

PL09 Bioactive natural products from marine dinoflagellates*Jun'ichi Kobayashi*

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Marine dinoflagellates have proven to be a good source of compounds with intriguing structures and interesting biological activity.

A series of cytotoxic macrolides, amphidinolides A~H and J~W, have been isolated from marine dinoflagellates of genus *Amphidinium*, which were separated from the marine flatworms *Amphiscolops* sp. Amphidinolides B, C, G, H, and N were potent cytotoxic, among which amphidinolides C and H showed antitumor activity *in vivo*. The absolute stereochemistries of amphidinolides B, C, E, G, H, J, T, and W have been established by combination of syntheses of the degradation products and NMR analysis. On the basis of stable isotope incorporation experiment, the backbones of some amphidinolides were shown to be derived from non-successive mixed polyketide chains.

On the other hand, colopsinols and luteophanols, long chain polyhydroxyl compounds, have been isolated from dinoflagellates of the genus *Amphidinium* and the structures were elucidated by 2D NMR techniques and FABMS/MS data and chemical means. Colopsinol A exhibits potent inhibitory activity against DNA polymerases α and β .

In this congress, the isolation, structure elucidation, biosynthesis, and bioactivity of these macrolides and polyketides will be described.

References: 1. Kobayashi J. et al. (1999) *J. Org. Chem.*, 64: 1478-1782. 2. Sato M. et al. (2000) *Tetrahedron*, 41: 503-506. 3. Kobayashi J. et al. (2000) *Org. Lett.*, 2: 2805-2807. 4. Kubota T. et al. (2001) *Org. Lett.*, 3: 1363-1366. 5. Shimbo K. et al. (2002) *J. Org. Chem.*, 67: 1020-1023.

**Prof. Dr. Jun'ichi Kobayashi**

Prof. Jun'ichi Kobayashi (1949) studied in Hokkaido University, Sapporo (Japan) where he became PhD in Pharmaceutical Sciences (1979). Since 1975 he has occupied several positions: Researcher in the Mitsubishi-Kasei Institute of Life Sciences (1975-1986), Research Associate in the University of Illinois (with Prof. Kenneth Rinehart) (1982-1984), and Senior Researcher in the Mitsubishi-Kasei Institute of Life Sciences (1986-1989). Since then he is Professor of the Graduate School of Pharmaceutical Sciences (Hokkaido University). His main research interests have been in the fields of bioactive metabolites from marine micro- and macro-organisms, stereochemistry and biogenesis of unique marine products, bioactive taxoids from yew trees, *Nocardia* metabolites as drug leads.