

REFERENCES

- Adriano, G., Ferreira, C., Martins, R., Quintas, A., 2019. Evaluating polar and non-polar solvents extraction efficiency of gunpowder components by FTIR. *Ann. Med.* 51, 181–181. <https://doi.org/10.1080/07853890.2018.1562751>
- AlgaeBase. (2022). AlgaeBase: Listing The World's Algae. Accessed from www.algaebase.org on March 2022.
- Alstyne, K. L. van, Ridgway, R. L., and Nelson, T. A. (2019). Neurotransmitters in Marine and Freshwater Algae. In *Neurotransmitters in Plants* (pp. 35–54). CRC Press. <https://doi.org/10.1201/b22467-3>
- Anggadiredja, T. A., Zatnika, H., Purwoto and Istini. (2009). *Rumput laut. Penebar Swadaya*, Jakarta.
- AOAC. (2016) Appendix F: Guidelines for Standard Method Performance Requirements. *AOAC Int.*
- Ariffin, F., D., Abdullah, A., Zainal Ariffin, S. H., and Chan, K. M. (2017). Macronutrients content of Red Seaweed *Kappaphycus alvarezii* and *Kappaphycus striatum*. *Jurnal Sains Kesihatan Malaysia*, 15(02), 19–27. <https://doi.org/10.17576/jskm-2017-1502-03>
- Assunção, J., Amaro, H. M., Malcata, F. X., & Guedes, A. C. (2022). Factorial Optimization of Ultrasound-Assisted Extraction of Phycocyanin from *Synechocystis salina*: Towards a Biorefinery Approach. *Life*, 12(9). <https://doi.org/10.3390/life12091389>
- Barbarino, E., & Lourenço, S. O. (2005). An evaluation of methods for extraction and quantification of protein from marine macro- and microalgae. *Journal of Applied Phycology*, 17(5), 447–460. <https://doi.org/10.1007/s10811-005-1641-4>

Basir, P. Abukena, and Amiluddin. (2017). The growth of seaweed (*Kappaphycus alvarezii*) cultivated with long line and off bottom method on tita banda neira maluku coastal area. *Journal of Fisheries and Marine Research*. Available at: <http://jfmr.ub.ac.id>.

Bellmaine, S., Schnellbaecher, A., & Zimmer, A. (2020). Reactivity and degradation products of tryptophan in solution and proteins. In *Free Radical Biology and Medicine* (Vol. 160, pp. 696–718). Elsevier Inc. <https://doi.org/10.1016/j.freeradbiomed.2020.09.002>.

Berger, M., Gray, J. A., and Roth, B. L. (2009). The expanded biology of serotonin. In *Annual Review of Medicine* (Vol. 60, pp. 355–366). <https://doi.org/10.1146/annurev.med.60.042307.110802>

Bikker, P., Stokvis, L., van Krimpen, M. M., van Wikselaar, P. G., and Cone, J. W. (2020). Evaluation of seaweeds from marine waters in Northwestern Europe for application in animal nutrition. *Animal Feed Science and Technology*, 263. <https://doi.org/10.1016/j.anifeedsci.2020.114460>

Bizzaro, G., Vatland, A. K., and Pampanin, D. M. (2022). The One-Health approach in seaweed food production. In *Environment International* (Vol. 158). Elsevier Ltd. <https://doi.org/10.1016/j.envint.2021.106948>

Cárcel, J. A., García-Pérez, J. V., Benedito, J., & Mulet, A. (2012). Food process innovation through new technologies: Use of ultrasound. *Journal of Food Engineering*, 110(2), 200–207. <https://doi.org/10.1016/j.jfoodeng.2011.05.038>.

Carreira-Casais, A., Otero, P., Garcia-Perez, P., Garcia-Oliviera, P., Pereira, A. G., Carpena, M., Soria-Lopez, A., Simal-Gandara, J., & Preto, M.A. (2021). Benefits and drawbacks of ultrasound-assisted extraction for the recovery of bioactive

- compounds from marine algae. *International Journal of Environmental Research and Public Health*, 18, 9153. <https://doi.org/10.3390/ijerph18179153>.
- Charpe, T. W. dan V. K. Rathod. (2016). Kinetics of Ultrasound Assisted Extraction of Wedelolactone from *Eclipta alba*. *Brazilian Journal of Chemical Engineering*. Volume 33 nomor 4:1003-1010. http://www.scielo.br/scielo.php?pid=S0104-66322016000401003&script=sci_arttext.
- Chemat, F., Zill-E-Huma, & Khan, M. K. (2011). Applications of ultrasound in food technology: Processing, preservation and extraction. *Ultrasonics Sonochemistry*, 18(4), 813–835. <https://doi.org/10.1016/j.ultsonch.2010.11.023>
- Cui, F. J., Qian, L. S., Sun, W. J., Zhang, J. S., Yang, Y., Li, N., Zhuang, H. N., & Wu, D. (2018). Ultrasound-assisted extraction of polysaccharides from *Volvariella volvacea*: Process optimization and structural characterization. *Molecules*, 23(7). <https://doi.org/10.3390/molecules23071706>
- Diyana, F., Abdullah, Hisham, S., & Chan, K. M. (2015). Antioxidant activity of red algae *Kappaphycus alvarezii* and *Kappaphycus striatum*. In *International Food Research Journal* (Vol. 22, Issue 5).
- Erland, L. A. E., and Saxena, P. (2019). Auxin driven indoleamine biosynthesis and the role of tryptophan as an inductive signal in *Hypericum perforatum* (L.). *PLoS ONE*, 14(10). <https://doi.org/10.1371/journal.pone.0223878>
- Ertas, S., O., & Kayali, A. (2005). An overview on analytical method validation. *Dergi park akademik*. 1: (41-57). https://doi.org/10.1501/Eczfak_0000000014
- Food and Agriculture Organization. (2014). *FAO Yearbook : Fishery and Aquaculture Statistics*. Rome: ISBN 978-92-5-009268-3. <https://www.fao.org/3/i5555e/i5555e.pdf>

Food and Agriculture Organization. (2023). www.fao.org/publications

Ferreira, S. L. C., Bruns, R. E., Ferreira, H. S., Matos, G. D., David, J. M., Brandão, G. C., da Silva, E. G. P., Portugal, L. A., dos Reis, P. S., Souza, A. S., & dos Santos, W. N. L. (2007). Box-Behnken design: An alternative for the optimization of analytical methods. In *Analytica Chimica Acta* (Vol. 597, Issue 2, pp. 179–186). <https://doi.org/10.1016/j.aca.2007.07.011>

Fleurence, J. L. (n.d.). *Seaweed proteins: biochemical, nutritional aspects and potential uses*.

Friedman, M. (2018). Analysis, Nutrition, and Health Benefits of Tryptophan. In *International Journal of Tryptophan Research* (Vol. 11). SAGE Publications Ltd. <https://doi.org/10.1177/1178646918802282>

Ghisaidoobe, A. B. T. & Chung, J.C. (2014). Intrinsic tryptophan fluorescence in the detection and analysis of proteins : A focus on foster resonance energy transfer technique. *International Journal of Molecular sciences*. 15 (12). doi: [10.3390/ijms151222518](https://doi.org/10.3390/ijms151222518)

Garcia-Castello, E. M., Rodriguez-Lopez, A. D., Mayor, L., Ballesteros, R., Conidi, C., & Cassano, A. (2015). Optimization of conventional and ultrasound assisted extraction of flavonoids from grapefruit (*Citrus paradisi* L.) solid wastes. *LWT*, 64(2), 1114–1122. <https://doi.org/10.1016/j.lwt.2015.07.024>.

Hasbullah, D., Akmal, Syamsul, B., IGP Agung, Suaib and Ilham. (2014). Implementasi berbagai jenis substrat dasar sebagai media produksi lawi-lawi caulerpa sp. *Jurnal Ilmu perikanan*. 3(1).

Hashtroudi, M. S., Ghassempour, A., Riahi, H., Shariatmadari, Z., and Khanjir, M. (2013). Endogenous auxins in plant growth-promoting Cyanobacteria-Anabaena

vaginicola and *Nostoc calcicola*. *Journal of Applied Phycology*, 25(2), 379–386.

<https://doi.org/10.1007/s10811-012-9872-7>

Hong, D., Minh Hien, H., Thi Hoai Thu, N., Thi Thu Hang, D., and Quang Nang, H. (2010). Establish Cultivation by Mixing Crops of Different Strains of *Eucheuma* and *Kappaphycus* Species. In *Journal of Marine Bioscience and Biotechnology* (Vol. 4, Issue 1).

Horovitz, O., & Paşca, R. D. (2017). Classification of amino acids by multivariate data analysis, based on thermodynamic and structural characteristics. *Studia Universitatis Babes-Bolyai Chemia*, 62(2Tom1), 19–31.

<https://doi.org/10.24193/subbchem.2017.2.02>.

Hossain, M.B., Brunton, N.P., Patras, A., Tiwari, B., O'Donnell, C.P., Martin- Diana, A.B., Barry-Ryan, C., 2012. Optimization of ultrasound assisted extraction of antioxidant compounds from marjoram (*Origanum majorana* L.) using response surface methodology. *Ultrason. Sonochem.* 19, 582–590.

<https://doi.org/10.1016/j.ultsonch.2011.11.001>

Hurtado, A. Q., Critchley, A. T., Trespoey, A., and Bleicher-Lhonneur, G. (2008). Growth and carrageenan quality of *Kappaphycus striatum* var. *sacoli* grown at different stocking densities, duration of culture and depth. *Journal of Applied Phycology*, 20(5), 551–555. <https://doi.org/10.1007/s10811-008-9339-z>

ICH, 2005. ICH Topic Q2 (R1) Validation of Analytical Procedures: Text and Methodology. Geneva, Switzerland.

Jamaluddin, J., Kum, Y.F., and Khumaidi, A., 2019. Comparative Study on the Amino Acid Profile of *Eucheuma*. *Tadulako Sci. Technol. J.* 1, 1–11.

- Jin, Y., Wang, C.Y., Hu, W., Huang, Y., Xu, M.L., Wang, H., Kong, X., Chen, Y., Dong, T.T., Qin, Q., Tsim, K.W.K., 2019. An optimization of ultra-sonication-assisted extraction from flowers of *Apocynum venetum* in targeting to amount of free amino acids determined by UPLC-MS/MS. *Food Qual. Saf.* 3, 52–60.
<https://doi.org/10.1093/fqsafe/fyz001>
- Juul, L., Haue, S. K., Bruhn, A., Boderskov, T., & Kastrup Dalsgaard, T. (2023). Alkaline pH increases protein extraction yield and solubility of the extracted protein from sugar kelp (*Saccharina latissima*). *Food and Bioprocess Processing*, 140, 144–150. <https://doi.org/10.1016/j.fbp.2023.05.008>
- Kahveci, H. Bilginer, N., Diraz-Yildirim, E., Kulak, M., Yazar, E., Kocacinar, F. and Karaman, S. (2021). Priming with salicylic acid, β -carotene and tryptophan modulates growth, phenolics and essential oil components of *Ocimum basilicum* L. grown under salinity. *Jurnal Scientia Horticulturae*, 281. Available at: <https://doi.org/10.1016/j.scienta.2021.109964>.
- Kałużna-Czaplińska, J., Gątarek, P., Chirumbolo, S., Chartrand, M. S., & Bjørklund, G. (2019). How important is tryptophan in human health? In *Critical Reviews in Food Science and Nutrition* (Vol. 59, Issue 1, pp. 72–88). Taylor and Francis Inc.
<https://doi.org/10.1080/10408398.2017.1357534>
- Kell, G. H. Steinhart. (1990). Oxidation of tryptophan by H₂O₂ in model systems, *J. Food Sci.* 55 (4) (1990) 1120-1123.
- Kementerian Kelautan dan Perikanan. (2022). Rilis Data Kelautan dan Perikanan Triwulan IV Tahun 2022.

- Khemaissa, S., Sagan, S., & Walrant, A. (2021). Tryptophan, an amino-acid endowed with unique properties and its many roles in membrane proteins. In *Crystals* (Vol. 11, Issue 9). MDPI. <https://doi.org/10.3390/cryst11091032>
- Kumar, K., Srivastav, S., & Sharanagat, V. S. (2021). Ultrasound assisted extraction (UAE) of bioactive compounds from fruit and vegetable processing by-products: A review. In *Ultrasonics Sonochemistry* (Vol. 70). Elsevier B.V. <https://doi.org/10.1016/j.ultsonch.2020.105325>.
- Kostoglou-Athanassiou, I. (2013). Therapeutic applications of melatonin. *Therapeutic Advances in Endocrinology and Metabolism*, 4(1), 13–24. <https://doi.org/10.1177/2042018813476084>
- Lv, C., Jia, X., Li, M., Yang, J., & Zhao, G. (2011). Optimization of Extraction Process of Crude Protein from Grape Seeds by RSM. In *Food Sci. Technol. Res* (Vol. 17, Issue 5).
- Mandal, S. C., Mandal, V., & Das, A. K. (2015). Classification of Extraction Methods. In *Essentials of Botanical Extraction* (pp. 83–136). Elsevier. <https://doi.org/10.1016/b978-0-12-802325-9.00006-9>
- Maradhy, E., Nazriel, R., S., Sutjahjo, S., H., Rusli, M., S., Widiatmaka and Sondita, M., F., A. (2022). Evaluation of Water Suitability for Sustainable Seaweed (*Kappaphycus Alvarezii*) Cultivation to Support Science Technopark in North Kalimantan. *Jurnal Pengelolaan Sumberdaya Alam dan Lingkungan* (Journal of Natural Resources and Environmental Management), 11(3), pp. 490–503. Available at: <https://doi.org/10.29244/jpsl.11.3.490-503>.
- Maran, J., P. and Priya, B. (2014). Ultrasound-assisted extraction of pectin from sisal waste. *Carbohydr polynm*. DOI: [10.1016/j.carbpol.2014.07.058](https://doi.org/10.1016/j.carbpol.2014.07.058)

Matanjun, P., Mohamed, S., Mustapha, N. M., and Muhammad, K. (2009). Nutrient content of tropical edible seaweeds, *Eucheuma cottonii*, *Caulerpa lentillifera* and *Sargassum polycystum*. *Journal of Applied Phycology*, 21(1), 75–80.

Muneer, A. (2020). Kynurenine Pathway of Tryptophan Metabolism in Neuropsychiatric Disorders: Pathophysiologic and Therapeutic Considerations. In *Clinical Psychopharmacology and Neuroscience* (Vol. 18, Issue 4, pp. 507–526). Korean College of Neuropsychopharmacology.
<https://doi.org/10.9758/CPN.2020.18.4.507>.

Muñiz-Márquez, D.B., Martínez-Ávila, G.C., Wong-Paz, J.E., Belmares-Cerda, R., Rodríguez-Herrera, R., Aguilar, C.N., 2013. Ultrasound-assisted extraction of phenolic compounds from *Laurus nobilis* L. and their antioxidant activity. *Ultrason.Sonochem.*20,1149–1154. <https://doi.org/10.1016/j.ultsonch.2013.02.008>

Mutiarahma, S., Putra, V. G. P., Chaniago, W., Carrera, C., Anggrahini, S., Palma, M., & Setyaningsih, W. (2021). Uv-vis spectrophotometry and uplc–pda combined with multivariate calibration for *kappaphycus alvarezii* (Doty) doty ex silva standardization based on phenolic compounds. *Scientia Pharmaceutica*, 89(4).
<https://doi.org/10.3390/scipharm89040047>.

Naseri,A., Charlotte, J., Jimmy,J.P.S., Tommy, E.P., Jan, L., Karin, M.H., Multi Extraction, and Susan, L.H. (2020). Quality of Protein and Carrageenan from Commercial *Spinosum* (*Eucheuma denticulatum*). *Foods*. 9(8).1072;
<https://doi.org/10.3390/foods9081072>

Nelson, P. R., Coffin, M., Karen, A. F. C. (2003). Response surface methodology. Academic press. <https://doi.org/10.1016/B978-012515423-9/50011-X>.

- Nguyen, D., T., T., Guillarme, D., Heinisch, S., Barrioulet, M., Rocca, J., Rudaz, S., Veuthey, J. (2007). High throughput liquid chromatography with sub-2 μm particles at high pressure and high temperature. *Journal of Chromatography A*. 1167 (1) : 76-84. <https://doi.org/10.1016/j.chroma.2007.08.032>.
- Nugroho, R. A., Wijayanto, D., Kurohman, F., Maulina, I. D., & Puspitasari, R. E. (2021). The Growth Analysis of *Euchema cottonii* using the Simple Longline Method and Basket Method on the Coast of Kemojan Island. *IOP Conference Series: Earth and Environmental Science*, 750(1). <https://doi.org/10.1088/1755-1315/750/1/012056>
- Nurkhasanah, A., Fardad, T., Carrera, C., Setyaningsih, W., & Palma, M. (2023). Ultrasound-Assisted Anthocyanins Extraction from Pigmented Corn: Optimization Using Response Surface Methodology. *Methods and Protocols*, 6(4), 69. <https://doi.org/10.3390/mps6040069>.
- Oh, S.H., Ahn, J., Kang, D.H., Lee, H.Y., 2011. The Effect of Ultrasonificated Extracts of *Spirulina maxima* on the Anticancer Activity. *Mar. Biotechnol.* 13, 205–214. <https://doi.org/10.1007/s10126-010-9282-2>
- Oroian, M. Dranca, F., and Ursachi, F. (2020). Comparative evaluation of maceration, microwave and ultrasonic-assisted extraction of phenolic compounds from propolis. *J Food Sci Technology*. 57 (1) : 70-78. doi: [10.1007/s13197-019-04031-x](https://doi.org/10.1007/s13197-019-04031-x)
- Pan, Z., Qu, W., Ma, H., Atungulu, G., G., and McHugh, T., H. (2012). Continous and pulsed ultrasound-assisted extractions of antioxidants from pomegranate peel. *Ultrasonic Sonochemistry*. 19 (2) : (365-372). <https://doi.org/10.1016/j.ultsonch.2011.05.015>

Parimi, N. S., Singh, M., Kastner, J. R., Das, K. C., Forsberg, L. S., & Azadi, P. (2015).

Optimization of protein extraction from *Spirulina platensis* to generate a potential co-product and a biofuel feedstock with reduced nitrogen content. *Frontiers in Energy Research*, 3(JUN). <https://doi.org/10.3389/fenrg.2015.00030>

Parniakov, O., Barba, F. J., Grimi, N., Marchal, L., Jubeau, S., Lebovka, N., & Vorobiev, E. (2015). Pulsed electric field and pH assisted selective extraction of intracellular components from microalgae *nannochloropsis*. *Algal Research*, 8, 128–134. <https://doi.org/10.1016/j.algal.2015.01.014>

Plaimo, P. E., Lamma Wabang, I., & Anigomang, F. R. (2021). Pelatihan Penggunaan Jarak Tanam Yang Ideal Untuk Menunjang Produktivitas Rumput Laut. 5(2), 757–766. <https://doi.org/10.31764/jmm.v5i2.4176>.

Putra, V. G. P., Mutiarahma, S., Chaniago, W., Rahmadi, P., Kurnianto, D., Hidayat, C., Carrera, C., Palma, M., & Setyaningsih, W. (2022). An ultrasound-based technique for the analytical extraction of phenolic compounds in red algae. *Arabian Journal of Chemistry*, 15(2). <https://doi.org/10.1016/j.arabjc.2021.103597>.

Rawiwan, P. Peng, Y., Paramayuda, I., G., B. and Quek, S., W. (2022). Red seaweed: A promising alternative protein source for global food sustainability. *Trends in Food Science and Technology*. Elsevier Ltd, pp. 37–56. Available at: <https://doi.org/10.1016/j.tifs.2022.03.003>.

Ribaudo, G., Povolo, C., and Zagotto, G. (2019). *Moringa oleifera* Lam.: A Rich Source of Phytoactives for the Health of Human Being. In *Studies in Natural Products Chemistry* (Vol. 62, pp. 179–210). Elsevier B.V. <https://doi.org/10.1016/B978-0-444-64185-4.00005-8>

- Rodríguez-Meizoso, I., Jaime, L., Santoyo, S., Señoráns, F. J., Cifuentes, A., & Ibáñez, E. (2010). Subcritical water extraction and characterization of bioactive compounds from *Haematococcus pluvialis* microalga. *Journal of Pharmaceutical and Biomedical Analysis*, 51(2), 456–463. <https://doi.org/10.1016/j.jpba.2009.03.014>
- Ruiz-Rodríguez, A., Carrera, C. A., Setyaningsih, W., Barbero, G. F., Ferreiro-González, M., Palma, M., & Barroso, C. G. (2017). Tryptophan levels during grape ripening: Effects of cultural practices. *Molecules*, 22(6). <https://doi.org/10.3390/molecules22060941>
- Safi, C., Ursu, A. V., Laroche, C., Zebib, B., Merah, O., Pontalier, P. Y., & Vaca-Garcia, C. (2014). Aqueous extraction of proteins from microalgae: Effect of different cell disruption methods. *Algal Research*, 3(1), 61–65. <https://doi.org/10.1016/j.algal.2013.12.004>.
- Samarasinghe, M. B., van der Heide, M. E., Weisbjerg, M. R., Sehested, J., Sloth, J. J., Bruhn, A., Vestergaard, M., Nørgaard, J. v., and Hernández-Castellano, L. E. (2021). A descriptive chemical analysis of seaweeds, *Ulva* sp., *Saccharina latissima* and *Ascophyllum nodosum* harvested from Danish and Icelandic waters. *Animal Feed Science and Technology*, 278. <https://doi.org/10.1016/j.anifeedsci.2021.115005>
- Santos, G. A. (1989). Carrageenans of Species of *Eucheuma* J. Agardh and *Kappaphycus* Doty (Solieriaceae, Rhodophyta). In *Aquatic Botany* (Vol. 36).
- Setyaningsih, W., Saputro, I. E., Carrera, C. A., Palma, M., & Barroso, C. G. (2017). Multiresponse optimization of a UPLC method for the simultaneous determination of tryptophan and 15 tryptophan-derived compounds using a Box-Behnken design

with a desirability function. *Food Chemistry*, 225, 1–9.

<https://doi.org/10.1016/j.foodchem.2016.12.034>

Simatupang, N. F., Pong-Masak, P. R., Ratnawati, P., Agusman, Paul, N. A., & Rimmer, M. A. (2021). Growth and product quality of the seaweed *Kappaphycus alvarezii* from different farming locations in Indonesia. *Aquaculture Reports*, 20. <https://doi.org/10.1016/j.aqrep.2021.100685>.

Stengel, D. B., Connan, S., and Popper, Z. A. (2011). Algal chemodiversity and bioactivity: Sources of natural variability and implications for commercial application. In *Biotechnology Advances* (Vol. 29, Issue 5, pp. 483–501). <https://doi.org/10.1016/j.biotechadv.2011.05.016>

Streitel, S. (2003). Assessing fluorescent color : a review of common practices and their limitations. Fourth Oxford Conference on Spectroscopy. <https://doi.org/10.1117/12.514495>.

Tal, O., Haim, A., Harel, O., and Gerchman, Y. (2011). Melatonin as an antioxidant and its semi-lunar rhythm in green macroalga *Ulva* sp. *Journal of Experimental Botany*, 62(6), 1903–1910. <https://doi.org/10.1093/jxb/erq378>

Talaat IM, Bekheta MA, and Mahgoub MH. Physiological response of periwinkle plants (*Catharanthus roseus* L.) to tryptophan and putrescine. *Int J Agricult Biol*. 2008;7: 210–213

Tomšik, A., Pavlić, B., Vladić, J., Ramić, M., Brindza, J., & Vidović, S. (2016). Optimization of ultrasound-assisted extraction of bioactive compounds from wild garlic (*Allium ursinum* L.). *Ultrasonics Sonochemistry*, 29, 502–511. <https://doi.org/10.1016/j.ultsonch.2015.11.005>.

- Ursu, A. V., Marcati, A., Sayd, T., Sante-Lhoutellier, V., Djelveh, G., & Michaud, P. (2014). Extraction, fractionation and functional properties of proteins from the microalgae *Chlorella vulgaris*. *Bioresource Technology*, 157, 134–139. <https://doi.org/10.1016/j.biortech.2014.01.071>
- Veide Vilg, J., & Undeland, I. (2017). pH-driven solubilization and isoelectric precipitation of proteins from the brown seaweed *Saccharina latissima*—effects of osmotic shock, water volume and temperature. *Journal of Applied Phycology*, 29(1), 585–593. <https://doi.org/10.1007/s10811-016-0957-6>
- Wahid, L., C. (2018). Introduction to design experiment. CRC Press. DOI:10.1201/9781482270846-4
- Wang, Q., Wang, Y., Huang, M., Hayat, K., Kurtz, N. C., Wu, X., Ahmad, M., & Zheng, F. (2021). Ultrasound-assisted alkaline proteinase extraction enhances the yield of pecan protein and modifies its functional properties. *Ultrasonics Sonochemistry*, 80. <https://doi.org/10.1016/j.ultsonch.2021.105789>
- Waszkowiak, K., & Gliszczynska-Świgło, A. (2016). Binary ethanol–water solvents affect phenolic profile and antioxidant capacity of flaxseed extracts. *European Food Research and Technology*, 242(5), 777–786. <https://doi.org/10.1007/s00217-015-2585-9>
- Weggler, B. A., Gruber, B., Teehan, P., Jaramillo, R., Dorman, F. L. (2020). Inlets and sampling, Chapter 5. Separation science and technology (12). 141-203. <https://doi.org/10.1016/B978-0-12-813745-1.00005-2>
- Widyartini, D. S., Widodo, P., & Susanto, A. B. (2017). Thallus variation of *Sargassum polycystum* from Central Java, Indonesia. *Biodiversitas*, 18(3), 1004–1011. <https://doi.org/10.13057/biodiv/d180319>

Winarno FG. (1997). Kimia Pangan dan Gizi. Cetakan Kesembilan. Jakarta: Gramedia.

Yu, Y., Yang, M., Yang, J., Su, Q., & Mou, H. (2017). Composition and characteristics of continuous enzymatic hydrolysis products from *Kappaphycus striatum*. Journal of Applied Phycology, 29(3), 1647–1656. <https://doi.org/10.1007/s10811-017-1064-z>

Zhu, W., Fan, Y., Xu, Q., Liu, X., Heng, B., Yang, W., Hu, Y., 2019. Saturated solubility and thermodynamic evaluation of l -Tryptophan in Eight Pure Solvents and Three Groups of Binary Mixed Solvents by the Gravimetric Method at T = 278.15-333.15 K. J. Chem. Eng. Data 64, 4154–4168. <https://doi.org/10.1021/acs.jced.9b00562>