Perkin 1 Abstracts: Natural Product Synthesis

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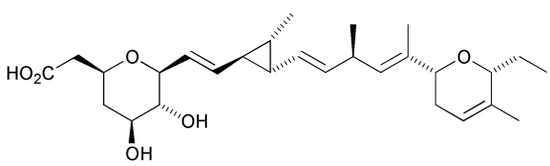
Perkin 1 Abstracts: Natural Product Synthesis aims to highlight syntheses that have been recently published. It includes brief descriptions of *biological activity* and *key steps*. A more comprehensive list of Natural Product syntheses and isolations can be found in *Natural Product Updates*.

Ambruticin

Biological activity: (a) isolated from *Polyangium cellulosum* var. *fulvum*; (b) orally active antifungal agent.

Key steps: (a) Kocienski-Julia olefination; (b) ring closing metathesis; (c) asymmetric allylation.

E. Lee, S. J. Choi, H. Kim, H. O. Han, Y. K. Kim, S. J. Min, S. H. Son, S. M. Lim and W. S. Jang, *Angew. Chem., Int. Ed.*, 2002, **41**, 1, 176.

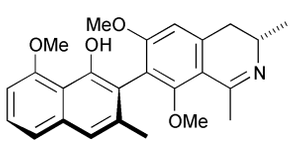


(–)-Ancistrocladidine

Biological activity: not reported.

Key steps: (a) Pinhey-Barton *ortho*-arylation; (b) Sharpless epoxidation; (c) Bischler-Napieralski cyclisation.

C. J. Bungard and J. C. Morris, *Org. Lett.*, 2002, **4**, 631.

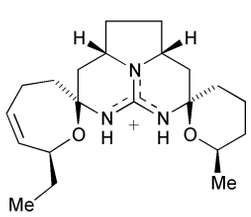


Crambescidin 359

Biological activity: (a) antitumour; (b) antiviral; (c) antifungal; (d) Ca^{+} channel blocker activity; (e) inhibitor of several ATPases.

Key steps: (a) Wittig reaction; (b) stereoselective 1,3-dipolar cycloaddition.

K. Nagasawa, A. Georgieva, H. Koshino, T. Nakata, T. Kita and Y. Hashimoto, *Org. Lett.*, 2002, **4**, 177.

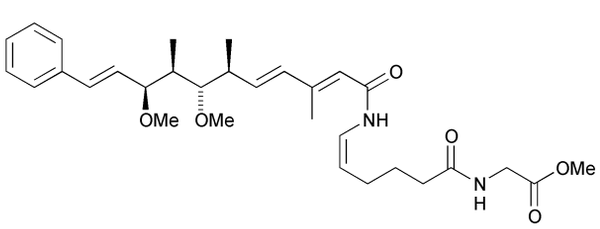


(+)-Crocacin D

Biological activity: (a) active against *Saccharomyces cerevisiae*; (b) toxic against L929 mouse fibroblast cell culture.

Key steps: (a) tin-mediated aldol reaction; (b) Stille coupling; (c) modified Wittig–Horner–Emmons reaction.

J. T. Feutrill, M. J. Lilly and M. A. Rizzacasa, *Org. Lett.*, 2002, **4**, 525.

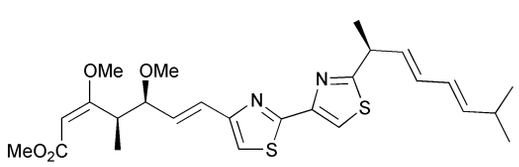


(+)-Cystothiazole A

Biological activity: (a) isolated from a strain of *Cystobacter fuscus*; (b) fungicide.

Key steps: Pd-catalysed cyclisation-methoxycarbonylation.

K. Kato, A. Nishimura, Y. Yamamoto and H. Akita, *Tetrahedron Lett.*, 2002, **43**, 643.

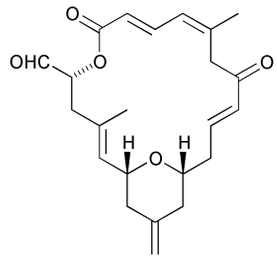


(+)-Dactylolide

Biological activity: (a) cytotoxic; (b) inhibits L1210; (c) inhibits SK-OV-3.

Key steps: (a) Steglich acylation; (b) Horner–Emmons macrocyclisation.

A. B. Smith III and I. G. Sofanov, *Org. Lett.*, 2002, **4**, 635.

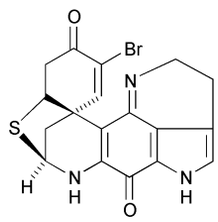


Discorhabdin A

Biological activity: (a) potent antitumour activity; (b) cytotoxic.

Key steps: PIFA-mediated spirocyclisation.

H. Tohma, Y. Harayama, M. Hashizume, M. Iwata, M. Egi and Y. Kita, *Angew. Chem., Int. Ed.*, 2002, **41**, 348.

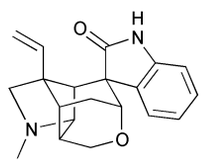


(±)-Gelsemine

Biological activity: not reported.

Key steps: stereospecific [3,3]-sigmatropic rearrangement.

H. Lin, F. W. Ng and S. J. Danishefsky, *Tetrahedron Lett.*, 2002, **43**, 549.

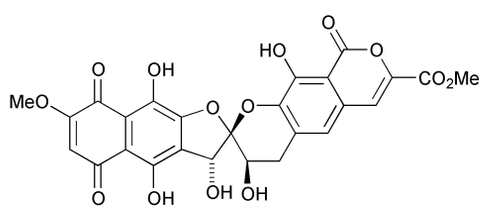


Heliquinomycinone

Biological activity: (a) related to structures encountered in the purpuromycin, γ-rubromycin and griseorhodin antibiotics; (b) aglycone of heliquinomycin, an inhibitor of human DNA helicase.

Key steps: spirocyclisation under Mitsunobu conditions.

T. Siu, D. Qin and S. J. Danishefsky, *Angew. Chem., Int. Ed.*, 2001, **40**, 4713.

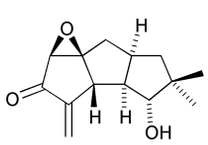


Hypnophilin

Biological activity: (a) antibacterial agent; (b) antitumour agent.

Key steps: (a) asymmetric formation of the tricyclic system by addition of a lithiated cyclopentyl acetal and vinyllithium to diisopropyl squarate.

F. Geng, J. Liu and L. A. Paquette, *Org. Lett.*, 2002, **4**, 71.

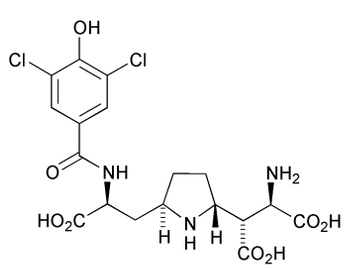


Kaitocephalin

Biological activity: potent inhibitor of neuronal cell death *via* antagonism of *N*-methyl-D-aspartic acid, α-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid and kainic acid receptors.

Key steps: (a) stereoselective 1,2-addition; (b) stereoselective C-C bond forming reaction of a nitrone and a halide.

H. Watanabe, M. Okue, H. Kobayashi and T. Kitahara, *Tetrahedron Lett.*, 2002, **43**, 861.

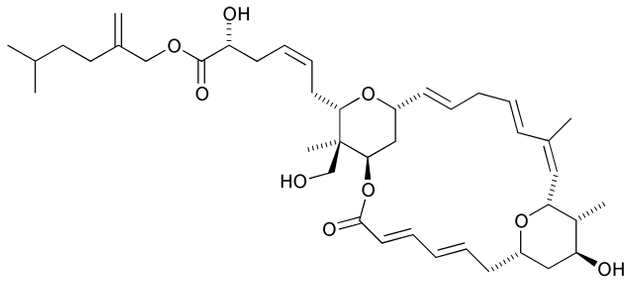


(–)-Lasonolide A

Biological activity: (a) isolated from *Forcepia sp.*; (b) cytotoxic against A-549 human-lung carcinoma cell line; (c) cytotoxic against P388 murine leukaemia cell line; (d) inhibits cell adhesion in EL-4.IL-2 cell line.

Key steps: (a) radical cyclisation of a bromomethyl (dimethyl)silyl ether; (b) Kocienski-Julia olefination; (c) Julia olefination; (d) intramolecular Stille coupling.

E. Lee, H. Y. Song, J. W. Kang, D.-S. Kim, C.-K. Jung and J. M. Joo, *J. Am. Chem. Soc.*, 2002, **124**, 384.

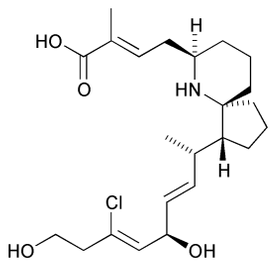


Pinnaic acid

Biological activity: isolated from the Okinawan bivalve *Pinna muricatta.*

Key steps: Horner–Wadsworth–Emmons reaction.

M. W. Carson, G. Kim and S. J. Danishefsky, *Angew. Chem., Int. Ed.*, 2001, **40**, 4453.

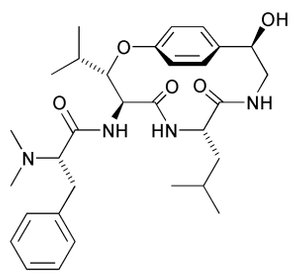


Sanjoinine G1

Biological activity: (a) isolated from the seed of *Zizyphus vulgaris*; (b) hypnotic; (c) sedative agent.

Key steps: intramolecular nucleophilic aromatic substitution of an aryl fluoride and tertiary alcohol.

T. Temal-Laib, J. Chastanet and J. Zhu, *J. Am. Chem. Soc.*, 2002, **124**, 583.

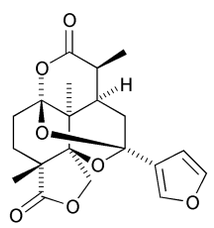


(–)-Saudin

Biological activity: (a) isolated from *Clutya richardiana*; (b) *in vivo* noninsulin dependent hypoglycemic activity.

Key steps: Claisen rearrangement.

R. K. Boeckman Jr., M. del Rosario Rico Ferreira, L. H. Mitchell and P. Shao, *J. Am. Chem. Soc.*, 2002, **124**, 190.

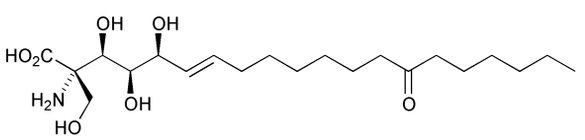


Sphingofungin E

Biological activity: (a) antifungal agents; (b) specifically inhibits serine palmitoyl transferase.

Key steps: Overman rearrangement.

T. Oishi, K. Ando, K. Inomiya, H. Sato, M. Iida and N. Chida, *Org. Lett.*, 2002, **4**, 151.



Ustiloxin D

Biological activity: (a) isolated from *Ustilaginoidea virens*; (b) potent antimitotic agent; (c) inhibitor of human tumour cell lines.

Key steps: (a) nucleophilic aromatic substitution of a nitrile-activated aryl fluoride with a tertiary alcohol; (b) Sharpless asymmetric aminohydroxylation; (c) macrolactamisation.

B. Cao, H. Park and M. M. Joullié, *J. Am. Chem. Soc.*, 2002, **124**, 520.