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Iriomoteolide-10a, a new 20-membered macrolides from dinoflagellate *Amphidinium* species

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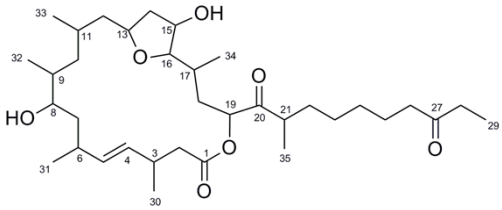
Summary

Marine dinoflagellates of the genus *Amphidinium* are well-known as a producer of unique cytotoxic metabolites. During our investigation of bioactive substances from the *Amphidinium* dinoflagellates, we have isolated a new 20-membered macrolide, iriomoteolide-10a, from the strain collected off Iriomote Island, Japan.

Iriomoteolide-10a is a new 20-membered macrolide with a tetrahydropyran ring at C-13—C-16, six one-carbon branches, two ketone carbonyls, and two hydroxyl groups. Iriomoteolide-10a exhibited cytotoxicity against human epidermoid carcinoma KB cells (IC_{50}: 0.9 μg/mL). In this symposium, we will discuss the isolation and structural elucidation of these new macrolides.



Iriomoteolide-10a

Isolation

Dinoflagellate *Amphidinium* sp. <strain KCA09053 >

Isolated from sea sand of Iriomote Island
25 ℃, 2 weeks in seawater medium enriched with
1 % PES supplement, 16 h light 8 h dark

30.3 g dry cells from 350 L of culture

Ext. with toluene / MeOH, 1 : 3
partit. with toluene / H_2O

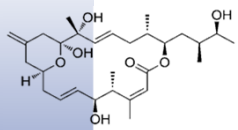
Amphidinium sp.
KCA09053 strain

Toluene 7.01g **H_2O**

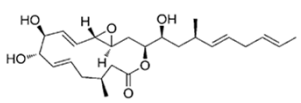
SiO_2 column ($CHCl_3$/MeOH, 95:5)
C_{18} column (MeCN/H_2O, 70 : 30)
C_{18}HPLC (MeCN/H_2O, 70 : 30)

Iriomoteolide-10a
0.0165%

known macrolides
Iriomoteolide-1a 0.0074%
Iriomoteolide-3a 0.0083%



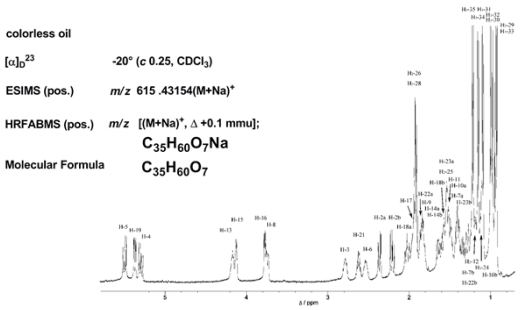
iriomoteolide-1a



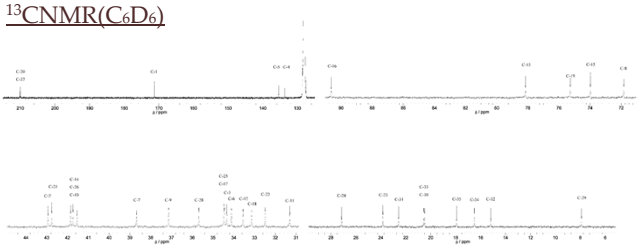
iriomoteolide-3a

Structure Elucidation of Iriomoteolide-10a

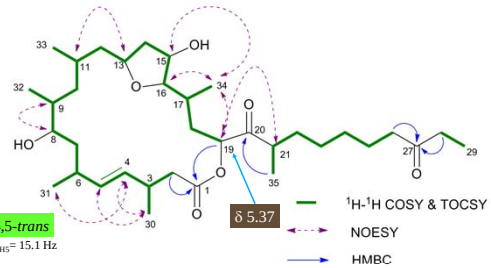
^{1}H NMR (C_6D_6)



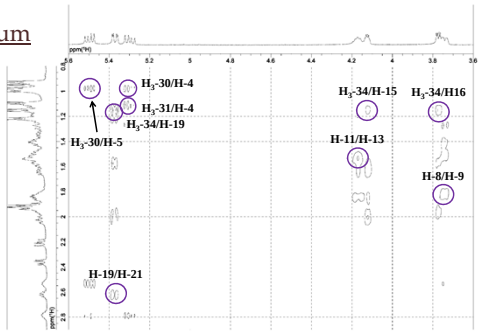
^{13}CNMR(C_6D_6)



Planar Structure



Noesy spectrum



Reference

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