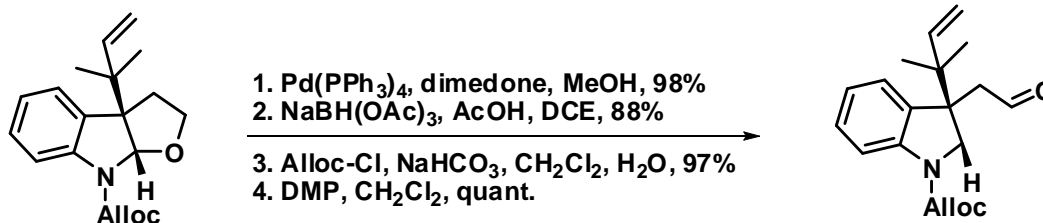


Stereoselective Introduction of the reverse prenyl group

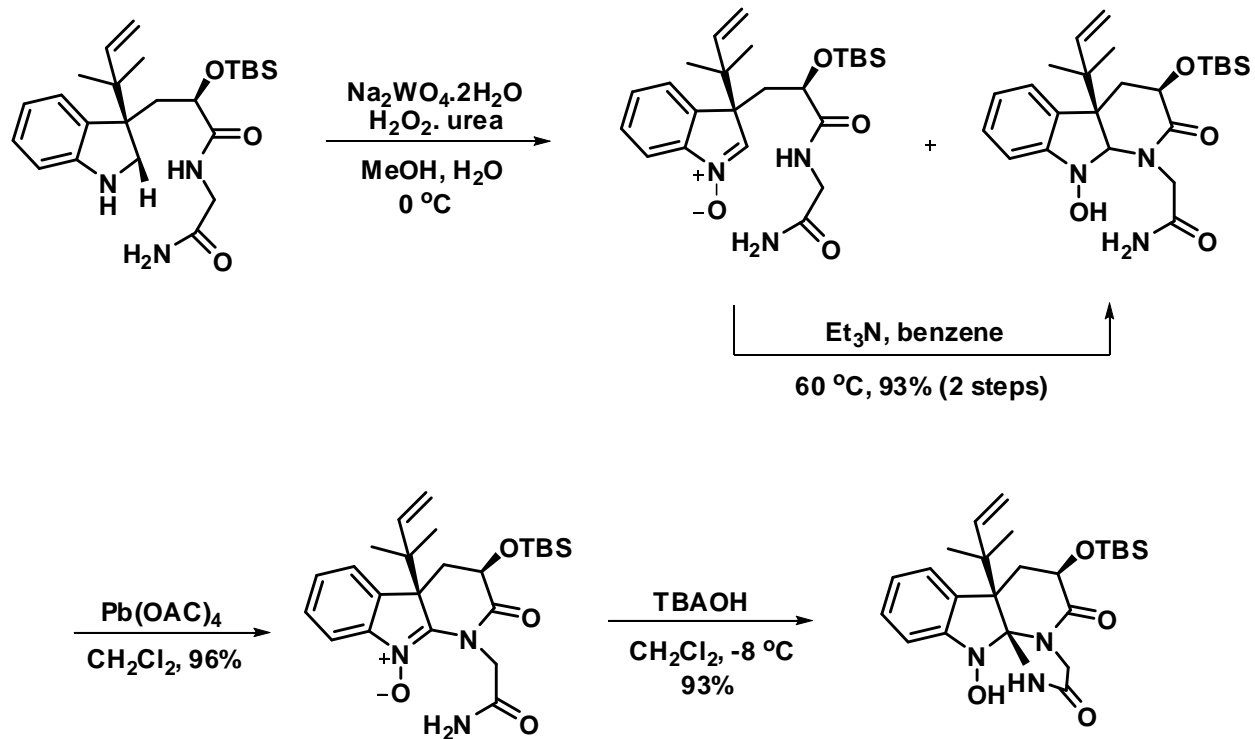


Stereochemistry was confirmed by NOE

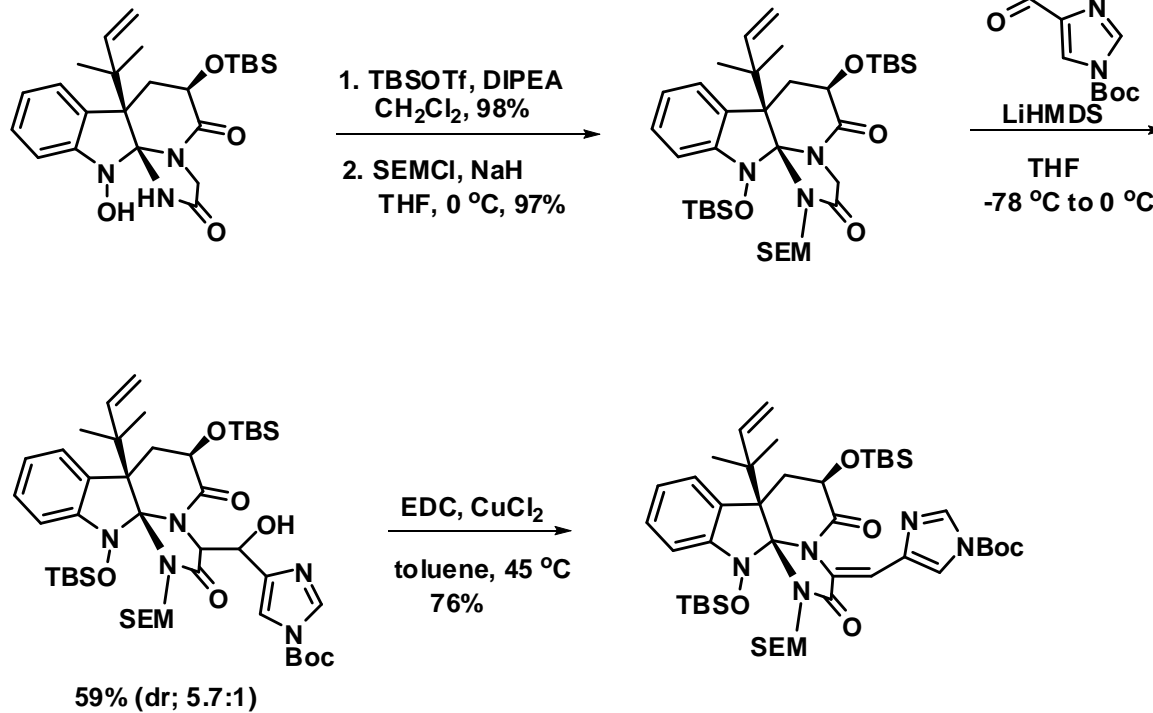
Preparation of cyclisation precursor

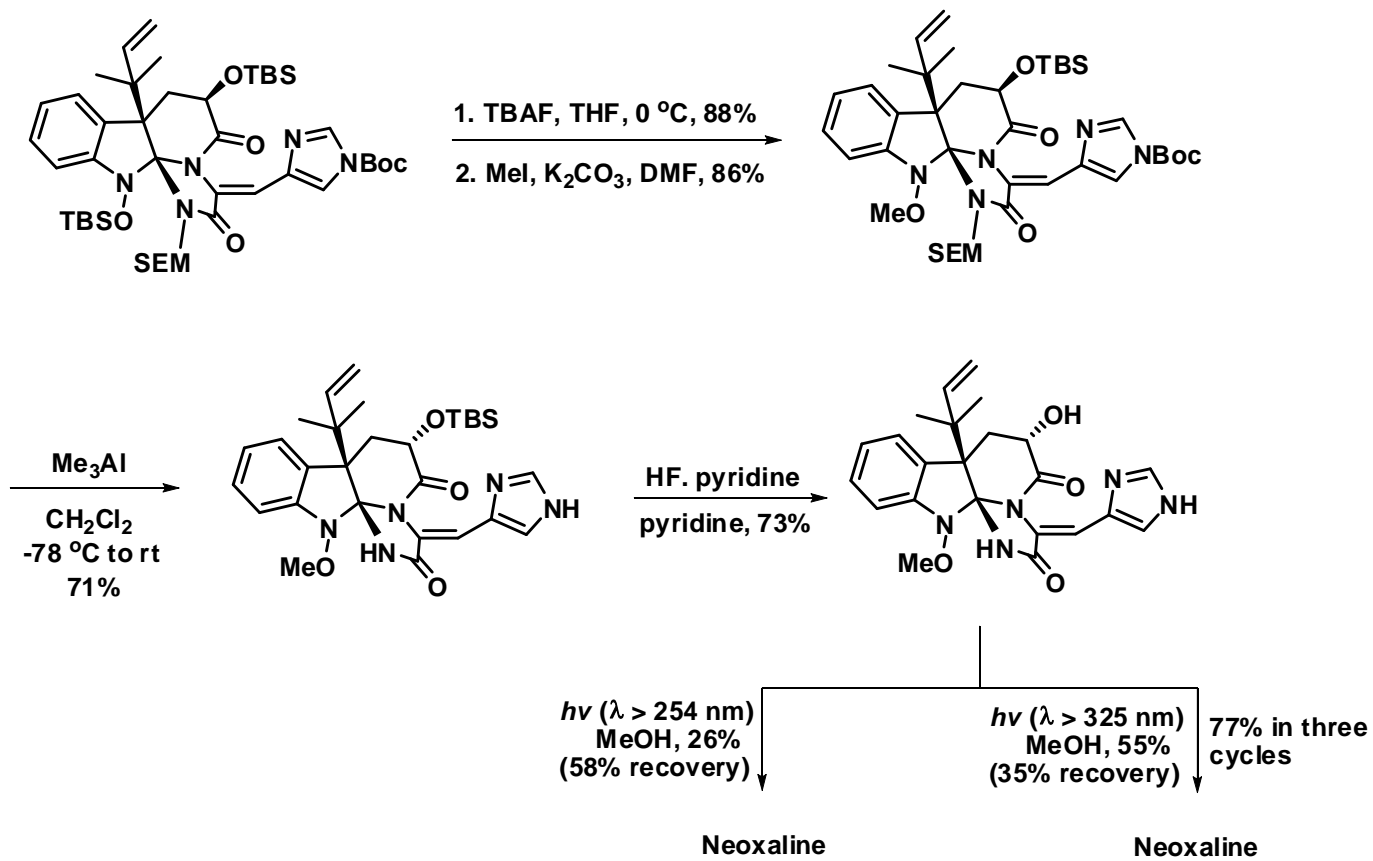


Construction of Indoline Spiroaminal



Total synthesis of Neoxaline





Conclusion

1. All spectral data including optical rotation value were matched with those of naturally occurring Neoxaline
2. This approach can facilitate the large-scale synthesis of Neoxaline (prepared 100 mg)
3. This synthesis could be applied to the analogues of Neoxaline

Thank you very much
For your attention