

DAFTAR PUSTAKA

- Almeida, C.L.F.D., H.D.S. Falcao, G.R.d.M. Lima, C.d.A. Montenegro, N.S. Lima, P.F. d. Athayde-Filho, L.C. Rodrigues, M.d.F.V. de Zouza, J.M. Barbosa-Filho, and L.M. Batista. 2011. Bioactivities from marine algae of the genus *Gracilaria*. *International Journal of Molecular Science*. 12: 4550-4573
- Ale, M.T., J.D. Mikkelsen, A.S. Meyer. 2011. Differential growth response of *Ulva lactuca* to ammonium and nitrate assimilation. *Journal of Applied Phycology*. 23:345-351
- Ananthi, A., H.R.B. Raghavendran, A.G. Sunil, V. Gayathri, G. Ramakrishnan, and H.R. Vasanthi. 2010. In vitro antioxidant and anti-inflammatory potential of crude polysaccharide from *Turbinaria ornata* (marine brown alga). *Food and Chemical Toxicology*. 48: 187-192
- Anonim a. 2003. Profil rumput laut Indonesia. Direktorat Jendral Perikanan Budidaya Departemen Kelautan dan Perikanan.
- Anonim b. TLC Visualization Reagents. <http://www.emdchemicals.com>. Diakses tanggal 27 Maret 2015
- Antolovich, M., P.D. Prenzler, E. Patsalides, S. McDonald and K. Robards. 2001. Method for testing antioxidant activity. *Analyst*. 127: 183-198
- Asari F., T. Kusumi, and H. Kasikawa. 1989. Turbinaric acid, a cytotoxic secosqualene carboxylic acid from the brown alga *Turbinaria ornata*. *Journal of Natural Products*. 52: 1167-1169
- Ashley, P.J. 2007. Fish welfare: Current issues in aquaculture. *Applied Animal Behaviour Science*. 104: 199-235
- Blunt, J.W., B.R. Copp, R.A. Keyzers, M.H.G. Munro, and M.R. Prinsep. 2015. Marine natural products. *Natural Product Report*. 31: 160-258
- Brotowijoyo, M. D., Dj. Tribawono., E. Mulbyantoro. 1995. Pengantar Lingkungan Perairan dan Budidaya Air. Liberty. Yogyakarta. 9-14
- Cannell, R.J.P. 1998. How to approach the isolation of a natural product. In: S.J. Sarker, Z. Latif, and A.I. Gray (Eds) *Natural Product Isolation*. Humana Press. 4: 1-51
- Cao, G and R.L. Prior. 1998. Comparison of different analytical methods for assessing total antioxidant capacity of human serum. *Clinical Chemistry*. 44:1309-1315.
- Cardozo, K.H.M., T. Guaratini, M.P. Barros, V.R. Falcao, A.P. Tonon, N.P. Lopes, S. Campos, M.A. Torres, A.O. Souza, P. Colepicolo, and E. Pinto. 2007. Metabolites

- from algae with economical impact. *Comparative Biochemistry and Physiology*. 146: 60-78
- Chew, Y.L., Y.Y. Lim, M. Omar, and K.S. Khoo. 2008. Antioxidant activity of three edible seaweeds from two areas in South East Asia. *LWT-Food Science and Technology*. 41: 1067-1072
- Choi, H.G., Y.S. Kim, J.H. Kim, S.J. Lee, E.J. Park, J. Ryu, and K.W. Nam. 2006. Effect of temperature and salinity on the growth of *Gracilaria verrucosa* and *G. chorda*, with the potential for mariculture in Korea. *Journal of Applied Phycology*. 18: 269-277
- Chia, Y.Y., M.S. Kanthimathi, K.S. Khoo, J. Rajareswaran, H.M. Cheng, and W.S. Yap. 2015. Antioxidant and cytotoxic activities of three species of tropical seaweeds. *BMC Complementary and Alternative Medicine*. 15: 339-353
- Colegate, S.M. and R.J. Molyneux. 2008. An introduction and overview. *In*: S.M. Colegate and R.J. Molyneux (Eds) *Bioactive Natural Product*. CRC Press. 35-37
- Cornish, M.L. and D.J. Garbary. 2010. Antioxidant from macroalgae: Potential application in human health and nutritions. *Algae*. 155: 155-171
- Costa, M.S., G.P. Fidelis, S.L. Cordeiro, R.M. Oliveira, D.A. Sabry, R.B.G. Camara, L.T.D.B. Nobre, M.S.P.P. Costa, J. Almeida-Lima, E.H.C. Farias, E.L. Leite, and H.A.O. Rocha. 2010. Biological activities of sulfated polysaccharides from tropical seaweeds. *Biomedicine & Pharmacotherapy*. 64: 21 -28
- Costa-mugica, A., A.E. Batista-Gonzales, D. Mondejar, Y. Soto-Lopez, V. Brito-Navaro, A.M. Vazques, D. Bromme, C. Zaldivar-Munoz, A. Vidal-Novoa, A.M.D.O. Silva, and J. Mancini-Filho. 2012. Inhibition of LDL-oxidation and antioxidant properties related polyphenol content of hydrophilic fraction from seaweed *Halimeda incrassate* (Ellis) Lamouroux. *Brazilian Journal of Pharmaceutical Sciences*. 48: 31-37
- D'orazio, N., E. Gemello, M.A. Gammone, M. de Girolamo, C. Ficoneri, and G. Riccioni. 2012. Fucoxantin: a treasure from the sea. *Marine Drugs*. 10: 604-616
- Das, B. and K.V.N.S. Srinivas. 1992. Minor C₂₉-Steroids from the marine red alga, *Gracilaria edulis*. *Phytochemistry*. 31: 4371-4373
- De San, Michele. 2012. The Farming of Seaweed. SmartFish Programme SF/2012/30 Report. Indian Ocean Commission. European Union. 6-10
- De Souza, M.C.R., C.T. Marques, C.M.G. Dore, F.R.F. da Silva, H.A.O. Rocha, and E.L. Leite. 2007. Antioxidant activities of sulfated polysaccharides from brown and red seaweeds. *Journal of Applied Phycology*. 19: 153-160

- Dhargalkar, V. K dan D. Kavlekar. 2004. Seaweeds: A field manual. National Institute of Oceanography. New Delhi. 1-9
- Fatma, C.A.F., O. Yilmaz, F. Durucan, N.S. Ozdemir. 2015. Biochemical component of three marine macroalgae (*Padina pavonica*, *Ulva lactuca*, and *Taonia atomaria*) from the Levantine sea coast of Antalya, Turkey. *Journal of Biodiversity and Environmental Sciences*. 6: 401-411
- Francavilla, M., M. Franchi, M. Monteleone, and C. Caroppo. 2013. The red seaweed *Gracilaria gracilis* as a multi products source. *Marine Drugs*. 11: 3754-377
- Ganesan, P., C.S. Kumar, and N. Bhaskar. 2008. Antioxidant properties of methanol extract and its solvent fraction obtained from selected Indian red seaweeds. *Bioresouce Technology*. 99:2717-2723
- Gibbons, S. 2005. An introduction to planar chromatography. In: S.J. Sarker, Z. Latif, and A.I. Gray (Eds) Natural Product Isolation. Humana Press. 20: 77-116.
- Guyen, K.C., A. Percot, and E. Sezik. 2010. Alkaloids in marine algae. *Marine Drugs*. 8: 269-284
- Halliwell, B. 2002. Food-Derived Antioxidants: How to evaluate their importance in food and in vivo. Handbook of Antioxidants (Second Edition). *Marcel Dekker Inc*. 214: 40-45.
- Harbone, J. B. 2006. Metode fitokimia: Penuntun cara modern menganalisis tumbuhan. Terbitan ke-2, diterjemahkan oleh Kosasih Padmawinata dan Iwang Soediro. Penerbit ITB. Bandung
- Harrison, P.J. & C.L. Hurd. 2001. Nutrient physiology of seaweed: application of concept to aquaculture. *Cahiers de Biologie Marine*. 42: 71-82
- Heo, S. J., J. Y. Hwang, J. I. Choi, J. S. Han, H. J. Kim, and Y. J. Jeon. 2009. Diphlorethohydroxycarmalol isolated from *Ishige Okamurae*, a brown algae, a potent alpha-glucosidase and amylase inhibitor, alleviates postprandial hyperglycemia in giabetic mice. *European Journal of Pharmacology*. 615: 252-256.
- Hertrampf, J.W and F. Piedad-Pascual. 2000. Handbook on ingredients for aquaculture feeds. Springer Science and Business Media Dordrecht. 31-42.
- Husni, A., D.R. Putra, dan I.Y.B. Lelana. 2014. Aktivitas antioksidan *Padina* sp. pada berbagai suhu dan lama pengeringan. *Jurnal Pascapanen dan Bioteknologi Perikanan*. 9: 165-173
- Ismail, Z. 2009. Optimalisasi pemanfaatan sumber daya ekonomi hayati laut kasus budidaya rumput laut. LIPI Press. Jakarta. 1-19

- Jayasankar, R and S. Varghese. 2002. Cultivation of marine red alga *Gracilaria edulis* (Gigartinales, Rhodophyta) from spores. *Indian Journal of Marine Sciences*. 31: 75-77
- Kadi, A. 2004. Potensi Rumput Laut Dibeberapa Perairan Pantai Indonesia. *Oseana*. 4: 25-36
- Karasek, F.W. and R.E. Clement. 2003. Basic Gas Chromatography-Mass Spectrometry. Elsevier. Amsterdam. 101-110
- Karleskint, G.Jr., R. Turner, J.W.Jr. Small. 2010. Introduction to Marine Biology. 3th Edition. Brooks/Cole Cengage Learning. United States. 159-173.
- Kasanah, N., Triyanto, D.S. Seto, W. Amelia, and A. Isnansetyo. 2015. Antibacterial compounds from red seaweeds (Rhodophyta). *Indonesian Journal of Chemistry*. 15: 201-209.
- Kelman, D., E.K. Posner, K.J. McDermid, N.K. Tabandera, P.R. Wright, and A.D. Wright. 2012. Antioxidant Activity of Hawaiian Marine Algae. *Marine Drugs*. 10: 403-416.
- Kelestemur, G.T dan Y. Ozdemir. 2011. Antioxidan Defense and Oxidative Stress on the Fishes. *Derleme*. 4: 63-73.
- Kenny, O., N.P. Brunton, and T.J Smyth. 2015. In vitro protocols for measuring the antioxidant capacity of algal extract. In: D.B. Stengel and S. Connan (Eds). Natural product from marine algae. Humana Press. 375-402
- Kim, S., & Wijesekara, I. 2010. Development and Biological Activities of Marine-Derived Bioactive Peptides. *Journal of Functional Foods*. 2: 1-9.
- Kolanjinathan, K., P. Ganesh and P. Saranraj. 2014. Pharmacological importance of seaweed: A Review. *World Journal of Fish and Marine Sciences*. 6: 1-15.
- Leal, M.C., M.H.G. Munro, J.W. Blunt, J. Puga, B. Jesus, R. Calado, R. Rosa, and C. Madeira. 2013. Biogeography and biodiscovery hotspots of macroalgal marine natural products. *Natural Product Report*. 30: 1361-1363
- Lee, S., Y.S. Lee, S.H. Jung, S.S. Kang, K.H. Shin. 2003. Anti-oxidant activities of fucosterol from the marine algae *Pelvetia siliquosa*. *Archives of Pharmacal Research*. 26: 719-722
- Li, K., X. Li, J.B. Gloer, and B. Wang. 2012. New nitrogen-containing bromophenols from the marine red alga *Rhodomela confervoides* and their radical scavenging activity. *Food Chemistry*. 135: 868-872.
- McHugh, D. J. 2003. A Guide to the Seaweed Industry. FAO Fisheries Technical Paper. Roma. 27-49

- McArtain, P., C. I. R. Gill, M. Brooks, R. Campbell, and I. R. Rowland. 2007. Nutritional value of edible seaweeds. *Nutrition Reviews*. 65: 535–543.
- Mallick, N. dan F.H. Mohn. 2000. Reactive oxygen species: Response of algal cells. *Journal of Plant Physical*. 157:183-193.
- Matanjun, P., S. Muhamed., N.M. Mustapha, Kharidah M., & C. H. Ming. 2008. Antioxidant activities and phenolics content of eight species of seaweeds from North Borneo. *J Appl phycol*. 20: 367-373.
- Molyneux, P. 2004. The use of the stable free radical diphenylpicryl-hydrazil (DPPH) for estimating antioxidant activity. *Journal Science Technology*. 26: 211 -219.
- Mondal, K., S.B. Bhattacharyya, A. Mitra. 2015. Seaweed incorporated diets improves astaxanthin content of shrimp muscle tissue. *Journal Marine Science Research and Development*. 5: 1-3
- Mubarak, H., A. Sulistijo, Djamali, dan O. K. Sumadhiharga. 1998. Sumber daya rumput laut *Dalam: Potensi dan Penyebaran Sumber daya Ikan laut Di Perairan Indonesia*. Komisi Nasional Pengkajian Stok Sumber daya Ikan Laut-LIPI. 4:226-241
- Murugan, K and V.V. Iyer. 2012. Antioxidant and antiproliferative activities of marine algae, *Gracilaria edulis* and *Enteromorpha lingulata*, from Chennai coast. *International Journal of Cancer Research*. 8: 15-26
- Naylor, R.L., R.J. Goldberg, J.H. Primavera, N. Kautsky, M.C.M. Beveridge, J. Clay, C. Folke, J. Lubchenco, H. Mooney, and M. Troell. 2002. Effect of aquaculture on world fish supplies. *Nature*. 405: 1017–1024
- Novo, E. and M. Parola. 2008. Redox mechanisms in hepatic chronic wound healing and fibrogenesis. *Fibrogenesis Tissue Repair*, 5: 1536-1755
- Othman, A., A. Ismail, N.A. Ghani, and I. Adenan. 2007. Antioxidant capacity and phenolic content of cocoa beans. *Food Chemistry*. 100:1523-1530
- Partosuwiryo, S. dan H.S. Hermawan. 2008. *Budidaya rumput laut*. Cipta Aji Pratama. Yogyakarta. 15-21
- Patra, J.K., G. Das, K. Baek. 2015a. Chemical composition and antioxidant and antibacterial activities of an essential oil extracted from an edible seaweed, *Laminaria japonica* L. *Molecules*. 20: 12093-12113
- Patra, J.K., S. H. Kim, and K. Baek. 2015b. Antioxidant and free radical-scavenging potential of essential oil from *Enteromorpha linza* L. prepared by microwave-assisted hydrodistillation. *Journal of Food Biochemistry*. 39: 80-90
- Percival, M. 1998. Antioxidants. *Clinical Nutrition Insight*. 31: 1-4

- Rattaya, S., S. Benjakul, T. Prodpran, 2015. Extraction, antioxidative, and antimicrobial activities of brown seaweed extracts, *Turbinaria ornata* and *Sargassum polycystum*, grown in Thailand. *International Aquatic Research*. 7: 1-16
- Reverter, M., N. Bontemps, D. Lecchini, B. Banaigs, and P. Sasal. 2014. Use of plant extract in fish aquaculture as an alternative to chemotherapy: current status and future perspectives. *Aquaculture*. 433: 50-61
- Rodriguez, P.A.T., L.C. Mendez-Rodriguez, E. Serviere-Zaragoza, T. O'hara, and T. Zenteno-Savin. 2013. Antioxidant substances and trace element content in macroalgae from a subtropical lagoon in the West Coast of Baja California Peninsula. *Vitamin and Trace Elements*. 2: 1-5
- Shahidi, F. and Y. Zhong. 2010. Lipid oxidation and improving the oxidative stability. *Chemical Society Review*. 39: 4067-4079
- Sarker, S.D., Z. Latif, and A.I. Gray. 2005. *Natural product isolation*. Humana Press. New Jersey. 20: 1-26
- Sato, K., T. Eksangri, and R. Egashira. 2006. Ammonia-nitrogen uptake by seaweed for water quality control in intensive mariculture ponds. *Journal of Chemical Engineering of Japan*. 39: 247-255
- Sediadi, A dan B. Utari. 2000. Rumput laut proyek system informasi iptek nasional guna menunjang pembangunan. Pusat dokumentasi dan informasi lembaga ilmu pengetahuan Indonesia. Jakarta. 3-12
- Seidel, V. 2006. Initial and bulk extraction. In: S.J. Sarker, Z. Latif, and A.I. Gray (Eds) *Natural Product Isolation*. Humana Press. 20: 27-33
- Shahidi, F. 2008. Bioactives from Marine Resources. In ACS symposium series. *ACS Publications*. 3: 24-34.
- Shahidi, F., & Alasalvar, C. 2011. Marine Oils and Other Marine Nutraceuticals. *Wiley Online Library*. 36: 444-454.
- Sheu, J., G. Wang, P. Sung, and C. Duh. 1999. New cytotoxic oxygenated fucosterols from the brown alga *Turbinaria conoides*. *Journal of Natural Products*. 62: 224-227
- Sveinsdottir, H., P.Y Hamaguchi, H.E. Bakken, and H.G. Kristinsson. 2014. Method for assessing the antioxidative activity of aquatic food compounds. In Hordur G. Kristinsson (Ed). *Antioxidant and functional component in aquatic foods*. John Wiley & Sons Ltd. 284-315
- Takamatsu, S., T.W. Hodges, I. Rajbhandari, W.H. Gerwick, M.T. Hammann, and D.G. Nagle. 2003. Marine natural products as novel. *Journal Natural Products*. 66: 605-608
- Tsuda, T., Y. Makino, H. Kato, and T. Osawa. 1993. Screening for antioxidative activity of edible pulses. *Bioscience Biotechnology and Biochemistry*. 57: 1606-1608.
- Swing, J. 2003. What Future for the Oceans. *Foreign Affairs*. 82: 139-152.

- Vijayabaskar, P. and Shiyamala V. 2012. Antioxidant properties of seaweed polyphenol from *Turbinaria ornata* (Turner) J. Agardh 1848. *Asian Pasific Journal of Tropical Biomedicine*. S90-S98
- Wang, T., R. Jonsdottir, G. Olafsdottir, and H.G. Kristinsson. 2014. Antioxidant properties of marine macroalgae. In: H.G. Kristinsson (Ed) Antioxidant and Functional components in Aquatic foods. John Wiley & Sons Ltd. 284-315
- Widowati, I., Daphne, L., Maya, P., Nathalie, B. 2014. Antibacterial and antioxidant properties of the red algae *Gracilaria verrucosa* from the north coast of Java, Semarang, Indonesia. *International Journal of Latest Research in Science and Technology*. 3: 179-185.
- Wijnana, A.P.A. 2016. Kandungan senyawa antibakteri alga merah *Gracilaria arcuata* dan bioaktivitasnya terhadap bakteri patogen ikan. Departemen Perikanan Fakultas Pertanian, Universitas Gadjah Mada. Skripsi
- Winberg, P.C., D. Skropeta, and A. Ullrich. 2011. Seaweed cultivation pilot trials: Towards culture systems and marketable products. RIRDC. 1-30
- Yotsu-Yamasita, M., K. Abe, T. Seki, K. Fujiwara, and T. Yasumoto. 2007. Polycavernoside C and C2, the new analogs of the human lethal toxin polycavernoside A, from the red algae, *Gracilaria edulis*. *Tetrahedron letters*. 48: 2255-2259
- Yong, Y.S., W.T.L Yong, V.Y. Thien, S.E Anton, and s. Yasir. 2014. Acclimatization of micropropagated *Kappaphycus alvarezii* in outdoor nursery system. *Journal of Applied Phycology*. 26: 1-7
- Yu, J. and Y.F Yang. 2008. Physiological and biochemical response of seaweed *Gracilaria lemaneiformis* to concentration changes of N and P. *Journal of Experimental Marine Biology and Ecology*. 367: 142-148
- Zheng, J., Y. Chen, F. Yao, W. Chen, and G. Shi. 2012. Chemical composition and antioxidant/antimicrobial activities in supercritical carbon dioxide fluid extract of *Gloiopeltis tenax*. *Marine Drugs*. 10: 2634-2647
- Zubia, M., C. Payri, E. Deslandes. 2008. Alginate, mannitol, phenolic compounds and biological activities of two range –extending brown algae, *Sargassum mangarevense* and *Turbinaria ornata* (Phaeophyta: fucales) from Tahiti (French Polynesia). *Journal of Applied Phycology*. 20: 1033-1043