A02

Aplysiatoxin/oscillatoxin 類の網羅的合成研究

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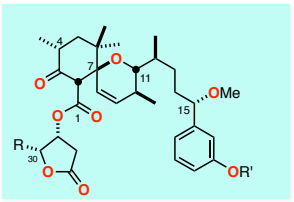
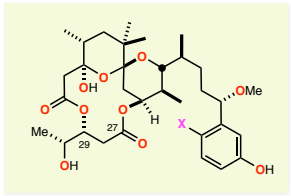
Oscillatoxin D and Aplysiatoxin



oscillatoxin D (OTX-D) : R = H
30-methyloscillatoxin D : R = Me

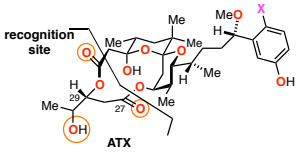
Isolation & structure
cyanobacteria (*Lyngbya majuscula*)
(R. E. Moore, *JOC* **1985**, *50*, 1255.)
Biological activity
Cytotoxicity against L1210 cell line
(as a personal communication)
Total synthesis
Ichihara (28 steps) *TL* **1995**, *36*, 3373.

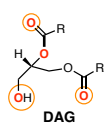


aplysiatoxin (ATX): X = Br
debromoaplysiatoxin: X = H

Isolation & structure
cyanobacteria, sea hare (*Stylocheilus longicauda*)
(P. J. Scheuer, *JACS* **1974**, *96*, 2243.)
Biological activity
Inflammatory activity
Tumor promotion through PKC activation
(R. E. Moore, *PNAS*, **1981**, *78*, 3872)
Total synthesis: Kishi (39 steps)
JACS **1987**, *109*, 6205.

PKC activation by aplysiatoxin

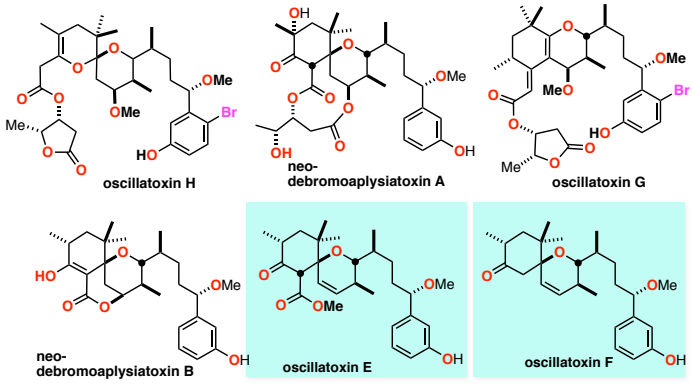




Aplysiatoxin activates protein kinase C (PKC) by mimicking diacylglycerol (DAG), an endogenous activator of PKC.

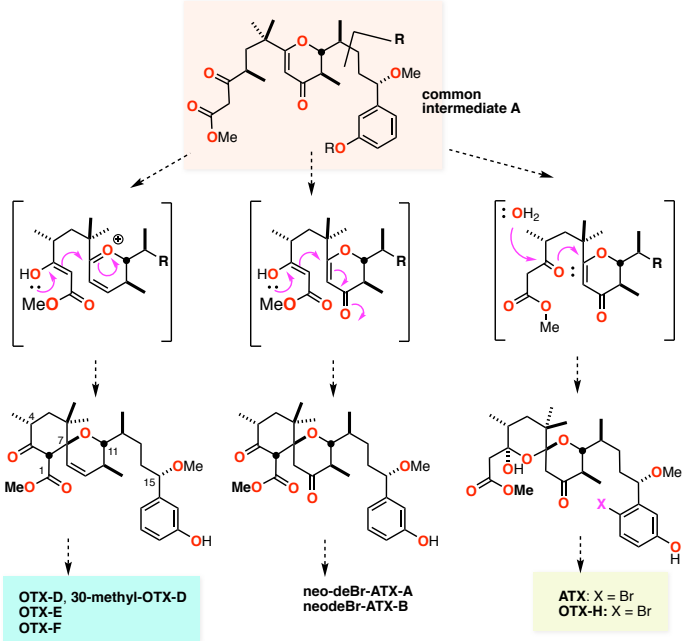
Review: Y. Kishi et al.
Acc. Chem. Res. **1998**, *31*, 163.

New analogs of ATX/OTX

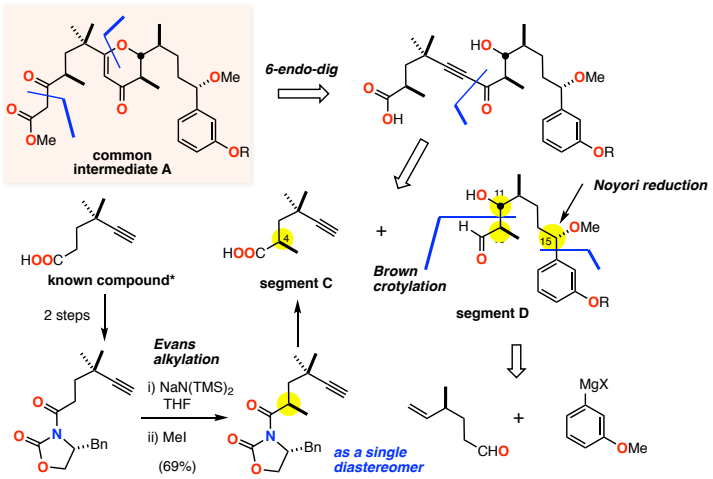


Ref. (a) H.-B. Han et al. *OL* **2018**, *20*, 578. (b) H. Nagai et al. *Tetrahedron* **2019**, *75*, 2486.
(c) Y.-H. Tang et al. *RSC Adv.* **2019**, *9*, 7594.

An unified synthetic strategy

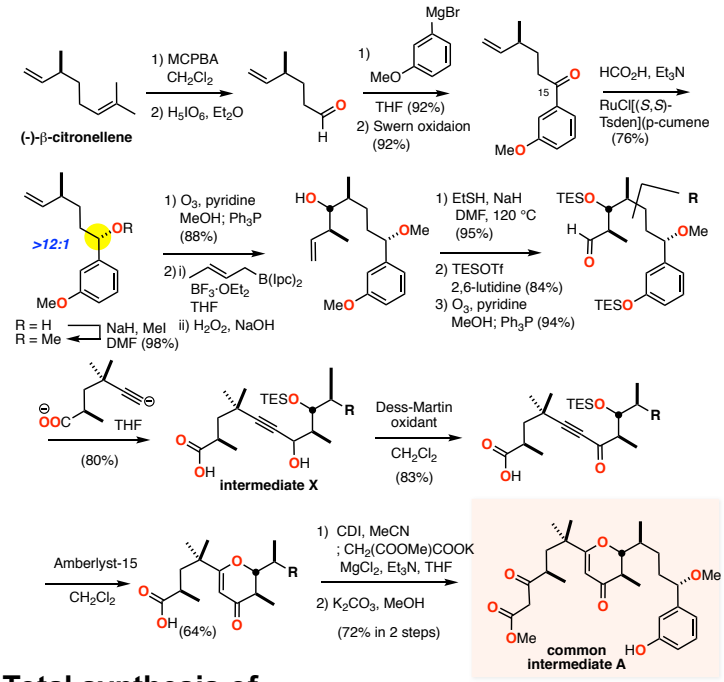


Synthetic plan of common intermediate A

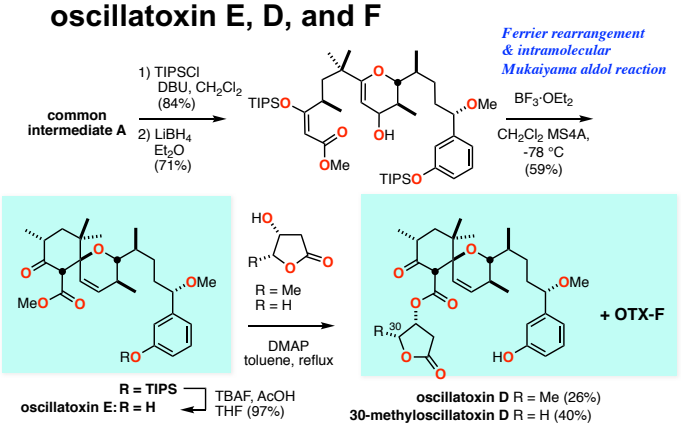


*B. M. Trost et al. *J. Am. Chem. Soc.*, **2007**, *129*, 11781.

Synthesis of common intermediate A



Total synthesis of oscillatoxin E, D, and F



Nokura Y. et al. *Org. Lett.*, **2017**, *19*, 5992.
Araki Y. et al. Manuscript preparation

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