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OBITUARY

Remembering Professor Jun'ichi Kobayashi (September 23, 1949–October 9, 2023)

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Professor Jun'ichi Kobayashi

Dr. Jun'ichi Kobayashi, Professor Emeritus of Hokkaido University, passed away on October 9, 2023 at the age of 74. He served *The Journal of Antibiotics* as an Editorial Board Member since 2006.

Professor Jun'ichi Kobayashi was born in 1949 at Hirosaki, Aomori, Japan. He completed his B.S. in 1973 and M.S. in 1975 at the Faculty of Pharmaceutical Sciences, Hokkaido University with Professor Yoshihisa Mizuno on the studies of nucleic acid synthesis. In 1975 he joined Mitsubishi-Kasei Institute of Life Sciences and worked on the synthesis and conformational analyses of bioactive peptides. After receipt of his Ph.D. from Hokkaido University in 1979, he started his research program on marine natural products chemistry together with the late Professor Hideshi Nakamura (Nagoya University) and the late Professor Yoshimasa Hirata (Professor Emeritus of Nagoya University). His early study on marine natural products was on the isolation of peptide toxins from the venom gland of cone shells, named geographtoxins (μ-conotoxins). Professor Kobayashi did postdoctoral studies at University of Illinois at Urbana-Champaign with Professor Kenneth L. Rinehart from 1982 to 1984, and isolated a series of antiviral halogenated β-carboline alkaloids, eudistomins, from the Caribbean colonial tunicate *Eudistoma olivaceum*. After returning to Japan, he investigated the synthesis of β-carboline alkaloids and discovered a derivative called MBED with significant Ca^{2+}-releasing activity from sarcoplasmic reticulum through collaboration with Professor Yasushi Ohizumi (Professor Emeritus of Tohoku University). In 1986 he was promoted to Senior Researcher at Mitsubishi-Kasei Institute of Life Sciences, and further developed his study on marine natural products and succeeded in isolating a number of new bioactive substances from various marine organisms such as sponges, tunicates, dinoflagellates, and others.

In 1989, Professor Kobayashi was appointed as a full professor at Hokkaido University, Faculty of Pharmaceutical Sciences, where he continued his research career for more than 25 years as a globally recognized top-tier scientist in the field of natural products chemistry. After his retirement in 2015, he became an Invited Professor at Hokkaido University (2015–2018). He was also appointed as Emeritus Professor at Shanghai Institute of Organic Chemistry and Emeritus Professor at Shanghai Institute of Material Medica in 2005, Visiting Professor at Shanghai Jiao Tong University (2015-2018), and Visiting Professor at Taipei Medical University in 2017. I joined his research group as a postdoctoral fellow at Mitsubishi-Kasei Institute of Life Sciences in 1986–1988 and also as an associate professor at Hokkaido University in 1990–1997.

Professor Kobayashi's main research interest was the search for bioactive substances from various marine and

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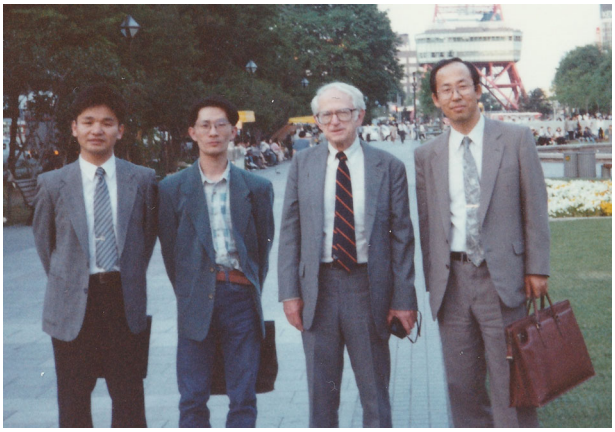

A picture on the occasion of the visit of Professor K. L. Rinehart to Hokkaido University taken at the Odori Park in Sapporo on June 24th, 1994. From the right: Professor J. Kobayashi, Professor K. L. Rinehart, Professor M. Tsuda (Kochi University), and M. Ishibashi.

other wide-ranging natural resources, and their application to the basic research of life sciences. He isolated and determined the structures of more than 1000 new bioactive natural products, and many of them are expected to serve as lead compounds for drug development studies or as chemical tools for elucidating biological functions. Some of his representative works with a high number of citations are introduced as follows.

A series of manzamine derivatives, which are polycyclic alkaloids with unusual ring systems and expected as antimalarial agents, were isolated from Okinawan marine sponge *Ircinia* sp., including ircinal A and keramaphidin B corresponding to the biosynthetic intermediates of manzamine alkaloids. Purealidins, bromotyrosine spiroisoxazoline alkaloids, and manzacidins, tetrahydropyrimidine alkaloids, are also unique Okinawan sponge metabolites isolated from *Psammaplysilla purea* and *Hymeniacidon* sp., respectively, and their structures attracted the attention of many synthetic organic chemists. Unique alkaloids with polycyclic aromatic ring systems such as ascididemin and cystodytins were obtained from Okinawan marine tunicates from *Didemnum* sp. and *Cystodytes dellechiajei*, respectively. Iejimalides with a unique 24-membered polyene-macrolide structure having V-ATPase inhibition activity were also obtained from an Okinawan tunicate *Eudistoma* cf. *rigida* native to the coral reefs of Ie Island (Iejima). Amphidinolides are a series of new macrolides with cytotoxic activity isolated from symbiotic marine dinoflagellates of the genus *Amphidinium* sp., which were separated from inside cells of marine acoelomorpha *Amphiscolops* sp. More than 30 new macrolides of amphidinolide group were obtained with various different carbon-chain structures, and some of them had odd-numbered macrocyclic lactone rings.

Not constrained to marine organisms, Professor Kobayashi also had outstanding achievements in the isolation of many new natural products from terrestrial plants and microorganisms. He isolated new taxoids from Japanese yew tree *Taxus cuspidata* inhibiting drug transport activity of P-glycoprotein in multidrug-resistant cells, and numerous unique alkaloids with polycyclic aliphatic structures from plant materials of the genera of *Daphniphyllum* and *Lycopodium*. Additionally, a new 32-membered macrolide, brasilinolide A, and a new diterpenoid derivative, brasilicardin A, with immunosuppressive activity were isolated from actinomycetes of the genus *Nocardia*.

In addition to his contribution to *The Journal of Antibiotics* as a member of the Editorial Board, Professor Kobayashi also served as an Editorial Board Member of *Marine Drugs*, *Molecules*, *Chemical and Pharmaceutical Bulletin*, and *Journal of Natural Medicines*. He was also an Editorial Advisory Board Member of *Journal of Organic Chemistry* and *Journal of Natural Products*, and was a Co-editor of *Progress in the Chemistry of Organic Natural Products* (Springer).

Professor Kobayashi has 554 publications in Web of Science with *h*-index of 68 as of November 21st, 2023, and he published more than 55 reviews and 19 book chapters. In recognition of these achievements, he was awarded the Sumiki-Umezawa Memorial Award by the Japan Antibiotics Research Association in 2008, the Japanese Society of Pharmacognosy Award in 2013, and the Pharmaceutical Society of Japan Award in 2015.

Professor Kobayashi's great and globally renowned contribution to the development of natural products chemistry and the leading role he played in research and education in natural medicines for many long years are truly remarkable. I pray for the repose of his soul and sincerely thank for his many great achievements. On behalf of all members involved in this journal, I sincerely express our condolences here.

Compliance with ethical standards

Conflict of interest The author declares no competing interests