

REFERENCES

- Adamczeski, M., Quinoa, E., and Crews, P. 1989. Novel sponge-derived amino acids: Structures, stereochemistry, and synthesis of several new heterocycles. *J. Am. Chem. Soc.* 111: 647-654.
- Adamczeski, M., Reed, A. R., and Crews, P. 1995. New and known diketopiperazines from the Caribbean sponge, *Calyx* cf. *podatypa*. *J. Nat. Prod.* 58(2): 201-208.
- Anthoni, U., Christophersen, C., and Neilsen, P. H. 1995. Pseudomonine, an isoxazolidone with siderophoric activity from *Pseudomonas fluorescens* AH2 isolated from lake Victorian Nile perch. *J. Nat. Prod.* 58(11): 1786-1789.
- Benedict, R. C., and Langlykke, A. F. 1947. Antibiotics. *Annu. Rev. Microbiol.* 1: 193.
- Baumann, P., Gauthier, M. J., and Baumann, L. 1984. Genus *Alteromonas* Baumann, Baumann, Mandel, and Allen 1972. In N. R. Krieg, and J. G. Holt (eds.), *Bergey's manual of systematic bacteriology*, pp. 343-352. Vol. 1, Baltimore: William & Wilkins.
- Bell, R., and Carmeli, S. 1994. Vibrindole A, a metabolite of the marine bacterium, *Vibrio parahaemolyticus*, isolated from the toxic mucus of the boxfish *Ostracion cubicus*. *J. Nat. Prod.* 57(11): 1587-1590.
- Benjadol, P. 1998. Natural components of marine origin. (n.d.). (n.p.).
- Blunden, G. 1996. Biologically active compounds from marine organisms. In W. C. Evan (ed.), *Trease and Evans' Pharmacognosy*, pp. 19-27. UK: W. B. Saunders.
- Borrow, G. I., and Feltham, R. K. A., eds. 1993. Cowan and Steel's manual for identification of medical bacteria. 3rd ed. Great Britain: Cambridge University Press.
- Brock, T. D., Madigan, M. T., Martinko, J. M., and Parker, J. 1993. Biology of microorganisms. 7th ed. New Jersey: Prentice Hall.

- Burkholder, P. R., Pfister, R. M., and Leitz, F. H. 1966. Production of a pyrrole antibiotic by a marine bacterium. *Appl. Microbiol.* 14(4): 649-653.
- Davidson, B. S. 1995. New dimensions in natural products research: Cultured marine microorganisms. *Biotechnology* 6: 284-291.
- Davidson, B. S., and Schumacher, R. W. 1993. Isolation and synthesis of caprolactin A and B, new caprolactams from marine bacterium. *Tetrahedron* 49(30): 6569-6574.
- De man, J. M., De man, L., and Gupta, S. 1986. Texture and microstructure of soybean curd (tofu) as affected by different coagulants. *Food Microstruct.* 5: 83-89.
- Do, H. K., Kogure, K., and Simido, U. 1990. Identification of deep-sea-sediment bacteria which produce tetrodotoxin. *Appl. Envi. Microbiol.* 56(4): 1162-1163.
- Fenical, F. 1993. Chemical studies of marine bacteria: Developing a new resource. *Chem. Rev.* 93: 1973-1983.
- Fenical, F., and Jensen, P. R. 1993. Marine microorganisms: A new biomedical resource. In D. H. Attaway, and O. R. Zaborsky (eds.), *Marine biotechnology: Volume 1 pharmaceutical and bioactive natural products*, pp. 419-457. New York: Plenum press.
- Fusetani, N., Ejima, D., Matsunaga, S., Hashimoto, K., Itagaki, K., Akagi, Y., Taga, N., and Suzuki, K. 1987. 3-amino-3-deoxy-D-glucose: An antibiotic produced by a deep sea bacterium. *Experientia* 43: 464-465.
- Gassman, P. G., Cue, B. W. Jr., and Luh, T. Y. 1977. A general method for the synthesis of isatins. *J. Org. Chem.* 42(8): 1344-1348.
- Gil-Turnes, M. F., and Fenical, W. 1992. Embryos of *Homarus americanus* are protected by epibiotic bacteria. *Biol. Bull.* 182: 105-108.
- Gil-Turnes, M. F., Hay, M. E., and Fenical, W. 1989. Symbiotic marine bacteria chemically defend crustacean embryos from a pathogenic fungus. *Science* 246: 116-118.

- Grassman, P. G., Cue, B. W. Jr., and Luh, T. Y. 1977. A general method for the synthesis of isatin. J. Org. Chem. 42(8): 1344-1348.
- Gustafson, K., Roman, M., and Fenical, W. 1989. The Macrolactins, a novel class of antiviral and cytotoxic macrolides from a deep sea marine bacterium. J. Am. Chem. Soc. 111: 7519-7524.
- Hirsch, S., Miroz, A., McCarthy, P., and Kashman, Y. 1989. Etzionin, A new antifungal metabolite from a red sea tunicate. Tetrahedron Lett. 30(32): 4291-4294.
- Holt, J. G. (editor-in chief): 1994. Burgey's manual of determinative bacteriology. 9th ed. London: William & Wilkins.
- Hotta, K., Yoshida, M., Hamada, M., and Okami, Y. 1980. Study on new aminoglycoside antibiotics, isatamycins, from an actinomycete isolated from a marine environment. J. Antibiot. 33(12): 1515-1520.
- Inglis, V., Abdullah, S. Z., Angka, S. L., Chinabut, S., Chowdhury, Md. B. R., Leano, E. M., MacRae, I. H., Sasongko, A., Somsiri, T., and Yambot, A. V. 1992. Survey of resistance to antibacterial agents used in aquaculture in five South East Asian countries. In M. Shariff, R. P. Subasinghe, and J. R. Arthur, (eds.), Diseases in Asian Aquaculture, pp. 331-336. Malaysia: n.p.
- Ireland, C. M., Copp, B. R., Foster, M. P., McDonald, L. A., Radisky, D. C., and Christopher Swersey, J. 1993. Biomedical potential of marine natural products. In D. H. Attaway, and O. R. Zaborsky (eds.), Marine biotechnology: Volume 1 pharmaceutical and bioactive natural products, pp. 1-4. New York: Plenum Press.
- Isono, F., Takeuchi, M., Katayama, T., Seno, A., Shiozawa, H., Inukai, M., Ishii, A., Kodama, K., Haruyama, H., Watanabe, T., Kinoshita, T., and Takahashi, S. 1993. A new antibiotic, B-1015, produced by *Alcaligenes faecalis*. Annu. Rep. Sunkyo Res. Lab. 45: 113-118.

- Jalal, M. A. F., Hossain, M. B., Van der Helm, D., Sanders-Loehr, J., Actis, L. A., and Crosa, J. H. 1993. Structure of anguibactin, a unique plasmid-related bacteria siderophore from the fish pathogen *Vibrio anguillarum*. *J. Am. Chem. Soc.* 111: 292-296.
- Jayatilake, G. S., Thronton, M. P., Leonard, A. C., Grimwade, J. E., and Baker, B. J. 1996. Metabolites from an Antarctic sponge-associated bacterium, *Pseudomonas aeruginosa*. *J. Nat. Prod.* 59: 293-296.
- Kakou, Y., Crews, P., and Bakus, G. J. 1987. *J. Nat. Prod.* 50: 482. cited in J. Kobayashi, and M. Ishibashi 1992. *The Alkaloids* 41: 42-123.
- Kameyama, T., Takahashi, A., Kurasawa, S., Ishizuka, M., Okami, T., Takeuchi, T., and Umezawa, H. 1978. Bisucaberin, a new siderophore, sensitizing tumor cells to macrophage-mediated cytolysis. *J. Antibiot.* 40(12): 1664-1670.
- Kazlauskas, R., Murphy, P. T., and Well, R. J. 1978. A diketopiperazine derivatives trichloroleucine from the sponge *Dysidea herbacea*. *Tetrahedron Lett.* 49: 4945-4948.
- Kohl, H., Bhat, S. V., Patell, J. R., Ganhi, N. M., Nazareth, J., Divekar, P. V., and de Souza, N. J. 1974. Structure of magesidin, a new magnesium-containing antibiotic from *Pseudomonas magnesiorubra*. *Tetrahedron Lett.* 12: 983-986.
- Kosuge, T., Tsuji, K., Hirai, K., and Fukuyama, T. 1985. First evidence of toxin production by a marine organism. *Chem. Pharm. Bull.* 33(7): 3059-3061.
- Lali, C. M., and Parsons, T. R. 1997. *Biological Introduction*. 2nd ed. Scotland: Thomson Litho.
- Li, J., Chen, G., and Webster, J. M. 1995. Antimicrobial metabolites from a bacterial symbiont. *J. Nat. Prod.* 58(7): 1081-1086.
- Lindgren, G., and Bohlin, L. 1986. Studies of Swedish marine organisms VII. A novel biologically active indole alkaloid from the sponge *Geodia baretti*. *Tetrahedron Lett.* 27(28): 3283-3284.

- Lovell, F. M. 1966. The structure of a bromide-rich marine antibiotic. J. Am. Chem. Soc. 88(19): 4510-4511.
- McInerney, B. V., and Gregson, R. P. 1991. Biologically active metabolites from *Xenorhabdus* sp. J. Nat. Prod. 54(3): 774-784.
- Miki, W., Otaki, N., Yokoyama, A., Izumida, H., and Shimidzu, N. 1994. Okadaxanthin, a novel C₅₀-carotenoid from a bacterium, *Pseudomonas* sp. KK10206C associated with marine sponge, *Halichondria okadai*. Experientia 50: 684-686.
- Molinski, T. F., and Ireland, C. M. 1988. J. Org. Chem. 53: 2103. cited in J. Kobayashi, and M. Ishibashi 1992. The Alkaloids 41: 42-123.
- Needham, J., Andersen, R. J., and Kelly, M. T. 1991. Oncorhyncilide, a novel metabolite of a bacterium isolated from seawater. Tetrahedron Lett. 32(3): 315-318.
- Needham, J., Kelly, M. T., Ishige, M., and Andersen, R. J. 1994. Andrimad and moiramides A-C, metabolites produced in culture by a marine isolate of the bacterium *Pseudomonas fluorescens*: structure elucidation and biosynthesis. J. Org. Chem. 59: 2058-2063.
- Noguchi, T., Jeon, J. K., Arakawa, O., Sugita, H., Deguchi, Y., Shida, Y., and Hashimoto, K. 1986. Occurrence of tetrodotoxin and anhydrotetrodotoxin in *Vibrio* sp. isolated from the intestines of a xanthid crab, *Atergatis floridus*. J. Biochem. 99: 311-314.
- Okami, Y. 1986. Marine microorganisms as a source of bioactive agents. Microbiol. Ecol. 12: 65-78.
- Okami, Y., Okazaki, O., Kitahara, T., and Umesawa, H. 1976. A new antibiotic, aplasmomycin, produced by a Streptomycete isolated from shallow sea mud. J. Antibiot. 29(10): 1019-1025.
- Okazaki, T., Kitahara, T., and Okami, Y. 1975. A new antibiotic SS-228 produced by *Chainia* isolated from shallow sea mud. J. Antibiot. 28(3): 176-184.

- Omar, S., Tenenbaum, L., Manes, L., and Crews, P. 1988. Novel marine sponge derived amino acids 7. The Fenestins. Tetrahedron Lett. 29(43): 5489-5492.
- Orjala, J., Nagle, D., and Gerwick, W. H. 1995. Malyngamide H, an ichthyotoxic amide possessing a new carbon skeleton from the Caribbean cyanobacterium *Lyngbya majuscula*. J. Nat. Prod. 58(5) 764-768.
- Pathirana, C., Dwight, R., Jensen, P. R., and Fenical, W. 1991. Struture and synthesis of a new butanolide from a marine *Actinomycete*. Tetrahedron Lett. 32(48): 7001-7004.
- Pathirana, C., Jensen, P. R., and Fenical, W. 1992. Marinone and debromomarinone: Antibiotic sesquiterpenoid naphthoquinones of a new structure class from a marine bacterium. Tetrahedron Lett. 33(50): 7663-7666.
- Pathirana, C., Tapiolas, D., Jensen, P. R., Dwight, R., and Fenical, W. 1991. Structure determination of maduralide: A new 24-membered ring macrolide glycoside produced by a marine bacterium (*Actinomyceteles*). Tetrahedron Lett. 32(21): 2323-2326.
- Pettit, G. R., Dreele, R. B., Bolliger, G., and Traxler, P. M. 1973. Isolation and structural elucidation of 3,6-dioxo-hexahydro-pyrrolo[1,2-a]pyrazine from the echinoderm *Luidia clathrata*. Experientia 29: 521-522.
- Popp, F. D. 1975. The Chemistry of isatin. In A. R. Katritzky, and A. J. Bouton (eds.), Advances in Heterocyclic Chemistry, Vol. 18, pp. 1-58. New York: Academic Press.
- Rajan, S., Tsou, H., Mowery, P. C., Bullock, M. W., and Stockton, G. W. 1984. Natural abundance two-dimensional double-quantum ^{13}C NMR spectroscopy of maduramicin, a polyether ionophore antibiotic and coccidiostat. J. Antibiot. 37(11): 1496-1500.
- Ried, R. T., Live, D. H., Faulkner, D. J., and Butler, A. 1993. A siderophore from a marine bacterium with an exceptional ferric ion affinity constant. Nature 366: 455-458.

- Ruangpan, L., and Kitao, T. 1992. Minimal inhibitory concentration of 19 chemotherapeutants against *Vibrio* bacteria of shrimp, *Penaeus monodon*. In M. Shariff, R. P. Subasinghe, and J. R. Arthur (eds.), *Diseases in Asian Aquaculture*, pp. 135-142. Malaysia: n.p.
- Rychnovsky, S. D., Skalitzky, D. J., Pathirana, C., Jensen, P. R., and Fenical, W. 1992. Stereochemistry of the macrolactins. *J. Am. Chem. Soc.* 114: 671-677.
- Sato, K., Okasawa, T., Maeda, K., and Okami, Y. 1978. New antibiotics, aplasmomycins B and C. *J. Antibiot.* 31(6): 632-635.
- Schmitz, F. J., Vanderah, D. J., Hollenbeck, K. H., Enwall, C. E. L., and Gopichand, Y. 1983. Metabolites from the marine sponge *Tedania ignis*. A new atisandiol and several known diketopiperazines. *J. Org. Chem.* 48: 3941-3945.
- Shigemori, H., Bae, M., Yasawa, K., Sasaki, T., and Kobayashi, J. 1992. Alteramide A, a new tetracyclic alkaloid from a bacterium *Alteromonas* sp. associated with the marine sponge *Halichondria okadai*. *J. Org. Chem.* 57: 4317-4320.
- Shiozawa, H., Kagasaki, T., Kinoshita, T., Haruyama, H., Domon, H., Utsui, Y., Kodama, K., and Takahashi, S. 1993. Thiomarinal, a new hybrid antimicrobial antibiotic produced by a marine bacterium. *J. Antibiot.* 46(12): 1834-1842.
- Simidu, U., Kita-Tsukamoto, K., Yasumoto, T., and Yotsu, M. 1990. Taxonomy of four marine bacterial strains that produce tetradotoxin. *Internat. J. Syst. Bacteriol.* 40(4): 331-336.
- Sofia, M., Turnes, G., and Fenical, W. 1992. Embryos of *Homarus americanus* are protected by epibiotic bacteria. *Biol. Bull.* 182: 105-108.
- Stierle, A. A., and Cardellina II, J. H. 1991. Benzothiazoles from a putative bacterial symbiont of the marine sponge *Tedania ignis*. *Tetrahedron Lett.* 32(37): 4847-4848.

- Stierle, A. A., CardellinaII, J. H., and Singleton, F. L. 1988. A marine *Micrococcus* produces metabolites ascribed to the sponge *Tedania ignis*. *Experientia* 44: 1021.
- Stierle, A. C., Cardellinall, J. H., and Strobel, G. A. 1988. Maculosin, a host - specific phytotoxin for spotted knapweed from *Alternaria alternata*. *P. Natl. Acad. Sci.* 85: 8008-8011.
- Stierle, D. B., and Stierle, A. A. 1992. Pseudomic acid derivatives from a marine bacterium. *Experientia* 48: 1165-1169.
- Su, J. Y., Zhong, Y. L., and Zeng, L. M. 1993. Three new diketopiperazines from a marine sponge *Dysidea fragilis*. *J. Nat. Prod.* 56(4): 637-642.
- Sutherland, R., Boon, R. J., Griffin, K. E., Masters, P. J., Slocombe, B., and White, A. R. 1985 . Antibacterial activity of mupirocin (pseudomic acid), a new antibiotic for topical use. *Antimicrob. Agents Ch.* 27(4): 495-498.
- Tapiolas, D. M., Roman, M., and Fenical, W. 1991. Octalactins A and B; cytotoxic eight-membered-ring lactones from marine bacterium, *Streptomyces* sp. *J. Am. Chem. Soc.* 113: 4682-4683.
- Todd, J. S., and Gerwick, W. H. 1995. Isolation of acyclic carbonate, A γ -butyrolactone, and a new indole derivative from the marine cyanobacterium *Lyngbya majuscula*. *J. Nat. Prod.* 58(4): 586-589.
- Tonguthai, K., and Chanratchakool, P. 1992. The use of chemotherapeutic agents in aquaculture in Thailand. In M. Shariff, R. P. Subasinghe, and J. R. Arthur (eds.), *Diseases in Asian Aquaculture*, pp. 555-565. Malaysia: n.p.
- Trischman, J. A., Jensen, P. R., and Fenical, W. 1994. Halobacilin: a cytotoxic cyclic acylpeptide of the iturin class produced by a marine *Bacillus*. *Tetrahedron Lett.* 35(31): 5571-5574.
- Umezawa, H., Okami, Y., Kurasawa, S., Ohnuki, T., and Ishizuka, M. 1983. Marinactan, antitumor polysaccharide produced by marine bacteria. *L. Antibiot.* 36(5): 471-477.

- Unson, M. D., and Faulker, D. J. 1993. Cyanobacterial symbiont biosynthesis of chlorinated metabolites from *Dysidea herbacea* (Porifera). Experientia. 49: 349-353.
- Voinov, V. G., El'kin, Yu. N., Kuznetsova, T. A., Mal'tsev, I. I., Mikhailov, V. V., and Sasunkevich, V. A. 1991. Use of mass spectrometry for the detection and identification of bromine-containing diphenyl ethers. Journal of Chromatography 586: 360-362.
- Waksman, S. A. 1947. What is an antibiotic or an antibiotic substance. Micrologia 39: 565-569.
- Woods, G. L., and Washington, J. A. 1995. Antibacterial susceptibility tests: Dilution and disk diffusion methods. In P. R. Murray (ed.), Manual of critical microbiology, pp. 1327-1341. Washington DC: ASM Press.
- Wratten, S. J., Wolfe, M. S., Andersen, R. J., and Faulkner D. J. 1977. Antibiotic metabolites from a marine Pseudomonad. Antimicrobial Agents and Chemotherapy 11(3): 411-414.
- Yoo, H., and Gerwick, W. H. 1995. Curacins B and C, new antimitotic natural products from the marine cyanobacterium, *Lyngbya majuscula*. J. Nat. Prod. 58(12): 1961-1965.
- Yotsu, M., Yamazaki, T., Meguro, Y., Endo, A., Murata, M., Naoki, H., and Yasumoto, T. 1987. Production of tetrodotoxin and its derivatives by *Pseudomonas* sp. isolated from the skin of a pufferfish. Toxicon. 25(2): 225-228.

VITA

Mr. Chayaluk Thongton was born on May 24, 1973 in Suratthani, Thailand. He received his Bachelor's degree of Science in Marine Science in 1995 from Faculty of Sciences, Chulalongkorn University, Thailand.



สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย