

DAFTAR PUSTAKA

- ATCC. 2012. Thawing, Propagating, and cryopreserving Protocol: NCI-PBCF-HTB133 (T-47D) Breast Carcinoma (ATCC® HTB-133™). Manassas: Physical Science-Oncology Center Network Bioresource Core Facility.
- Agilent Technologies (AT). 2001. Agilent LC-MS Primer. U.S.A 5988-204EN.
- Agnantis, N. J., Fatouros, M., Arampatzis, I., Briasoulis, E., Ignatiadou, E.V., Paraskevaidis, E., Roukos, D. 2004. Carcinogenesis of breast cancer: advances and applications. *Gastric Breast Cancer* 3(1):13-22.
- Aka, J. A., & Lin, S. X. 2012. Comparison of functional proteomic analyses of human breast cancer cell line T47D and MCF-7. *PloS One* 7(2):1-9.
- Alabsi, A. M., Ali, R., Ali, A. M., Al-dubai, S. R., Harun, H., Kasim, N. H., Alsalahi, A. 2012. Apoptosis introduction, cell cycle arrest, and in vitro anticancer activity of gonothalamin in a cancer cell line. *Asian Pacific J Cancer Prev*, 13(10), 5131-5136.
- Alkahtani, H. M., Abbas, A. Y., Wang, S. 2012.. Synthesis and biological evaluation of benzo[d]imidazole derivatives as potential anti-cancer agents. *Bioorganic and Medicinal Chemistry Letters*. 22(3):1317–21
- Aly, A. H., Debbab, A., Kjer, J., Proksch, P. 2010. Fungal endophytes from higher plants: a prolific source of phytochemicals and other bioactive natural products. *Fungal Divers* 41:1–16.
- Aly, A. H., Debbab, A., Proksch, P. 2011. Fungal endophytes: unique plant inhabitants with romises. *Appl Microbiol Biotechnol* 90:1829–45.
- An, B., Yin, F., de Voogd, N. J., Chen, X., Cheng, W., Lin, W. 2018. Chagosendines A-C, New Metal Complexes of Imidazole Alkaloids from the Calcareous Sponge *Leucetta chagoosensis*. *Chem Biodivers*, 15 (2). doi: 10.1002/cbdv.201700481
- Amagata, T., Morinaka, B. I., Amagata, A., Tenney, K., Valeriote, F. A., Lobkovsky, E., Clardy, J., & Crews, P. 2006. A Chemical Study Of Cyclic Depsipeptides Produced By a Sponge-Derived Fungus. *Journal of Natural Product* (69): 1560-1565.
- American Cancer Society. Cancer facts and figures 2014. Atlanta: American Cancer Society; 2014. Tersedia dari: <http://www.cancer.org>.
- Antona, C. R., & Sundberg, M. I. 2006. Cytochrome P450 pharmacogenetic and cancer. *Oncogene* 25: 1679-1691.

- Arnold, A., & Papanikolaou, A. 2005. Cyclic D1 in breast cancer pathogenesis. *Journal of clinical oncology* 23(18): 4215-4224.
- Asmino., Diponegoro, M. H., & Soendoko, R. 1985. Masalah kanker di Indonesia. Yayasan Kanker Wisnu Wardhana.
- Astuti, P., Alam, G., Hartati, M. S., Sari, D., & Wahyuono, S. 2005. Uji sitotoksik senyawa alkaloid dari spon *Petrosia* sp.: potensial pengembangan sebagai antikanker. *Majalah Farmasi Indonesia*. 16, (1), 58-62.
- Bacon, C. W., & White, J. F. 2000. Microbial endophytes. *Marcel Dekker Inc., New York*.
- Bakhtra, D. D. A., Suryani, R., Yuni, G. R., & Handayani, D. 2019. Antimicrobial and Cytotoxic Activities Screening of Symbiotic Fungi Extract Isolated from Marine Sponge *X.testudinaria* DD-01. *JCPS* 12(12):30-34.
- Balitbangkes Depkes RI. 2005. Surveillance of Major Non Communicable Disease in South East Asian Region. Report of an Inter-Country Consultation.
- Bao, J., Wang, J., Zhang, X. Y., Nong, H. H., Qi, S. H. 2017. New furanone derivatives and alkaloids from the co-culture of marine-derived fungi *Aspergillus sclerotiorum* and *Penicillium citrinum*. *Chem Biodivers*, 14(3). doi: 10.1002/cbdv.201600327.
- Bartek, J., Bartkova, J., & Lukas, J. 1996. The retinoblastoma protein pathway and the restriction point. *Curr. Opin. Cell Biol* 8:805.
- Basu, S. C., Boyle, P., Ma, R., Agarwal, A., Basu, M., Moskal, J. R., Banerjee, S., & Tuteja, N. 2018. Induction of Apoptosis in Metastatic Breast Cancer Cells: XV. Downregulation of DNA Polymerase- α -Helicase Complex (Replisomes) and Glyco-Genes. In *Biochemical and Biophysical Roles of Cell Surface Molecules* :199-221
- Belarbi, E. H., Gomez, Y. A. C., Chisti, Y., Camacho, F. G., Grima, E. 2003. Producing drugs from marine sponges. *Biotechnology Advances* 21. 585 – 598.
- Berdi, J. 2005. Bioactive Microbial Metabolites. *J. antibiot* 58(1): 1-26.
- Bertomi R. 2011. Uji Toksisitas Akut Ekstrak Kulit Batang Pulasari (*Alyxiae cortex*) dengan Metode Brine Shrimp Lethality Test. Program Studi Farmasi Fakultas Farmasi Universitas Sanata Dharma Yogyakarta.
- Bhadury, P., Mohammad, B. T., & Wright, P. C. 2006. The current status of natural products from marine fungi and their potential as anti-infective agents. *J Ind Microbiol Biotechnol* 33:325-337.
- Blunt, J. W., Copp, B. R., Munro, M. H, Northcote, P. T., & Prinsep, M. R. 2006. Marine natural products. *Nat Prod Rep* 23:26–78.

- Blunt, J. W., Copp, B. R., Munro, M. H., Northcote, P. T., & Prinsep, M. R. 2009. Marine Natural Products. *Nat Prod Rep* 26: 170-244.
- Bowers, L. C. 1989. High-performance liquid chromatography/mass spectrometry: state of the art for the drug analysis laboratory. *Clin Chem* 35: 1282-7.
- Breitmaier, E. 1993. *Structure Elucidation by NMR in Organic Chemistry*. John Willer & Sons.
- Brunton, L. L., Keith, L., Parker, Donald, K., Blumenthal, L. O., & Buxton. 2007. *Goodman & Gilman's Manual of Pharmacology and Therapeutics*. New York:McGraw Hill.
- Bueso-Ramos, C. E., Mansouri, T., Haidar, M. A., Huh, Y. O., Keating, M. J., & Albitar, M. 1995. Multiple patterns of MDM-2 deregulation in human leukemias: implication in leukemia genesis and prognosis. *Leuk. Lymphoma* 17: 13.
- Bueso-Ramos, C. E., Manshour, T., Haidar, M. A., Yang, Y., McCown, P., Ordonez, N., Glassman, A., Sneige, N., & Albitar, M. 1996. Abnormal expression of MDM-2 in breast carcinoma. *Breast Cancer Res. Treat.* 37:179.
- Bugni, T. S., & Ireland, C. M. 2004. Marine-derived fungi: a chemically and biologically diverse group of microorganisms. *Nat. Prod. Rep.* 21, 143-163.
- Burdall, E. S., Hanby, M. A, Lansdowne, R. J. M., Speirs, V. 2003. Breast Cancer Cell Line. *Breast Cancer Res* 5(2):89-95.
- Burgeiro, A., Gajate, C., Dakir, E. H, Villa-Pulgarín, J. A., Oliveira, P. J, & Mollinedo F. 2011. Involvement of mitochondrial and B-RAF/ERK signaling pathways in berberine-induced apoptosis in human melanoma cells. *Anti-cancer drugs.* 1;22(6):507-18.
- Cafieri, F., Fattorusso, E., & Tagliatalata, S. O. 1998. Novel betaines from the marine sponge *Agelas dispar*. *Journal of Natural Products* 61(9): 1171-1173.
- Cairns, R. A., Harris, I. S., & Mak, T. W. 2011. Regulation of cancer cell metabolism. *Nature Review Cancer* 11:85-95.
- Calcul, L., Longeon, A., Mourabit, A. Al, Guyot, M., & Bourguet-Kondracki, M. L. (2003). Novel alkaloids of the aaptamine class from an Indonesian marine sponge of the genus *Xestospongia*. *Tetrahedron*, 59(34), 6539–6544.
- Campbell, M. K., & Farrell, S. O. 2003. *Biochemistry* 4th ed. UK, London: Thomson Learning Inc.
- Cancer Chemoprevention Research Center (CCRC). 2009. Protokol Kultur Sel. Yogyakarta: Fakultas Farmasi Universitas Gadjah Mada Press.

- Cancer Chemoprevention Research Center (CCRC). 2013. Protokol Uji Sitotoksik Dengan MTT. Yogyakarta: Fakultas Farmasi Universitas Gadjah Mada Press.
- Chasanah, E. (2008). Marine biodiscovery research in Indonesia: challenges and rewards. *Journal of Coastal Development*, 12(1), 1–12.
- Chaitanya, G. V., Alexander, J. D., Babu, P. P. 2010. PARP-1 cleavage fragments: signatures of cell-death proteases in neurodegeneration. *Cell Commun Signal* 8(3):1-10.
- Chavanich, S. A. (2007). Distribution Patterns of the Renieramycin-Producing Sponge, *Xestospongia* sp., and Its Association with Other Reef Organisms in the Gulf of Thailand. *Zoological Studies*, 46(6), 695–704.
- Chen, L., Liu, W., Hu, X., Huang, K., Wu, J. L., & Zhang, Q. Q. 2011. Citrinin Derivatives From The Marine-Derived Fungus *Penicillium citrinum*. *Chem. Pharm. Bull* 59(4): 515-517.
- Chen, L., Liu, W., Huang, K., Hu, X., Fang, Z. X., Wu, J. L., & Zhang, Q. Q. 2011. Penicitrinols F-I, New Citrinin Derivatives from the Marine-Derived Fungus *Penicillium citrinum*. *Heterocycles* 83(8): 1853-1858.
- Chen, L., Huang, K., Zhong, P., Hu, X., Fang, Z. X., Wu, J. L., & Zhang, Q. Q. 2012. Tumonoic acids K and L, Novel Metabolites From the Marine-Derived Fungus *Penicillium citrinum*. *Heterocycles* 85(2):413-419.
- Chen, L., Zhou, T., Zhao, Y. Y., Gong, M. W., Xia, Q. W., Ying, M. G., Zheng, Q. H., Liu, Q. Y., & Zhang, Q. Q. 2015. Four new penicitrinols and two new penicillenols from the marine-derived fungus *Penicillium citrinum*. *Heterocycle* 91(5):1007-1016.
- Chen, L., Zhao, Y. Y., Lan, R. F., Du, L., Wang, B. S., Zhou, T., Li, Y. P., Zhang, Q. Q., Ying, M. G., & Zheng, Q. H., et al. 2017. Dicitrinone D, an antimitotic polyketide isolated from the marine-derived fungus *Penicillium citrinum*. *Tetrahedron* 73, 5900–5911
- Cita, Y. P., Suhermanto, A., Radjasa, O. K., & Sudharmono, P. (2017). Antibacterial activity of marine bacteria isolated from sponge *X.testudinaria* from Sorong, Papua. *Asian Pacific Journal of Tropical Biomedicine*, 7(5), 450–454.
- Clark, D. P., Carrol, J., Naylor, S., & Crews, S. 1998. Antifungal Cyclodepsipeptide, Cyclolittisthid A, from the sponge *Theonella swinhoei*. *J. Org. Chem* page EST :7.5.
- Clark, B. R., Capon, R. J., Lacey, E., Tennant, S., & Gill, J. H. 2006. Citrinin revisited: from monomers to dimers and beyond. *Org. Biomol. Chem* 4: 1520.
- Cocca, B. A., Cline, A. M., & Radic, M. Z. 2002. Blebs and apoptotic bodies are B cell autoantigens. *J. Immunol* 169:159-166.

- Colin, P. L., & Ameson, C. 1995. Tropical Pacific In Chen W, Liu X, Hu K, Huang J, Wu L & Zhang QQ.2011.*Chem. Pharm. Bull* 5:515.
- Coldits, G. A., Bohlke, K., & Berkey, C. S. 2014. Breast cancer risk accumulation start early: Prevention must also. *Breast Cancer Treat* 145(3):567-79.
- Collins, K., Jacks, T., & Pavletich, N. P. 1997. The cell cycle and cancer. *Proc. Natl. Acad. Sci. USA* 94:2776-2778.
- Corwin, E. 2008. *Handbook of Pathophysiology*. Lippincott Williams & Wilkins, USA, pp. 23-28.
- Covey, T. R., Lee, E. D., & Henion, J. D. 1986. High-speed liquid chromatography-tandem mass spectrometry for the determination of drugs in biological samples. *Anal Chem* 58: 2453-60.
- Cram, W. R., & Stewart, C. F. 1992. *Clinical Pharmacy and Therapeutic*. Edisi ke-5. Maryland. Williams and Wilkins.
- Crew, P., Rodriguez, J., & Jaspars, M. 1998. *Organic structure analysis*. New York: Oxford University Press.
- Crook, T., & Vousden, K. H. 1994. Interaction of HPV E6 with p53 and associated proteins. *Biochem. Sos. Trans.* 22:52.
- Cutignano, A., Bifulco, G., Bruno, I., Casapullo, A., Paloma, L. G., & Riccio, F. 2000. Dragmacidin F : A new antiviral bromoindole alkaloid from the Mediterranean *Halicortex* sp. *Tetrahedron* 56: 3743-3748.
- Dachriyanus. 2004. *Analisis Struktur Senyawa Organik Secara Spektroskopi*. Padang: LPTIK Universitas Andalas.
- Dame, Z. T., Suwannarach, N., Lumyong, S., & Laatsch, H. 2015. A new citrinin dimer isolated from *Aspergillus terreus* strain ZDF21. *Nat. Prod. Commun.* 10 (4), 623–624.
- De Santis, C., Ma, J., Bryan, L., & Jemal, A. 2014. Breast cancer statistic, 2013. *Ca Cancer J Clin* 64:52-62.
- Debbab, A., Aly, A. H., & Proksch, P. 2011. Bioactive secondary metabolites from endophytes and associated marine-derived fungi. *Fungal Divers* 49:1–12.
- Departemen kesehatan. *Survei Kesehatan Nasional. Laporan Studi Mortalitas* 2001. Jakarta: Departemen Kesehatan RI.
- Derome, E. 1995. *Modern NMR Techniques for Chemistry Research*. Pergamon.

- DeVita, V. T., & Chu, E. 2008. A History of Cancer Chemotherapy. *Cancer Res* 68(21): 8643-8653.
- Diaz-Perez, S., Kane, N., Kurmis, A. A., Yang, F., Kummer, N. T., Dervan, P. B., & Nickols, N. G. (2018). Interference with DNA repair after ionizing radiation by a pyrrole-imidazole polyamide. *PLoS ONE*, 13(5), 1–11. <https://doi.org/10.1371/journal.pone.0196803>
- Doyle, A., Griffiths, J. B., & Newell, D. G. 2000. *Cell and Tissue Culture: Laboratory Procedures*. Edisi III New York: Jhon Wiley & Son.
- Edianto, D. 2006. *Kanker Serviks*. Yayasan Bina Pustaka Sarwono Prawirohardjo. Jakarta.
- Ellis IO, Schnitt SJ, Garau XS, Bussolati G, Tavassoli FA, Eusebi V, et al, 2003. Invasive Breast Carcinoma. In (Fattaneh A, Tavassoli, Deville P). WHO classification of tumors of the breast and Female genital Organ. 3 th ed, Lyon: IARC press, pp 14–17.
- El-Neketi, M., Ebrahim, W., Lin, W., Gedara, S., Badria, F., Saad, H. E. A., Lai, D., & Proksch, P. 2013. Alkaloids and Polyketides from *Penicillium citrinum*, an Endophyte Isolated from the Moroccan Plant *Ceratonia siliqua*. *J. Nat. Prod*:A-F.
- Eom, K. S., Kim, H. J., So, H. S, Park, R., & Kim, T. Y. 2010. Berberine-induced apoptosis in human glioblastoma T98G cells is mediated by endoplasmic reticulum stress accompanying reactive oxygen species and mitochondrial dysfunction. *Biological and Pharmaceutical Bulletin*;33(10):1644-9.15.
- Faisel, C. T. W., Heriady, Y., & Fitriangga, A. 2012. Gambaran efek samping kemoterapi berbasis antrasiklin pada pasien kanker payudara di RSUD Dokter Soedarso Pontianak. <http://jurnal.untan.ac.id>
- Faulkner, D. J., Unson, M. D., & Bewley, C. A. 1994. The chemistry of some sponges and their symbionts. *Pure & Appl. Chem* 66: 1883 – 1990.
- Ferlay, F., Soerjomataram, I., Dikshit, R., Eser, S., Mathers, C., Rebelo, M., Parkin, D. M., Forman, D., & Bray, F. 2015. Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. *Int. J. Cancer* 136. E359-E386.
- Field, L. D., Sternehl, S., & Kalman, J. R. 2008. *Organic Structure from Spectra* 4th Edition. Chichester: John Wiley and Sons, Ltd.
- Firáková, S., Sturdíková, M., & Múcková, M. 2009. Bioactive secondary metabolites produced by microorganisms associated with plants. *Biologia.*, 62, 251-257.
- Firdausi, W., Sulistyowati, L., & Aini, L. Q. (2021). AGRIVITA Exploration and

Antifungal Assay of Endophytic Fungi as Biocontrol of Onion Purple. *AGRIVITA Journal of Agricultural Science*, 43(1), 114–124.

Frank, A. K., Pietsch, C., Dumont, P., Tao, J., Murphy, M. E. 2011. Wild-type and mutant p53 protein interact with mitochondrial caspase 3. *Cancer Biology & Therapy* 11(8): 740-745.

Freshney, R. I. 2005. *Culture of Animal Cells: A Manual of Basic Technique*, Fifth Edition. John Wiley & Sons, Inc. DOI:10.1002/9780470649367.

Friebolin, H. 1993. *Basic One and Two Dimensional NMR Spectroscopy* (2nd ed.). VCH.

Fristiohady, A., & Agustina, I. 2020. Review artikel: apoptosis pada kanker payudara. *Media Farmasi XVI*, 2:130-140.

Gage, J. R., Mayers, C., & Wettstein, F. O. 1990. The E7 proteins of the non-oncogenic human papillomavirus type 6b (HPV-6b) and of the oncogenic HPV-16 differ in retinoblastoma protein binding and other properties. *J. Virol* 64:723.

Gandjar, I. G., & Rohman, A. 2007. *Kimia farmasi analisis*. Yogyakarta: Pustaka Pelajar.

Gandjar, I. G. 2013. *Analisis obat secara spektrofotometri dan kromatografi*. Yogyakarta: Pustaka Pelajar.

Gao, S., Li, X., Ding, X., Qi, W., & Yang, Q. 2017. Cepharanthine induces autophagy, apoptosis, and cell cycle arrest in breast cancer cells. *Cellular Physiology and Biochemistry*, 41(4), 1633-1648.

Garson, M. J. 1994. *The Biosynthesis of Spon Secondary Metabolites: Why is Important, Time and Space*. van Soent, van Kempen and Brackma (Eds). Balkema, Rotterdam, 427-440.

Gasco, M., Shami, S., & Crook, T. 2002. The p53 pathway in breast cancer. *Breast Cancer Res* 44, No. 2: 70-76.

Gerl, R., & Vaux, D. L. 2005. Apoptosis in the development and treatment of cancer. *Carcinogenesis*, 26(2):263-70. doi: 10.1093/carcin/bgh283

Givan, A. L. 2001. *Flow Cytometry: First Principles*. New York: A John Wiley & Sons Inc.

Ghobrial, I., Witzig, T. E., & Adjie, A. A. 2005. Targeting Apoptosis Pathways in Cancer Therapy. *A Cancer Journal for Clinical* 55 (3): 179-194.

Gomes, N. G. M., Lefranc, F., Kijjoa, A., and Kiss, R. 2015. Can Some Marine-Derived Fungal Metabolites Become Actual Anticancer Agents? *Marine Drugs*,; 13:3950-3991.

- Green, E., & Shirley, F. 1999. *The Global Trade in Coral*. Cambridge. UK: World Conversation Press.
- Gritter, R., Bobbit, J., James, M., & Schwarting, A. E. 1985. *Introduction to chromatography*. USA: Holden-Day.
- Gritter, R. J., Bobbit, J. M., & Schwarting, A. E. 1991. Pengantar Kromatografi. (Edisi II). Penerjemah: Kosasih Padmawinata. Bandung: Penerbit ITB.
- Gross, H., Kehraus, S., König, G. M., Woerheide, G., & Wright, A. D. 2002. New and Biologically Active Imidazole Alkaloids from Two Sponges of the Genus *Leucetta*. *Journal of Natural Products* 65(8): 1190–93.
- Guyton, A. C. 1997. *Buku ajar fisiologi kedokteran* (Ed IX). Jakarta:EGC.
- Hagström, Å., Pommier, T., Rohwer, F., Simu, K., Stolte, W., Svensson, D., & Zweifel, U. L. 2002. Use of 16S ribosomal DNA for delineation of marine bacterioplankton species. *App Environ Microbiol* 68:5085-5092.
- Haiyu, L., Qing, Z., Deng, Y., Deng, Z., Tang, X., Feng, B., & Lin, W. 2019. Two Polyketides Produced by Endophytic *Penicillium Citrinum* DBR-9 from Medicinal Plant *Stephania Kwangsiensis* and Their Antifungal Activity against Plant Pathogenic Fungi. *Natural Product Communications* 14(5). <https://doi.org/10.1177/1934578X19846795>.
- Hall, M., & Peters, G. 1996. Genetic alterations of cyclins, cyclin-dependent kinase and CDK inhibitors in human cancer. *Adv. Cancer. Res* 68:67.
- Hanahan, D., & Weinberg, R. A. 2000. The Hallmark of Cancer. *J Cell* 100(1):57-70.
- Handa, S. S., Khanuj, S. P. S., Longo, G., & Rakesh, D. D. 2008. *Extraction Technologies for Medicinal and Aromatic Plants*. Trieste: International Centre for Science and High Technology
- Harjono S. 2006. *Spektroskopi*. Yogyakarta :Liberty.
- Hegelund, T., Ottosson, K., Rådinger, M., Tomberg, P., & Celander, M. C. 2004. Effects of the antifungal imidazole ketoconazole on CYP1A and CYP3A in rainbow trout and killifish. *Environmental Toxicology and Chemistry*;23(5):1326-1334. doi:10.1897/03-155
- Hentschel, U. M., Schmid, M., Wagner, L., Fieseler, C., Gernert., & Hacker, J. 2002. Isolation and phylogenetic analysis of bacteria with antimicrobial activities from the Mediterranean Sponges *Aplysina aerophoba* and *Aplysina cavernicola*. *FEMS Microbiol Ecol* 35, 305-312.

- Harborne, J. B. (1987). *Metode Fitokimia penuntun cara modern menganalisis tumbuhan*. Penerjemah: K. Padmawinata & I. Soediro. Terbitan ke-2. Bandung: Penerbit ITB.
- He, H. B., Wu, X. L., Yu, B., Liu, K. L., Zhou, G. X., Qian, G. Q., Ju, D. H., Chen, X. Y. 2012. The effect of desacetyl uvaricin on the expression of TLR4 and p53 protein in Hepg 2.2.15. *Hepat Mon* 11(5):364-367.
- Higa, T., Tanaka, J., Tsukitani, Y., & Kikuchi, H. 1981. Hippuristanol, cytotoxic poly oxygenated steroids from the gorgonian *Isis hippuris*. *Chemistry Let* : 1647-1650.
- Holliday, D. L., & Speirs, V. 2012. Review: choosing the right cell line for breast cancer research. *Breast Cancer Res* 13(215):1-7.
- Hooper, J. N. A., & Wiedenmayer, F. 1994. Porifera. *Zoological Catalogue of Australia (CSIRO: Melbourne)*. 12, 1-620. World Porifera database. Diakses pada 10 Agustus 2017 dari <http://www.marinespecies.org/porifera/>
- Horsthemke, B. 1992. *Genetics and cytogenetics of retinoblastoma*. *Cancer Genet. Cytogenet* 63:1.
- Hortobagyi, G. N. 2012. Toward individualized breast cancer therapy: translating biological concepts to the bedside. *The Oncologist* 17:577-584.
- Hostanska, K., Nisslein, T., Freudenstein, J., Reichling, J., & Saller, R. 2004. Evaluation of Cell Death Caused by Triterpene Glycosides and Phenolic Substance from *Cimicifuga racemosa* Extract in Human MCF- Breast Cancer Cell. *Biological & Pharmaceutical Bulletin* 27(12):1970-1975.
- Hu, Q. J., Dyson, N., & Harlow, E. 1990. The regions of the retinoblastoma protein needed for binding to adenovirus E1A or SV40 large T antigen are common sites for mutation. *EMBO J* 9:1147.
- Hu, Y., Zhang, J., Liu, D., Guo, J., Liu, T., & Xin, Z. 2017. Pencitrin and pencitrinol, two new citrinin derivatives from an endophytic fungus *Penicillium citrinum* salicorn 46. *Phytochemistry Letters*, 22: 229–234.
- Huang, G. L., Zhou, X. M., Bai, M., Liu, Y. X., Zhao, Y. L, Luo, Y. P, et al. 2016. Dihydroisocoumarins from the mangrove-derived fungus *Penicillium citrinum*. *Marine Drugs*. 14(10):6–13.
- Hussain, S., Fareed, S., Ansari, S., & Sajid, M. (2012). Marine natural products/ : a lead for anti-cancer. *Indian Journal of Geo-Marine Sciences*, 41(27–39).

- Ibrahim, M., Kaushik, N., Sowemimo, A., Chhruoa, H., Koekemoer, T., Venter, M. V., & Odukoya, O. 2016. Antifungal and anti-proliferative of endophytic fungi isolated from the leave of *Markhamia tomentosa*. *Pharma* 55(1): 1,590 – 595.
- Imhoff, J. F., & Stöhr, R. (2003). Sponge-associated bacteria: general overview and special aspects of bacteria associated with *Halichondria panicea*. *Progress in Molecular and Subcellular Biology*, 37, 35–57. https://doi.org/10.1007/978-3-642-55519-0_2.
- Iskandarsyah, A., Klerk, C., Suardi, D. R., Sadarjoen, S. S., & Passchier, J. 2014. Consulting a traditional healer and negative illness perceptions are associated with non-adherence to treatment in Indonesian women with breast cancer. *Psycho-Oncology* 23:1118-1124.
- Israelsen, W. J., & Heiden, M. G. V. 2010. ATP consumption promotes cancer metabolism. *Cell* 143:669-671.
- Iwamaru, A., Iwado, E., & Kondo, S. 2010. Eupalmarea acetate, a novel anticancer agent from Caribbean gorgonian octocorals, induces apoptosis in malignant glioma cells via the c-jun NH2-terminal kinase pathways. *Molecular Cancer Therapeutics* 6:184-192.
- Jan, R., & Chaundhry, G. S. 2019. Understanding apoptosis and apoptotic pathways targeted cancer therapeutics. *Advanced pharmaceutical bulletin*, 9(2), 205.
- Jelinski, L. W. 1984. Modern NMR Spectroscopy. *Chem Eng. News*, 5: 26-45.
- Jha, R. K., & Zi-rong, X. 2004. Biomedical compounds from marine organisms. *Marine Drugs* 2: 123 – 146.
- Joza, N., Susin, S. A., Daugas, E., Stanford, W. L., Cho, S. K., Li, C. Y. J., Sasaki, T., Elia, A. J., Cheng, H. Y. M., Ravagnan, L., Ferri, K. F., Zamzami, N., Wakeham, A., Hakem, R., Yoshida, H., Kong, Y. Y., Mak, T. W., Pfucker, J. C. Z., Kroemer, G., & Penninger, J. M. 2001. Essential role of the mitochondrial apoptosis-inducing factor in programmed cell death. *Nature* 410:549-559.
- Jun, D. W., Jeong, J. Y, Kim, H. J, Jeong, K. C, Kim, S, & Lee, C. H. 2012. Characterization of DDRI-18(3,3'-(1h, 3'H-5,5'-bibenzo(d)imidazole-2,2'-diy) dianiline), a novel small molecule inhibitor modulating the DNA damage response. *British journal of pharmacology*, 167:141-150. DOI:10.1111/j.1476-5381.2012.01977.x.
- Kalimuthu, S., & Se-Kwon, K. 2013. Cell Survival and Apoptosis Signaling as Therapeutic Target for Cancer, Marine Bioactive Compounds. *Molecular Sciences* 14:2334-2354.
- Kamuhabwa, A., Nshimo, C., De Witte, P. 2000. Cytotoxicity of some medicinal plant extracts used in Tanzanian traditional medicine. *J Ethnopharmacol.*;70(2):143-149.

- Kardono, L. B. S. 1992. *Application of Modern NMR techniques for Structure Elucidation Analysis of Some Bioactive Compounds from Indonesia Natural Products*. (Prosiding HKI). Bandung:299-321.
- Kavanagh, K. 2007. *New insight in Medical Mycology*. Netherlands: Springer.
- Kerr, J. F. R., Wyllie, A. H., Currie, A. R. (1972). Apoptosis: a basic biological phenomenon with wide-ranging implications intissuee kinetics. *Br J Cancer* 26:239.
- Kementerian Kesehatan RI. 2015. Info Pusat Data Dan Informasi Kementerian RI. Jakarta: Pusdatin Kementerian Kesehatan RI.
- Khamthong, N., Rukachaisirikul, V., Phongpaichit, S., Preedanon, S., Sakayaroj, J. 2012. Bioactive polyketides from the sea fan-derived fungus *Penicillium citrinum* PSU-F51. *Tetrahedron* 68, 8245–8250.
- Khopkar, S. M. 1990. *Konsep dasar kimia analitik*. Jakarta: UI Press
- Kijjoa, A., & Sawangwong, P. 2004. Drugs and cosmetics from the sea. *Marine Drugs* 2 : 73 – 82.
- Kim, E. A., Jang, J. H., Lee, Y. H., Sung, E. G., Song, I. H., Kim, J. Y., Kim, S., Sohn, H. Y., & Lee, T. J. 2014. Dioscin induces caspase-independent apoptosis through activation of apoptosis-inducing factors in breast cancer cells. *Apoptosis*, 19(7), 1165-1175.
- Kim, W. G., Song, N. K., & Yoo, I. D. 2001. Quinolactacins A1 and A2 new acetylcholinesterase inhibitors from *Penicillium citrinum*. *J. Antibot* 54: 831-835.
- Kinghorn, A. D., Carcache de Blanco, E. J., Chai, H. B., Orjala, J., Farnsworth, N. R., Soejarto, D. D., Oberlies, N. H., Wani, M. C., Kroll, D. J., & Pearce, C. 2009. Discovery of anticancer agents of diverse natural origin. *Pure Appl. Chem* 81:1051–1063.
- Kjer, J., Debbab, A., Aly, A. H., & Proksch, P. 2010. Methods for isolation of marine-derived endophytic fungi and their bioactive secondary products. *Nature Protocol* 5 (3) :479-490.
- Kleinsmith, L. J. 2006. *Principles of cancer biology*. Pearson International Edition. San Francisco: 22-29.
- Knudson, A. G. J. 1971. Mutation and cancer: statistical study of retinoblastoma. *Proc. Natl. Sci. USA* 68:820.

- Knight, L. 2007. *The Cell*. In J.A Gabriel. *The Biology of Cancer*. Chichester: John Wiley & Sons Ltd.
- Kobayashi, M., & Rachmaniar, R. 1999. Overview of Marine Natural Product Chemistry. *Prosiding Seminar Bioteknologi Kelautan Indonesia I '98*. Jakarta 14-15 Oktober 1998, 23-32. Lembaga Ilmu Pengetahuan Indonesia.
- Koff, J. L., Ramachandiran, S., & Bernal-Mizrachi, L. 2015. A time to kill: targeting apoptosis in cancer. *International journal of molecular sciences*, 16(2), 2942-2955.
- Komite Nasional Penanggulangan Kanker. *Panduan penatalaksanaan kanker payudara*. Jakarta: Kementerian Kesehatan RI. 2017
- König, G. M., Kehraus, S., Seibert, S. F., Abdel-Lateff, A., & Müller, D. 2006. Natural products from marine organisms and their associated microbes. *Chem. Bio. Chem*, 7, 229-238.
- Kozlovskii, A. G., Zhelifonova, V. P., Vinokurova, N. G., Ozerskaya, S. M., Kochkina, G. A., Grafe, U. 2003. The fungus *Penicillium citrinum*. Thom 1910 VKM FW-800 isolated from ancient permafrost sediments as a producer of the ergot alkaloids agroclavine-1 and epoxyagroclavine-1. *Microbiologia* 72: 723-272.
- Kozlovskii, A. G., Zhelifonova, V. P., Antripova, T. V., Adamin, V. M., Ozerskaya, S. M., Kochkina, G. A., Schlegel, B., Dahse, H. M., Gollmick, F. A., & Grafe, U. 2003. Quinocitrinines A and B, new quinoline alkaloids from *Penicillium citrinum* Thom 1910, a permafrost fungus. *J Antibiot* 56:488-491.
- Krampe, B., Al-Rubeai, M. 2010. Cell death in mammalian cell culture: molecular mechanisms and cell line engineering strategies. *Cytotechnology*, 62:175–188. DOI 10.1007/s10616-010-9274-0.
- Kumar, V., & Robin, S. L. 1995. *Buku Ajar Patologi 2*. Jakarta: Penerbit buku kedokteran EGC
- Kumar, V., Abas, A. K., & Foustron, N. 2005. *Pathology Basic of Disease*. New York: Elsevier Inc.
- Kumar, V., Cotran, R. S., Robbins, S. L. 2007. *Buku Ajar Patologi Robbins, Ed.7, Vol 1*. Jakarta: Penerbit Buku Kedokteran EGC.
- Kumar, S. 2007. Caspase function in programmed cell death. *Cell Death & Differentiation* 14(1):32-43
- Kumar, V., Abbas, A. K., & Aster, J.C. 2013. *Buku Ajar Patologi Robbins Ed 9: Neoplasia*. Elsevier Saunders.

- Kusumawati, R. 2013. *Efek ekstrak kloroform daun tapak dara (Catharanthus roseus (L) G. Don) var. Albus and roseus dalam induksi apoptosis berdasarkan ekspresi procaspase-3 pada sel heLa*. Yogyakarta: Universitas Gadjah Mada.
- Kim, E. L., Li, J. L., Dang, H. T., Hong, J., Lee, C. O., Kim, D. K., Yonn, W. D., Kim, E., Liu, Y., & Jung, J. H. 2012. Bioorganic & Medicinal Chemistry Letters Cytotoxic Cytochalasins from the Endozoic Fungus *Phoma* Sp . of the Giant Jellyfish *Nemopilema Nomurai*. *Bioorganic & Medicinal Chemistry Letters* 22(9):3126–29..
- Lee, K. Y., Lee, H. J., & Lee, H. K. 2001. Microbial symbiosis in marine sponge. *The Journal of Microbiology* 29(4): 254-264.
- Lee, Y. M., Li, H., Hong, J., Cho, H. Y., Bae, K. S., Kim, M. A., Kim, D. K., & Jung, J. H. 2010. Bioactive Metabolites from the Sponge-Derived Fungus *Aspergillus versicolor*. *Archives of Pharmacal Research* 33 (2), 231-235.
- Lee, S., Castillo, G. T., Pang, C., Clardy, J., Cao, S., & Kim, K. H. 2016. Diketopiperazines from Costa Rican endolichenic fungus *Colpoma* sp. CR1465A. *Bioorg. Med.Chem.Lett* 26: 2438-2441.
- Lestari, A. S. P., & Mulyono, A. 2011. Analisis Citra Ginjal untuk Identifikasi Sel Piknosis dan Sel Nekrosis. *Jurnal Neutrino* Vol. 4, No.1, p:48-66.
- Lin, Z. J., Lu, Z. Y., Zhu, T. J., Fang, Y. C., Gu, Q. Q., & Zhu, Q. M. 2008. Penicilenols from *Penicillium* sp. GQ-7, an Endophytic Fungus Associated with *Aegiceras corniculatum* *Chem. Pharm. Bull* 56(2):217-221.
- Liu, J. 1995. Pharmacology of oleanolic acid and ursolic acid. *J. Ethnopharmacol* 49: 57–68.
- Liu, J., Li, F., Kim, E. L., Li, J. L., Hong, J., Bae, K. S., Chung H. Y., Kim, H. S., & Jung, J. H. 2011. Antibacterial Polyketides from the Jellyfish-Derived Fungus *Paecilomyces Variotii*. *J. Nat. Prod* 74(8): 1826–29.
- Liu, Q. Y., Zhou, T., Zhao, Y. Y., Chen, L., Gong, M. W., Xia, Q. W., Ying, M. G., Zheng, Q. H., & Zhang Q. Q. 2015. Antitumor Effects and Related Mechanism of Penicitrinine A, a Novel Alkaloid with a Unique Spiro Skeleton from the Marine Fungus *Penicillium citrinum*. *Mar.Drugs* 13:4733-4753.
- Looi, C. Y., Arya, A., Cheah, F.K., Muharram, B., Leong, K.H., Mohamad, K., Wong, W.F., Rai, N., & Mustafa, M.R. 2013. Induction of apoptosis in human breast cancer cells via caspase pathway by vernodalin isolated from *Centratherum anthelminticum* (L.) seeds. *PloS one*, 8(2)

- Losung, F., Bara, R. A., & Angkouw, E. D. 2015. Isolasi Antimikroba dari Jamur yang Bersimbiosis dengan Biota Laut. *Jurnal LPPM Bidang Sains dan Teknologi*. Vol.2. No. 2.pp.36-41.
- Lowe, S. W., Bodies, S., McClatchey, A., Remington, L., Ruley, H. E., Fisher, D. E., & Jacks, T. 1994. P53 status and the efficacy of cancer therapy *in vivo*. *Sciences* 266:807.
- Lu, Y., & Cederbaum, A. I. 2007. CYP2E1 and oxidative liver injury by alcohol. *Free Radical Biology and Medicine*. 2008;44(5):723-738. doi:10.1016/j.freeradbiomed.11.004.
- Lu, Z.Y., Lin, Z. J, Wang, W. L., Du, L., Zhu, T. J., Fang, Y. C., Gu, Q. Q., Zhu, W. M. 2008. Citrinin Dimers from the Halotolerant Fungus *Penicillium citrinum* B-57. *J. Nat. Prod.*71, 543–546.
- Luna-Vargas, M. P., & Chipuk, J. E. 2016. The deadly landscape of pro-apoptotic BCL-2 proteins in the outer mitochondrial membrane. *The FEBS journal*, Luo, H., Qing, Z., Deng, Y., Deng, Z., Xia'an, T., Feng, B., & Lin, W. (2019). Two Polyketides Produced by Endophytic *Penicillium citrinum* DBR-9 from Medicinal Plant *Stephania kwangsiensis* and Their Antifungal Activity against Plant Pathogenic Fungi. *Natural Product Communications*, 14(5): 2676-2689.
- Machana, S., Weerapreeyakul, N., Barusrux, S., Nonpunya, A., Sripanidkulchai, B., Thitimetharoch, T. 2011. Cytotoxic and apoptotic effects of six herbal plants against the human hepatocarcinoma (HepG2) cell line. *Chin Med*, 6(1):39.
- McGahon, A. J., Martin, S. J., Bissonnette, R. P., Mahboubi, M., Shi, Y., Mogil, R. J., Nishioka, W. K., & Green, D. R. 1995. *The End of the (Cell): Line: Methods for the study of Apoptosis in Vitro*. In: Schwartz LM and Osborn BA, ed, Cell Death. San Diego: Academic Press.
- Malmstrom, J., Christophersen, C., & Frisvad, J. C. 2000. Secondary metabolites characteristic of *Penicillium citrinum*, *Penicillium steckii* and related species. *Phytochem* 54:301-309.
- McKay, J. 1999. Marine sponge: small animals with really neat compounds. The Evergreen State College Olympia, Washington. internet Access at <http://www.ucmp.berkeley.edu/porifera.html/>
- Maryati., & Sutrisna, E. M. 2011. fraksi petroleum eter tanaman ceplukan (*Physalis angulata* L) menghambat proliferasi dan memacu apoptosis pada sel HeLa. *Biota* 16(1): 82-84.

- Mayer, A. M. S. 1999. Marine Pharmacology in 1998: Antitumor and Cytotoxic Compounds. *The Pharmacologist* 11 (4): 159-164.
- Meyer, B. N., Ferrigni, N. R., Putnam, L. B., Nichols, D. E., Mclaughlin, J. L. 1982. Brine Shrimp: A Convenient General Bioassay for Active Plant Constituents. *Planta medica*, 45(1): 31-34. Doi: 10.1055/s-2007-971236.
- Mcdonald, J. W., & Pilgrim, T. K. 1999. Nuclear expression of p53, p21 and cyclin d1 is increased in bronchioloalveolar carcinoma. *Histopathology*, 34(5):439-446. Doi: 10.1046/j.1365-2559.1999.00632.x
- McGenity, T. J., Timmis, K. N., & Nogales, B. 2017. Hydrocarbon and Lipid Microbiology Protocols. 1st ed. Edited by B. Nogales. Braunschweig: Springer Berlin Heidelberg.
- Meng, L. H., Liu, Y., Li, X. M., Xu, G. M., Ji, N. Y., & Wang, B. G. 2015. Citrifelins A and B, citrinin adducts with a tetracyclic framework from cocultures of marine-derived isolates of *Penicillium citrinum* and *Beauveria felina*. *J. Nat. Prod.* 78 (9), 2301–2305.
- Merlic, C. A. 1997. Introduction to IR Spectra. URL: <https://webspectra.chem.ucla.edu//irintro.html>
- Mitchell, S. S., Nicholson, B., Teisan, S., Lam, K. S., & Potts, B. C. 2004. Aureo Vertical Lactam, a novel 22-atom macrocyclic lactam from the marine actinomycete *Streptomyces aureus verticillatus*. *J. Nat. Prod* 67:1400–1402.
- Moller, M. B., Ino, Y., Gerdes, A., Skjodit, K., Louis, D., & Pedersen, N. 1999. Aberration of the p53 pathways components p53, MDM2 and CDKN2A appear independent in diffuse large B cell lymphoma. *Leukimia* 13:453.
- Morrison, W. B. 2010. Cancer Chemotherapy: An annotated history. *Journal Vet. Intern. Med* 24: 1294-1262.
- Motomasa, K. 1998. *Search for Biologically Active Substances from Marine Sponges*. In: Prosiding Seminar Bioteknologi I (R. R. eds.), Puslit Oseanologi LIPI, Jakarta.
- Moyna G. 1999. *Advanced Nuclear Magnetic Resonance Spectroscopy*. Spring. URL: http://208.154.206/gmoyna/NMR_ectures/NMR_lectures1/tsld001.htm.
- Mukherjee, S., Koner, B. C., Ray, S., & Ray, A. 2006. Environmental contaminants in pathogenesis of breast cancer. *Ind J Exp Biol* 44(1):13-8.
- Mulrane, L., Mcgee, S. F., Gallagher, W. M., Mulrane, L., Mcgee, S. F., Gallagher, W. M., & Connor, D. P. O. 2013. miRNA Dysregulation in breast cancer miRNA

dysregulation in breast cancer. *American Association for Cancer Research*.
<https://doi.org/10.1158/00085472.CAN-13-1841>

- Munro, M. H. G., Luibrand, R. T., & Blunt, J. W. 1987. *The Search for Antiviral and Anticancer Compounds from Marine Organisms*. In : Scheuer, P. Bioorganic Marine Chemistry, Volume 1. Berlin:Springer-Verlag.
- Munro, M. H. G., Blunt, J. W., Dumdei, E. J., Hickford, S. J. H., Lill, R. E., Li, S., Battershill, C. N., & Duckworth, A. R. 1999. The discovery and development of marine compounds with pharmaceutical potential. *Journal of Biotechnology* 70: 14 - 25.
- Murniasih, T. 2003. Metabolit sekunder dari spons sebagai bahan obat. *Oseana* 18 (3) 27-33.
- Nafrialdi, G. S. 1995. *Antikanker dan immunosupresan*. In Ganiswara SG et al, (Eds). Farmakologi dan terapi, Ed. 4. Jakarta:UIP.
- Neumann, K. (2008). Marine-Derived Fungi : a Source for Structurally New and Bioactive Secondary. *Thesis*, 1–153.
- Newman, D. J., & Cragg, G. M. 2016. Drugs and drug candidates from marine sources: an assessment of the current “state of play”. *Planta Med.* 82, 775-789.
- Neve, R. M., Chin, K., Fridlyand, J., Yeh, J., Beahner, F. L., Fevr, T., Clark, L., Bayani, N., Coppe, J. P., Tong, F., Speed, T., Spellman, P. T., Devries, S., Lapuk, A., Wang, N. J., Kuo, W. L., Stilwell, J. L., Pinkel, D., Albertson, D. G., Waldman, F. M., McCormick, F., Dickson, R. B., Johnson, M. D., Lippman, M., Ethier, S., Gazdar, A., Gray, J. W. 2006. A collection of breast cancer cell lines for the study of functionally distinct cancer subtypes. *Cancer Cell* 10(6):515-27. doi: 10.1016/j.ccr.2006.10.008.
- Nickols, N. G., Jacobs, C. S., Farkas, M. E., & Dervan, P. B. (2007). Modulating hypoxia-inducible transcription by disrupting the HIF-1-DNA interface. *ACS Chemical Biology*, 2(8), 561–571. <https://doi.org/10.1021/cb700110z>
- Nicolier, M., Decrion-Barthod A., Launay, S., Pretet, J., & Mougin, C. 2009. Spatiotemporal activation of caspase-dependent and independent pathways in staurosporine-induced apoptosis of 53 and p53 human cervical carcinoma cells. *Biol cell* 101(8):455-476.
- Nobili, S., Lippi, D., Wort, E., Donnini, M., Bausi, L., Min, K., & Capaccioli, S. 2009. Natural Compounds for Cancer treatment and prevention. *Pharmacological Research* 59: 365-378.

- Nunez, R. 2001. DNA Measurement and Cell Cycle Analysis by Flow Cytometry. *Curr. Issues. Mol. Biol* 3(3):67-70.
- Nurhayani, A. P. D., Nurlita, A., & Rachmat, F. 2006. Uji toksisitas ekstrak *Eucheuma alvarezii* terhadap *Artemia salina* sebagai studi pendahuluan potensi antikanker. *Akta kimindo* 2(1):41-46.
- Oka, A. I., Hasebe, T., & Shi, Y. B. 2010. Apoptosis in amphibian organs during metamorphosis. *Apoptosis* 15(3):350-364.
- Parkin, M. 2001. Global cancer statistics in the year 2000. *The Lancet Oncology* 2(9): 533-543.
- Pelengaris, S., Khan, M., & Evan, G. 2002. c-MYC: More Than Just a Matter of Life and Death. *Nature review cancer*, 2(10):764-776. Doi:10.1038/nrc904.
- Perou, C. M., Sorlie, T., Eisen, M. B., Rijn, M., Jeffrey, S. S., Rees, C. A. Pollack, J. R., Ross, D. T., Johnsen, H., Akslen, L. A., Fluge, O., Pergamenschikov, A., Williams, C., Zhu, S. X., Lonning, P. E., Borresen-Dale, A. L., Brown, P. O., Botstein, D. 2000. Molecular portraits of human breast tumours. *Nature* 406(67997): 747-752.
- Pistritto, G., Trisciuglio, D., Ceci, C., Garufi, A., & D'Orazi, G. 2016. Apoptosis as anticancer mechanism: function and dysfunction of its modulators and targeted therapeutic strategies. *Aging (Albany NY)*, 8(4), 603.
- Pettit, G. R., Butler, M. S., Bass, C. G., Doubek, D. L., Williams, M. D., Schmidt J. M., Pettit, R. K., Hooper, J. N. A., Tackett, L. P., & Filiatrault, M. J. 1997. Antineoplastic Agents, 326. The Stereochemistry Of Bastadins 8, 10, And 12 From The Bismarck Archipelago Marine Sponge *Ianthella basta*. *Chemical and Pharmaceutical Bulletin* 42 (12) : 2449-2451.
- Piel, J., Hui, D. Q., Wen, G. P., Butzke, D., Platzer, M., Fusetani, N., & Matsunaga, S. 2004. Antitumor polyketide biosynthesis by an uncultivated bacterial symbiont of the marine sponge *Theonella swinhoei*. *Proc. Natl. Acad. Sci. U. S. A.* 101, 16222-16227
- Pistritto, G., Trisciuglio, D., Ceci, C., Garufi, A., & D'Orazi, G. 2016. Apoptosis as anticancer mechanism: function and dysfunction of its modulators and targeted therapeutic strategies. *Aging (Albany NY)*, 8(4), 603.
- Pollard, T., Earnshaw, W., Schwartz, J. L., Johnson, G. 2004. *Cell Biology*. Philadelphia Saunders.
- Pourkarimi, E., Greiss, S., & Gartner, A. 2012. Evidence that CED-9/Bcl2 and CED-4/Apaf-1 localization is not consistent with the current model for *C. elegans* apoptosis induction. *Cell Death Differ* 19:406-415.

- Pratiwi, S. 2008. *Mikrobiologi farmasi*. Jakarta: Gelora Aksara Pratama.
- Pretsch, E., Bühlmann, P., & Badertscher, M. 2020. *Structure Determination of Organic Compounds: Tables of Spectral Data* (5ed.). Springer: Berlin.
- Pringgoutomo, E. S., Himawan, S., Tjarta, A. 2002. Buku Ajar Patologi I. Jakarta: Sagung Seto.
- Proksch, P., Edrada, R. A., & Ebel, R. 2002. Drugs from the sea – current status and microbial implications. *Appl. Microbiol. Biotechnol* 59 : 125 – 134.
- Quiiob, E., Kakou, Y., & Crews, P. (1988). *15S*,16S*,17R*,19S*,20S**. 3644–3646.
- Rabinovitch, P. 2010. *Introduction to cell cycle analysis*. San Diego: Phoenix Flow Systems, Inc
- Reha, D., Kabelac, M., Ryjacek, F., Sponer, J., Sponer, J. E., Elstner., Suhai, S., Hobza, P. 2003. Nature of stacking interaction between intercalators (ethidium, daunomycin, ellipticine, and 4',6-diamide-2-phenylindole) and DNA Base Pairs. *J. Am. Chem. Soc* 124: 3366-3376.
- Rachmani, E. P. N., & Sehesti, T. S. (2012). The Breast of Anticancer from leaf extract of *Annona muricata* against cell line in T47D. *International Journal of Applied Science and Technology*, 2(1), 157–164.
- Rajasekar, T., Balaji, S., Kumaran, S., Deivasigamani, B., & Pugzhavendhan, S. R. 2012. Isolation and Characterization of Marine Fungal Metabolites against Clinical Pathogens. *Asian Pacific Journal of Tropical Diseases*. Elsevier S387-392.
- Ralifo, P., Tenney., Valeriote, F. A., & Crews, P. 2007. A Distinctive Structural Twist in the Aminoimidazole Alkaloids from a Calcareous Marine Sponge: Isolation and Characterization of Leucosolenamines A and B. *Journal of Natural Products* 70(1): 33–38.
- Rautajoki, K. J., Martilla, E. M., Nyman, T. A., & Lahesmaa, R. 2007. Interleukin-4 inhibits caspase 3 by regulating several proteins in the fas pathway during initial stages of human T helper 2 cell differentiation. *Mol Cell Proteomics* 6:238-251.
- Reddy, D.R.S., Audipudi, A.V., Reddy, G.D., and Bhaskar, C.V.S. 2011. Antioxidant, Anti-Inflammatory and Antifungal Activity of Marine Sponge *Subergargoria suberosa*-Derived Natural Products. *International Journal of Pharm Tech Research*, 3(1):342-348.
- Rateb, M., & Ebel, R. 2011. Secondary metabolites of fungi from marine habitats. *Nat. Prod. Rep.*, 28, 290.

- Rodriguez, M., & Potter, D. A. 2013. Cytochrome P450 1A1 regulates breast cancer cell proliferation and survival. *Mol Cancer Res* 11(7): 780-792. doi: 10.1158/1541-7786.MCR-12-0675.
- Ross, J. S., Fletcher, J. A., Linette, G. P, Stec, J., Clark, E., Ayes, M. 2003. The Her-2/neu gene and protein in breast cancer 2003: biomarker and target of therapy. *Oncologist* 8(4): 307-325.
- Rzepa, H. 1995. *NMR Spectroscopy. Principles and Application*. Imperial College. UR: <http://www.ch.ic.ac.uk/local/organic/nmr.html>
- Sabdaningsih, A., Liu, Y., Mettal, U., Heep, J., Marner, M., Radjasa, O. K., Sabdono, A., & Trianto, A. (2020). *A New Citrinin Derivative from the Indonesian*.
- Samuel, P., Prince, L., & Prabakaran, P. 2011. Antibacterial Activity of Marine Derived Fungi Collected from South East Coast of Tamilnadu, India. *J. Microbiol. Biotech. Res.* 1(4):86-94.
- Sanders, J. K. M., & Hunter, B. K. 1993. *Modern NMR Spectroscopy*. Oxford University Press.
- Santos, G. F., Lima, G. S., Oliveira, G. P., Filho, J. D. S., Amaral, L. S., Rodrigues-Filho, E., Takahashi, J. A. 2018. New AChE inhibitors from microbial transformation of trachyloban-19-oic acid by *Syncephalastrum racemosum*. *Bioorganic Chemistry* 79: 60–63.
- Sari, L. M. 2018. Apoptosis: Mekanisme molekuler kematian sel. *Cakradonya Dental Journal* 10(2), 65-70.
- Sarkar, S., & Mandal, M. 2009. Growth factor receptors and apoptosis regulators: signaling pathways, prognosis, chemosensitivity and treatment outcomes of breast cancer. *Basic and clinical research* 3: 47-60.
- Sarmoko, L. 2012. *Regulasi siklus sel*. Yogyakarta: Cancer Chemoprevention Research Center, UGM.
- Saryadi. 1992. Pola Kanker di Indonesia dalam buku Gaya Hidup dan Kanker. Semarang: UNDIP.
- Sastrohamidjojo, H. 2001. *Spektroskopi*. Yogyakarta: Liberty.
- Sata, N. U., Matsunaga, S., Fusetani, N., & van Soest, R. W. B. 1999. Aurantosides D, E, and F: New Antifungal Tetramic Acid Glycosides from the Marine Sponge *Siliquaria spongia japonica*. *J. Nat. Prod.* 62:969-971.1647-1650.

- Schachke, N., & Sommoerhoff, P. C. 2010. Upgrading a natural product: inhibition of human β -tryptase by cyclotheonamide analogues. *Chem. Mws. Chem*, 5: 367-370.
- Schuh, H. 2008. Artenreiche Finsternis. *Die Zeit* 34, 31
- Silverstein, R., Fuson, F., Curtin, D., & Moril, T. C. 1981. The systematic identification of organic compound (fourth edition). Singapore: John Willey and Sons.
- Situmorang, E. C., Prameswara, A., Sinthya, H. C., Toruan-Mathius, N., & Liwang, T. 2014. Morphology and history identification of fungal endophytes from oil palm roots in *Ganoderma boninense* endemic area. *Microbiology Indonesia*, 7(4), pp. 198-204. Doi: 10.5454/mi.7. 4. 9.
- Shelton, S. N., Dillard, C. D., & Robertson, J. D. 2010. Activation of caspase-9, but not caspase-2 or caspase-8, is essential for heat-induced apoptosis in jurkat cells. *Journal of Biological Chemistry* 282(52): 40525-40533.
- Sheng, H., & Sun, H. 2011. Synthesis, biology and clinical significance of pentacyclic triterpenes: a multi-target approach to prevention and treatment of metabolic and vascular diseases. *Nat. Prod. Rep.* 28, 543–593.
- Sherr, C. J. 1988. Tumor surveillance via the ARF-p53 pathways. *Gene and development* 12(19): 2984-2991. Doi:10.1101/gad.12.19.2984.
- Shibuya, K., Mathers, C. D., Boschi-Pinto, C., Lopez, A. D., & Murray, C. J. L. 2002. Global and regional estimates of cancer mortality and incidence by site: II. Result for the global disease 200. *BMC Cancer* 2:37-62.
- Smets, L. A . 1994. Programed cell death (apoptosis) and response to anticancer drugs. *Anti-cancer drugs* 5,3-9.
- Srivastava, R. 2007. *Apoptosis, cell signaling, and human diseases*. 1st edn. New Jersey: Human Press.
- Sturm, I., Papadopoulus, S., Hillebrand, T., Benter, t., Luck, H. J., Wolff, G., Dorken, B., Daniel, P. T. 2000, Impaired Bax protein expression in breast cancer, mutational analysis of the BAX and the p53 gene. *Int J Cancer* 87(4):517-521.
- Sudiana, I. K. 2008. *Patologi Molekuler Kanker*. Jakarta: Salemba Medika, :1-3,46.
- Suhartati, T. 2013. *Dasar-dasar spektrofotometri uv-vis dan spektrometri massa untuk penentuan struktur senyawa organik*. Bandar Lampung :CV. Anugrah Utama Raharja.

- Sukardiman, W., & Hapsari, P. 2006. Aktivitas Antikanker dan Induksi Apoptosis Fraksi Kloroform Daun Pepaya (*Carica papaya* L) terhadap Kultur Sel Kanker Mieloma. *Media Kedokt Hewan*,22(2),pp. 104-111
- Sukardja, I. D. G. 2000. *Onkologi klinik*. Surabaya: Universitas Airlangga Press.
- Sun Y, Xun K, Wang Y, & Chen X. 2009. A systematic review of the anticancer properties of berberine, a natural product from Chinese herbs. *Anti-cancer drugs*: 20(9):757-69.14.
- Sun, Y. L., Zhang, X. Y., Zheng, Z. H., Xu, X. Y., & Qi, S. H. (2014). Three new polyketides from marine-derived fungus *Penicillium citrinum* SCSGAF 0167. In *Natural Product Research* 28, Issue 4, pp. 239–244.
- Susanti, M., & Dachriyanus. 2017. *Kromatografi Cair Kinerja Tinggi*. Padang: LPTIK Universitas Andalas.
- Tanaka, J., Trianto, A., Musman, M., Hammad, H. I., Ohtani, I. I., Iciba, T., Higa, T., Yoshida, W. Y., & Scheuer, P. J. 2002. New Polyoxygenated steroids exhibiting reversal of multidrug resistance from the gorgonian *Isis hippuris*. *Tetrahedron* 58:6259-6266.
- Taneja, P., Maglic, D., & Imoto, M. 2007. Function of cyclin D1 as an oncogene and regulation of cyclin D1 expression. *Cancer Sci* 98(5):629-635.
- Tang, w. z., Yang, Z. Z., Sun, S., Qang, S. P., Yang, F., Jiao, W. H., & Lin, H. W. 2019. (-)-Calcaridine B, a New Chiral Aminoimidazole-Containing Alkaloid from the Marine Sponge *Leucetta Chagosensis*. *Journal of Asian Natural Products Research* 21(11): 1123–28. <https://doi.org/10.1080/10286020.2018.1499729>.
- Takahashi, J. A., Monterio de Castro, M. C., Souza, G. G, Lucas, E. M. F., Bracarense, A. A. P., Abreu, L. M., Marrie, I. E., Oliveira, M. S, Floreano, M. B, & Oliveira, T. S. 2008. Isolation and screening of fungal species isolated from Brazilian cerrado soil for antibacterial activity against *Escherichia coli*, *Staphylococcus aureus*, *Salmonella typhimurium*, *Streptococcus pyogenes* and *Listeria monocytogenes*. *J. Mycol. Med* 18, 198-204.
- Tao, L. Y., Zhang, J. Y., Liang, Y. J., Chen, L. M, Zheng, L. S., Wang, F., Mi, Y. J., She, Z. G., To, K. K. W., & Lin, Y. C. 2010. Anticancer effect and structure-activity analysis of marine products isolated from metabolites of mangrove fungi in the South China Sea. *Mar. Drugs*.8, 1094–1105.
- Tashiro, E., Tsuchiya, A., Imoto, M. 2007. Functions of cyclin D1 as an oncogene and regulation of cyclin D1 expression. *Cancer Sci*, 98 (5): 629–635

- Taylor, M. W., Radax, R., Steger, D., & Wagner, M. 2007. Sponge-associated microorganisms, evolution, ecology, and biotechnological potential. *Microbiology and Molecular Biology Reviews*, 71(2), 295–347.
- Thakur, N. L., & Muller, W. G. 2004. Biotechnological potential of marine sponge. *Current Science* 86 (11):1,506-1,512.
- Thamsiri, P., Phongpaichit, S., Sakayaroj, J., & Rukachaisirikul, V. (2020). *Isochroman derivatives from the marine-derived fungus Penicillium citrinum PSU-MF100. Paccon*, 1–136.
- Triana, E., Yulinery, T., & Nurhidayat, N. 2015. analisis citrinin, lovastatin. dan pigmen pada angkak hasil fermentasi beras Ir 42 dengan *Monascus purpureus* hasil mutagenesis etidium bromida. prosiding SNaPP 2014 Sains, Teknologi dan kesehatan :495-466.
- Tjindarbumi, D., & Mangunkusumo, R. 2002. Cancer in Indonesia, Present and Future. *Japan Journal of Clinical Oncology* 32 :17-21.
- Tolstoy, V. P., Chernyshova, I. V., Skryshevsky, V. A. 2003. *Handbook of infrared spectroscopy of ultrathin film*. USA: John Wiley and Sons Publication.
- Torre, L. A., Bray, F., Siegel, R. L., Ferlay, J., Tieulent, J. L., & Jemal, A. 2015. Global Cancer Statistics, 2012. *Ca Cancer J Clin* 65:87-108.
- Tsai, T., Davalath, S., Rankin, C., Radich, J. P., Head, D., Appelbaum, F. R., & Boldt, D. H. 1996. Tumor suppressor gene alteration in adult acute lymphoblastic leukemia (ALL). Analysis of retinoblastoma (Rb) and gene expression in lymphoblasts of patients with de novo, relapsed, or refractory ALL treated in Southwest Oncology Group studies. *Leukimia* 10:1901.
- Tsukamoto, S., Kawabata, T., Kato, H., & Ohta, T. O. 2007. Naamidines H and I, Cytotoxic Imidazole Alkaloids from the Indonesian Marine Sponge *Leucetta Chagosensis*. *Journal of Natural Products* 70(10): 1658–60.
- Trump, B. F. I, Berezsky, K., Chang, S. H., & Phelps, P. C. (1997). The pathways of cell death: oncosis, apoptosis, and necrosis. *Toxicol. Pathol.* 25, 82–88. doi: 10.1177/019262339702500116
- Turner, W. B., & Aldridge, D. C. 1983. *Fungal metabolisme* II. Academic: London.
- Ulfah, M. 2010. Flow cytometry untuk Evaluasi Obat Antiplasmodial pada Gametosit *Plasmodium falciparum*. *Malaria Journal* 9(1):45-55.

- Ullah, M. F., & Aatif, M. 2009. The footprints of cancer development: cancer biomarker. *Cancer Treatment Review*. 35: 193-200.
- Vahakangas, K.H., Samet, J.M., Metcalf, R.A., Welsh, J.A., Bennet, W.P., Lane, D.P. & Harris, C.C. 1992. Mutations of p53 and ras genes in radon-associated lung cancer from uranium miners. *The Lancet* 339:576-80.
- Van Den Heuvel, S. J., Van Laar, T., Kast, W. M., Melief, C. J., Zantema, A., Van Der Eb, A. J. 1990. Association between the cellular p53 and the adenovirus 5 E1B-55 kd proteins reduces the oncogenicity of A-transformed cells. *EMBO J* 9: 2621.
- Van Soest, R. W. M. (1989). The Indonesian sponge fauna: A status report. *Netherlands Journal of Sea Research*, 23(2), 223–230.
- Van Soest, R. W. M., & Braekman, J. C. 1999 . Chemosystematics of Porifera: a review. *Mem. Queensl. Mus* 44: 569-598
- Verma, S. P., Goldin, B. R., & Lin, P. S. 1998. The Inhibition of the Estrogenic Effects of Pesticides and Environmental Chemicals by Curcumin and Isoflavonoids. *Envir Health Presp* 106(12):807-812.
- Vermeulen, K., Dirk, R., Van Bockstaele., & Zwi, N. B. 2003. The cell cycle: a review of regulation, deregulation and therapeutic targets in cancer. *Cell Prolif* 36:131-149.
- Vogeser, M., & Seger, C. 2008. A decade of HPLC-MS/MS in the routine clinical laboratory-goals for further development. *Clinical Biochemistry Rev* 41: 649-662.
- Wakana, D., Hosoe, T., Itabashi, T., Okada, K., Takaki, G. M. D. C., Yaguchi, T., Fukushima, K., & Kawai, K. I. 2006. New citrinin derivatives isolated from *Penicillium citrinum*. *J. Nat. Med.* 60 (60), 279–284.
- Wang, Q. L., Dong, Z., Li, Y. D., Zhang, F. M., Wang, C., & Liang, X. L. 2014. Genome shuffling and ribosome engineering of *Streptomyces actuosus* for High-Yield Nosiheptide Production. *Appl. Biochem. Biotechnol.* 173 (6), 1553–1563.
- Wang, L., Li, C., Yu, G., Sun, Z., Zhang, G., Gu, Q., Zhu, T., Che, Q., Guan, H., & Li, D. (2019). Dicitrinones E and F, citrinin dimers from the marine-derived fungus *Penicillium citrinum* HDN-152-088. *Tetrahedron Letters*, 60(44), 151182.
- Waters, M. D., & Thomas, R. S. 2016. *Toxicogenomics in Predictive Carcinogenicity*. The Royal Society of Chemistry. Cambridge CB4 0WF, UK (pp:298-300).
- Waters, A. L., Hill, R. T., Place, A. R., & Hamann, M. T. 2010. The expanding role of marine microbes in pharmaceutical development. *Curr. Opin. Biotechnol* 21:780–786.

- Wei, X., Hu, X., Yu, R., Wan, S., & Jiang, T. 2020. Efficient Total Synthesis of Lissodendrin b, 2-Aminoimidazole Marine Alkaloids Isolated from Lissodendoryx (Acanthodoryx) Fibrosa. *Marine Drugs* 18(1): 1–10.
- Welington, K. D., Cambie, R. C., Rudledge, P. S., & Berquist, P. R. 2000. Chemistry of Sponges.19. Novel Metabolites from *Hamigera tarangensis*. *J. Nat. Prod* 63 : 79-85.
- Wibowo, T. (2011). *The charm of Bunaken Manado Indonesia* (1st ed). Manado: PT Samuan Rumah Kreasi.
- Wickremasinghe, R. G., & Hoffbrand, A. V.1999. Biochemical and genetic control of apoptosis: relevance to normal hematopoiesis and hematological malignancies. *Blood* 3(11):3587-3600.
- Wiese, J., Bitgit O., Blumel, M., Schmaljohann, R., Imhoff, J. F. 2011. Phylogenetic Identification of Fungi Isolated from the Marine Sponges Tethyaaurantium and Identification of Their Secondary Metabolites. *Mar. Drugs* 9: 562 –564.
- Williams, P. G. 2009. Panning for chemical gold: Marine bacteria as a source of new therapeutics. *Trends Biotechnol* 27:45–52.
- Williams, M. M., & Cook, R. S. 2015. Bcl-2 family protein in breast development and cancer: could Mcl-1 targeting overcome therapeutic resistance?. *Oncotarget* 6(6),3519.
- Wipf, P., & Lim, S. 1995, Total Synthesis of the Enantiomer of the Antiviral Marine Natural Product Hennoxazole A. *J. Am. Chem. Soc.* 117:558-569.
- Wulandari, L. 2011. *Kromatografi Lapis Tipis*. Jember: PT. Taman Kampus.
- Xiong, Z. Q., Wang, J.F., Hao, Y. Y., & Wang, Y. 2013. Recent advances in the discovery and development of marine microbial natural products. *Mar. Drugs* 11: 700–717.
- Xu, L., Wang, W., Gotte, D., Yang, F., Hare, A. A., Welch, T. R., Li, B. C., Shin, J. H., Chong, J., Strathern, J. N., Dervan, P. B., & Wang, D. (2016). RNA polymerase II senses obstruction in the DNA minor groove via a conserved sensor motif. *Proceedings of the National Academy of Sciences of the United States of America*, 113(44), 12426–12431. <https://doi.org/10.1073/pnas.1612745113>
- Yager, J. D., & Davidson, N. E. 2007. Estrogen carcinogenesis in breast cancer. *N Engl J Med* 354(3):270-82.
- Yang, F., Nickols, N. G., Li, B. C., Szablowski, J. O., Hamilton, S. R., Meier, J. L., Wang, C. M., & Dervan, P. B. (2013). Animal toxicity of hairpin pyrrole-imidazole

polyamides varies with the turn unit. *Journal of Medicinal Chemistry*, 56(18), 7449–7457. <https://doi.org/10.1021/jm401100s>

Yang, W., Chen, Y., Cai, R., Zou, G., Wang, B., & She, Z. (2020). Benzopyran Derivatives and an Aliphatic Compound from a Mangrove Endophytic Fungus *Penicillium citrinum* QJF-22. *Chemistry and Biodiversity*, 17(6).

Yersal, O., Barutca, S. Biological subtypes of breast cancer: prognostic and therapeutic implications. *World J Clin Oncol*. 2014;5(3):412.

Young, R. P. 1996. *Organic Chemistry onLine*. URL: <http://chipo.chem.uic.edu/web1/ocol/ocol.htm>.

Yurchenko, A. N., Trinh, P. T. H., Girich, E. U., Smetanina, O. F., Rasin, A. B., Popov, R. S., Dyshlovoy, S. A., von Amsberg, G., Smetanina., Menchinskaya, E. S., Van, T. T. T., Afiyatullo, S. S. 2014. Biologically Active Metabolites of the Facultative Marine Fungus *Aspergillus Terreus*. *Chemistry of Natural Compounds* 49(6):1123–24.

Zampieri, L., Bianchi, P., Ruff, P., & Arbuthno, P. 2002. Differential modulation by estradiol of P-glycoprotein drug resistance protein expression in culture MCF-7 and T47D breast cancer cells. *Anticancer Res* 22(4): 2253-9.

Zeiss, C. J. (2003). The apoptosis-necrosis continuum: insights from genetically altered mice. *Vet. Pathol.* 40, 481–495. doi: 10.1354/vp.40-5-481.

Zhang, M., Wang, W. L., Fang, Y. C., Zhu, T. J., Gu, Q. Q., & Zhur, W. M. 2008. Cytotoxic Alkaloids and Antibiotic Nordammarane Triterpenoids from the Marine-Derived Fungus *Aspergillus sydowii*. *J. Nat. Prod.* 71(6):985-9.

Zhang, G., Wu, G., Zhu, T., Kurtain, T., Mandi, A., Jiao, J., Li, J., Qi, X., Gu, Q., & Li, D. 2013. Meroterpenoids With Diverse Ring Systems From The Sponge-Associated Fungus *Alternaria* sp. *Journal of Natural Products*. A-L.

Zhou, X., Lub, Y., Lina, X., Yanga, B., Yanga, X., Liua, Y. 2011. Brominated aliphatic hydrocarbons and sterols from the sponge *Xestospongia testudinaria* with their bioactivities. *Chemistry and Physics of Lipids* 164, 703– 706.