

4708-1 (C15 acetogenin)

Name: Zagashimallene⁽⁴⁾; aplysiallene⁽⁵⁾

{2-(4-Bromo-hexa-1,3-dienyl)-5-(3-bromo-propa-1,2-dienyl)-
hexahydro-furo[3,2-*b*]furan}

Origin: *Laurencia okamurai* (as *L. okamurai*) (Zagashima Island, Ago Bay, Mie, Japan)⁽¹⁾;

Laurencia sp. (Tsubota, Miyakejima Island, Tokyo, Japan)⁽²⁾;

Laurencia sp. (Omaezaki, Shizuoka, Japan)⁽³⁾;

Laurencia intricata (Katsuura, Chiba, Japan)⁽⁴⁾;

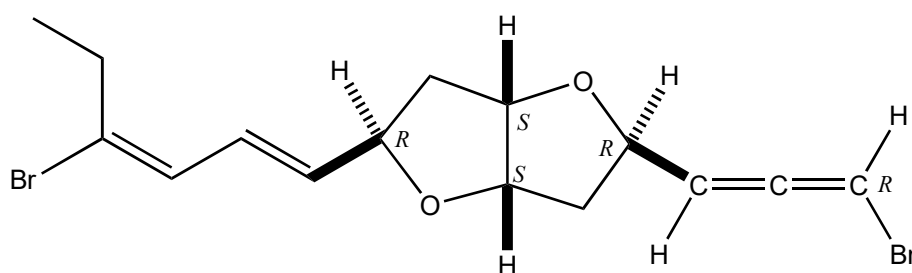
Aplysia kurodai (Echizen Coast, Fukui, Japan)⁽⁵⁾;

Formula: C₁₅H₁₈Br₂O₂

Mol. Wt.: 390.11

Opt. Rot.: [α]_D²³ -215 (CHCl₃)⁽¹⁾; [α]_D²³ -168 (CHCl₃)⁽⁴⁾; [α]_D²³ -160 (CHCl₃)⁽⁵⁾

Mp.: Oil



References and Notes

(1) Suzuki, M. and Kurosawa, E. 1985. *Phytochemistry*, **24**, 1999-2002. A C-15 non-terpenoid from the red alga *Laurencia okamurai*. (UV, IR, ¹H-NMR, ¹³C-NMR, MS)

(2) **Revision of chemical shift values and assignment of carbon signals**; Suzuki, M., Kawamoto, T., Vairappan, C. S., Ishii, T., Abe, T., and Masuda, M. 2005. *Phytochemistry*, **66**, 2787-2793. Halogenated metabolites from Japanese *Laurencia* spp. (¹³C-NMR)

(3) Umezawa, T., Oguri, Y., Matsuura, H., Yamazaki, S., Suzuki, M., Yoshimura, E., Furuta, T., Nogata, Y., Serisawa, Y., Matsuyama-Serisawa, K., Abe, T., Matsuda, F., Suzuki, M., and Okino, T. 2014. *Angew. Chem. Int. Ed.*, **53**, 3909-3912. Omaezallene from red alga *Laurencia* sp.: Structure elucidation, total synthesis, and antifouling activity. (together with omaezallene, (12*Z*)-omaezallene, 12,13-dihydroomaezallene, [zagashimallene](#), intricatetraol)

(4) Ishii, T., Shinjo, Y., Miyagi, M., Matsuura, H., Abe, T., Kikuchi, N., and Suzuki, M. 2019. *Rec. Nat. Prod.*, **13**, 81-84. Investigation of insect repellent activity of cyclocolorenone obtained from the red alga *Laurencia intricata*. (¹³C-NMR) (together with [zagashimallene](#), intricatetraol, cyclocolorenone)

(5) **From the sea hare**; (a) Okamoto, Y., Nitanda, N., Ojika, M., and Sakagami, Y. 2001. *Biosci. Biotechnol. Biochem.*, **65**, 474-476. Aplysiallene, a new bromoallene as an Na, K-ATPase inhibitor from the sea hare, *Aplysia kurodai*. (UV, ¹H-NMR, ¹³C-NMR) (together with laurinterol, debromolaurinterol); (b) ERRATA, *Biosci. Biotechnol. Biochem.*, **67**, 460 (2003).

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References and Notes

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(6) **Total synthesis**; (a) Wang, J. and Pagenkopf, B. L. 2007. *Org. Lett.*, **9**, 3703-3706. First total synthesis and structural reassignment of (-)-aplysiallene.; (b) Yamakawa, M., Kurachi, T., Yoshikawa, Y., Arisawa, M., Okino, Y., Suzuki, K., and Fujioka, H. 2015. *J. Org. Chem.*, **80**, 10261-10277. Stereoselective construction of 2,7-disubstituted *fused*-bis tetrahydrofuran skeletons: Biomimetic-type synthesis and biological evaluation of (*dl*)- and (-)-aplysiallene and their derivatives.; (c) Kobayashi, S., Yokoi, T., Inoue, T., Hori, Y., Saka, T., Shimomura, T., and Masuyama, A. 2016. *J. Org. Chem.*, **81**, 1484-1488. Stereocontrolled synthesis of a possible stereoisomer of laurenidificin and a formal total synthesis of (+)-aplysiallene featuring a stereospecific ring contraction.