

REFERENCES

- Abranches, D.O., Larriba, M., Silva, L.P., Melle-Franco, M., Palomar, J.F., Pinho, S.P., Coutinho, J.A.P., 2019. Using COSMO-RS to design choline chloride pharmaceutical eutectic solvents. *Fluid Phase Equilib.* 497, 71–78.
<https://doi.org/10.1016/j.fluid.2019.06.005>
- Abu Bakar, N., Anyanji, V.U., Mustapha, N.M., Lim, S.L., Mohamed, S., 2015. Seaweed (*Eucheuma cottonii*) reduced inflammation, mucin synthesis, eosinophil infiltration and MMP-9 expressions in asthma-induced rats compared to Loratadine. *J. Funct. Foods* 19, 710–722.
<https://doi.org/10.1016/j.jff.2015.10.011>
- Adam, F., Abert-Vian, M., Peltier, G., Chemat, F., 2012. “Solvent-free” ultrasound-assisted extraction of lipids from fresh microalgae cells: A green, clean and scalable process. *Bioresour. Technol.* 114, 457–465.
<https://doi.org/10.1016/j.biortech.2012.02.096>
- 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>
- Al-Saif, S.S.A. Ilah, Abdel-Raouf, N., El-Wazanani, H.A., Aref, I.A., 2014. Antibacterial substances from marine algae isolated from Jeddah coast of Red sea, Saudi Arabia. *Saudi J. Biol. Sci.* 21, 57–64.
<https://doi.org/10.1016/j.sjbs.2013.06.001>
- Al Sadi, J., 2018. Designing experiments: 3 level full factorial design and variation of processing parameters methods for polymer colors. *Adv. Sci. Technol. Eng. Syst.* 3, 109–115. <https://doi.org/10.25046/aj030515>
- Amaya-Guerra, C., Saldívar, S.O.S., Alanis-Guzman, M.G., 2006. Soyabean fortification and enrichment of regular and quality protein maize tortillas affects brain development and maze performance of rats. *Br. J. Nutr.* 96, 161.
<https://doi.org/10.1079/bjn20061804>
- Astor, Y., Engineering, G., Program, S., Wisyantono, D., Science, C.Z., Hendriatiningsih, S., 2015. Integration Construction of Marine Utilization Elements Towards Indonesia Good Ocean Governance in Marine Cadastre Perspective. *Indones. J. Geospacial* 4, 1-16–16.
- Balaji, C., Banerjee, T., Goud, V. V., 2012. COSMO-RS based predictions for the extraction of lignin from lignocellulosic biomass using ionic liquids: Effect of cation and anion combination. *J. Solution Chem.* 41, 1610–1630.
<https://doi.org/10.1007/s10953-012-9887-3>

- Benjama, O., Masniyom, P., 2014. Biochemical composition and physicochemical properties of two red seaweeds Biochemical composition and physicochemical properties of two red seaweeds (*Gracilaria fisheri* and *G . tenuistipitata*) from the Pattani Bay in Southern Thailand.
- Bingham, T.C., 1997. An approach to developing multi-level fractional factorial designs. *J. Qual. Technol.* 29, 370–380.
<https://doi.org/10.1080/00224065.1997.11979789>
- Boccutto, L., Chen, C.F., Pittman, A.R., Skinner, C.D., McCartney, H.J., Jones, K., Bochner, B.R., Stevenson, R.E., Schwartz, C.E., 2013. Decreased tryptophan metabolism in patients with autism spectrum disorders. *Mol. Autism* 4, 1–10.
<https://doi.org/10.1186/2040-2392-4-16>
- Catena, S., Rakotomanomana, N., Zunin, P., Boggia, R., Turrini, F., Chemat, F., 2020. Solubility study and intensification of extraction of phenolic and anthocyanin compounds from *Oryza sativa* L. ‘Violet Nori.’ *Ultrason. Sonochem.* 68, 105231. <https://doi.org/10.1016/j.ultsonch.2020.105231>
- Celli, G.B., Ghanem, A., Brooks, M.S.L., 2015. Optimization of ultrasound-assisted extraction of anthocyanins from haskap berries (*Lonicera caerulea* L.) using Response Surface Methodology. *Ultrason. Sonochem.* 27, 449–455.
<https://doi.org/10.1016/j.ultsonch.2015.06.014>
- Chan, C.X., Ho, C.L., Phang, S.M., 2006. Trends in seaweed research. *Trends Plant Sci.* 11, 165–166. <https://doi.org/10.1016/j.tplants.2006.02.003>
- Charpe, T.W., Rathod, V.K., 2016. Kinetics of ultrasound assisted extraction of wedelolactone from *eclipta alba*. *Brazilian J. Chem. Eng.* 33, 1003–1010.
<https://doi.org/10.1590/0104-6632.20160334s20140234>
- Chemat, F., Rombaut, N., Sicaire, A.G., Meullemiestre, A., Fabiano-Tixier, A.S., Abert-Vian, M., 2017. Ultrasound assisted extraction of food and natural products. Mechanisms, techniques, combinations, protocols and applications. A review. *Ultrason. Sonochem.* 34, 540–560.
<https://doi.org/10.1016/j.ultsonch.2016.06.035>
- Ciko, A.M., Jokić, S., Šubarić, D., Jerković, I., 2018. Overview on the application of modern methods for the extraction of bioactive compounds from marine macroalgae. *Mar. Drugs* 16. <https://doi.org/10.3390/md16100348>
- Cotas, J., Leandro, A., Monteiro, P., Pacheco, D., Figueirinha, A., Gonçalves, A.M.M., Da Silva, G.J., Pereira, L., 2020. Seaweed phenolics: From extraction to applications. *Mar. Drugs* 18. <https://doi.org/10.3390/MD18080384>
- Dai, J., Mumper, R.J., 2010. Plant phenolics: Extraction, analysis and their antioxidant and anticancer properties. *Molecules*.

<https://doi.org/10.3390/molecules15107313>

- Dang, T.T., Van Vuong, Q., Schreider, M.J., Bowyer, M.C., Van Altena, I.A., Scarlett, C.J., 2017. Optimisation of ultrasound-assisted extraction conditions for phenolic content and antioxidant activities of the alga *Hormosira banksii* using response surface methodology. *J. Appl. Phycol.* 29, 3161–3173.
<https://doi.org/10.1007/s10811-017-1162-y>
- Dawczynski, C., Schubert, R., Jahreis, G., 2007. Amino acids, fatty acids, and dietary fibre in edible seaweed products. *Food Chem.* 103, 891–899.
<https://doi.org/10.1016/j.foodchem.2006.09.041>
- Delgado-Vargas, F., Jimenez, A.R., Paredes-Lopez, O., 2010. Critical Reviews in Food Science and Nutrition. Natural Pigments: Carotenoids, Anthocyanins, and Betalains — Characteristics, Biosynthesis, Processing, and Stability, Critical Reviews in Food Science and Nutrition, 40:3.
- Duarte, K., Justino, C.I.L., Pereira, R., Freitas, A.C., Gomes, A.M., Duarte, A.C., Rocha-Santos, T.A.P., 2014. Green analytical methodologies for the discovery of bioactive compounds from marine sources. *Trends Environ. Anal. Chem.* 3, 43–52. <https://doi.org/10.1016/j.teac.2014.11.001>
- Eckert, F., Klamt, A., 2002. Fast Solvent Screening via Quantum Chemistry: COSMO-RS Approach. *AIChE J.* 48, 369–385.
<https://doi.org/10.1002/aic.690480220>
- Erdiwansyah, Mamat, R., Sani, M.S.M., Sudhakar, K., 2019. Renewable energy in Southeast Asia: Policies and recommendations. *Sci. Total Environ.* 670, 1095–1102. <https://doi.org/10.1016/j.scitotenv.2019.03.273>
- Falleh, H., Ksouri, R., Lucchessi, M.E., Abdelly, C., Magné, C., 2012. Ultrasound-assisted extraction: Effect of extraction time and solvent power on the levels of polyphenols and antioxidant activity of *Mesembryanthemum edule* L. Aizoaceae shoots. *Trop. J. Pharm. Res.* <https://doi.org/10.4314/tjpr.v11i2.10>
- Ferdouse, F., Løvstad Holdt, S., Smith, R., Murúa, P., Yang, Z., FAO, 2018. The global status of seaweed production, trade and utilization. *FAO Globefish Res. Program.* 124, 120.
- Fernández-Cruz, E., Álvarez-Fernández, M.A., Valero, E., Troncoso, A.M., García-Parrilla, M.C., 2016. Validation of an Analytical Method to Determine Melatonin and Compounds Related to l-Tryptophan Metabolism Using UHPLC/HRMS. *Food Anal. Methods* 9, 3327–3336.
<https://doi.org/10.1007/s12161-016-0529-z>
- Friedman, M., 2018. Analysis, Nutrition, and Health Benefits of Tryptophan. *Int. J. Tryptophan Res.* 11. <https://doi.org/10.1177/1178646918802282>

- Galvan D' Alessandro, L., Kriaa, K., Nikov, I., Dimitrov, K., 2012. Ultrasound assisted extraction of polyphenols from black chokeberry. *Sep. Purif. Technol.* 93, 42–47. <https://doi.org/10.1016/j.seppur.2012.03.024>
- Gao, D., Le Ba, V., Rustam, R., Cho, C.W., Yang, S.Y., Su, X.D., Kim, Y.H., Kang, J.S., 2020. Isolation of bioactive components with soluble epoxide hydrolase inhibitory activity from *Stachys sieboldii* MiQ. by ultrasonic-assisted extraction optimized using response surface methodology. *Prep. Biochem. Biotechnol.* 0, 1–10. <https://doi.org/10.1080/10826068.2020.1821217>
- 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 - Food Sci. Technol.* 64, 1114–1122. <https://doi.org/10.1016/j.lwt.2015.07.024>
- Gomez-Gutierrez, C.M., Guerra-Rivas, G., Soria-Mercado, I.E., Ayala-Sánchez, N.E., 2011. Marine edible algae as disease preventers. *Adv. Food Nutr. Res.* 64, 29–39. <https://doi.org/10.1016/B978-0-12-387669-0.00003-X>
- Guo, Z., Lue, B.M., Thomasen, K., Meyer, A.S., Xu, X., 2007. Predictions of flavonoid solubility in ionic liquids by COSMO-RS: Experimental verification, structural elucidation, and solvation characterization. *Green Chem.* 9, 1362–1373. <https://doi.org/10.1039/b709786g>
- Halimah, S.N., Suryani, R.A., Wijayanti, S.W., Pangestu, R.A., Deni, G.D., Romadhon, 2016. Fortification Seaweed Noodles [*Euchema cottonii* (Weber-van Bosse, 1913)] with Nano-Calcium from Bone Catfish [*Clarias batrachus* (Linnaeus, 1758)]. *Aquat. Procedia* 7, 221–225. <https://doi.org/10.1016/j.aapro.2016.07.030>
- Hayouni, E.A., Abedrabba, M., Bouix, M., Hamdi, M., 2007. The effects of solvents and extraction method on the phenolic contents and biological activities in vitro of Tunisian *Quercus coccifera* L. and *Juniperus phoenicea* L. fruit extracts. *Food Chem.* <https://doi.org/10.1016/j.foodchem.2007.02.010>
- Herderich, M., Gutsche, B., 1997. Tryptophan-derived bioactive compounds in food. *Food Rev. Int.* 13, 103–135. <https://doi.org/10.1080/87559129709541100>
- Horovitz, O., Paşca, R.D., 2017. Classification of amino acids by multivariate data analysis, based on thermodynamic and structural characteristics. *Stud. Univ. Babeş-Bolyai Chem.* 62, 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>

- Hou, D.Y., Muller, A.J., Sharma, M.D., DuHadaway, J., Banerjee, T., Johnson, M., Mellor, A.L., Prendergast, G.C., Munn, D.H., 2007. Inhibition of indoleamine 2,3-dioxygenase in dendritic cells by stereoisomers of 1-methyl-tryptophan correlates with antitumor responses. *Cancer Res.* 67, 792–801.
<https://doi.org/10.1158/0008-5472.CAN-06-2925>
- Huang, L., Hogewind-Schoonenboom, J.E., Zhu, L., Kraaijenga, J.V.S., Van Haren, N.P.C., Voortman, G.J., Schierbeek, H., Twisk, J.W.R., Huang, Y., Chen, C., Van Goudoever, J.B., 2014. Tryptophan requirement of the enterally fed term infant in the first month of life. *J. Pediatr. Gastroenterol. Nutr.* 59, 374–379.
<https://doi.org/10.1097/MPG.0000000000000434>
- Jamaluddin, J., Kum, Y.F., Khumaidi, A., 2019. Comparative Study on the Amino Acid Profile of Eucheuma. *Tadulako Sci. Technol. J.* 1, 1–11.
- Jayaprakasha, G.K., Girenavar, B., Patil, B.S., 2008. Antioxidant capacity of pummelo and navel oranges: Extraction efficiency of solvents in sequence. *LWT - Food Sci. Technol.* <https://doi.org/10.1016/j.lwt.2007.03.017>
- 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>
- Kadam, S.U., Tiwari, B.K., O'Donnell, C.P., 2013. Application of novel extraction technologies for bioactives from marine algae. *J. Agric. Food Chem.* 61, 4667–4675. <https://doi.org/10.1021/jf400819p>
- Kang, J.Y., Khan, M.N.A., Park, N.H., Cho, J.Y., Lee, M.C., Fujii, H., Hong, Y.K., 2008. Antipyretic, analgesic, and anti-inflammatory activities of the seaweed *Sargassum fulvellum* and *Sargassum thunbergii* in mice. *J. Ethnopharmacol.* 116, 187–190. <https://doi.org/10.1016/j.jep.2007.10.032>
- Kementrian kelautan dan Perikanan, 2017. Permen KP Nomor 63 Tahun 2017 tentang : Rencana Strategis Kementerian kelautan Tahun 2015 - 2019 1–120.
- Khan, W., Rayirath, U.P., Subramanian, S., Jithesh, M.N., Rayorath, P., Hodges, D.M., Critchley, A.T., Craigie, J.S., Norrie, J., Prithiviraj, B., 2009. Seaweed extracts as biostimulants of plant growth and development. *J. Plant Growth Regul.* 28, 386–399. <https://doi.org/10.1007/s00344-009-9103-x>
- Klamt, A., 2018. The COSMO and COSMO-RS solvation models. *Wiley Interdiscip. Rev. Comput. Mol. Sci.* 8, 1–11. <https://doi.org/10.1002/wcms.1338>

- Klamt, A., Eckert, F., Arlt, W., 2010. COSMO-RS: An alternative to simulation for calculating thermodynamic properties of liquid mixtures. *Annu. Rev. Chem. Biomol. Eng.* 1, 101–122. <https://doi.org/10.1146/annurev-chembioeng-073009-100903>
- Lindseth, G., Helland, B., Caspers, J., 2015. The effects of dietary tryptophan on affective disorders. *Arch. Psychiatr. Nurs.* 29, 102–107. <https://doi.org/10.1016/j.apnu.2014.11.008>
- Liu, J., Yuan, T., Wang, R., Liu, Y., Fang, G., 2019. The properties and tortilla making of corn flour from enzymatic wet-milling. *Molecules.* <https://doi.org/10.3390/molecules24112137>
- Liu, X., Dong, M., Chen, X., Jiang, M., Lv, X., Yan, G., 2007. Antioxidant activity and phenolics of an endophytic *Xylaria* sp. from *Ginkgo biloba*. *Food Chem.* <https://doi.org/10.1016/j.foodchem.2007.04.008>
- Maharany, F., Nurjanah, Suwandi, R., Anwar, E., Hidayat, T., 2017. Kandungan Senyawa Bioaktif Rumput Laut *Padina australis* dan *Eucheuma cottonii* Sebagai Bahan Baku Krim Tabir Surya. *J. Masy. Pengolah. Has. Perikanan Indonesia.* 20, 10–17.
- Matanjan, P., Mohamed, S., Mustapha, N.M., Muhammad, K., 2009. Nutrient content of tropical edible seaweeds, *Eucheuma cottonii*, *Caulerpa lentillifera* and *Sargassum polycystum*. *J. Appl. Phycol.* 21, 75–80. <https://doi.org/10.1007/s10811-008-9326-4>
- Medina-Torres, N., Ayora-Talavera, T., Espinosa-Andrews, H., Sánchez-Contreras, A., Pacheco, N., 2017. Ultrasound assisted extraction for the recovery of phenolic compounds from vegetable sources. *Agronomy* 7. <https://doi.org/10.3390/agronomy7030047>
- Mendis, E., Kim, S.K., 2011. Present and future prospects of seaweeds in developing functional foods, 1st ed, *Advances in Food and Nutrition Research.* Elsevier Inc. <https://doi.org/10.1016/B978-0-12-387669-0.00001-6>
- Meneses, N.G.T., Martins, S., Teixeira, J.A., Mussatto, S.I., 2013. Influence of extraction solvents on the recovery of antioxidant phenolic compounds from brewer's spent grains. *Sep. Purif. Technol.* 108, 152–158. <https://doi.org/10.1016/j.seppur.2013.02.015>
- Montgomery, D.C., 2013. *Design and Analysis of Experiments*, Eight Edit. ed, John Wiley & Sons, Inc. John Wiley & Sons, Inc., USA. <https://doi.org/10.1002/9783527809080.catatz11063>
- Motlagh, S.R., Harun, R., Awang Biak, D.R., Hussain, S.A., Omar, R., Elgharbawy, A.A., 2020. COSMO-RS based prediction for alpha-linolenic acid (ALA)

- extraction from microalgae biomass using room temperature ionic liquids (RTILS). *Mar. Drugs* 18, 1–22. <https://doi.org/10.3390/md18020108>
- 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>
- Musa, K.H., Abdullah, A., Jusoh, K., Subramaniam, V., 2011. Antioxidant Activity of Pink-Flesh Guava (*Psidium guajava* L.): Effect of Extraction Techniques and Solvents. *Food Anal. Methods* 4, 100–107. <https://doi.org/10.1007/s12161-010-9139-3>
- Mussagy, C., Santos-Ebinuma, V.C., Kurnia, K.A., Dias, A., Carvalho, P.J., Coutinho, J.A.P., Pereira, J.F.B., 2020. Integrative platform for the selective recovery of intracellular carotenoids and lipids from *Rhodotorula glutinis* CCT-2186 yeast using mixtures of bio-based solvents. *Green Chem.* <https://doi.org/10.1039/d0gc02992k>
- Nikolaus, S., Schulte, B., Al-Massad, N., Thieme, F., Schulte, D.M., Bethge, J., Rehman, A., Tran, F., Aden, K., Häslér, R., Moll, N., Schütze, G., Schwarz, M.J., Waetzig, G.H., Rosenstiel, P., Krawczak, M., Szymczak, S., Schreiber, S., 2017. Increased Tryptophan Metabolism Is Associated With Activity of Inflammatory Bowel Diseases. *Gastroenterology* 153, 1504-1516.e2. <https://doi.org/10.1053/j.gastro.2017.08.028>
- Normanly, J., 2010. Approaching cellular and molecular resolution of auxin biosynthesis and metabolism. *Cold Spring Harb. Perspect. Biol.* 2. <https://doi.org/10.1101/cshperspect.a001594>
- Norziah, M.H., Ching, C.Y., 2000. Nutritional composition of edible seaweed *Gracilaria changgi*. *Food Chem.* 68, 69–76. [https://doi.org/10.1016/S0308-8146\(99\)00161-2](https://doi.org/10.1016/S0308-8146(99)00161-2)
- Oh, S.H., Ahn, J., Kang, D.H., Lee, H.Y., 2011. The Effect of Ultrasonicated Extracts of *Spirulina maxima* on the Anticancer Activity. *Mar. Biotechnol.* 13, 205–214. <https://doi.org/10.1007/s10126-010-9282-2>
- Oroian, M., Ursachi, F., Dranca, F., 2020. Ultrasound-assisted extraction of polyphenols from crude pollen. *Antioxidants* 9. <https://doi.org/10.3390/antiox9040322>
- Palego, L., Betti, L., Rossi, A., Giannaccini, G., 2016. Tryptophan biochemistry: Structural, nutritional, metabolic, and medical aspects in humans. *J. Amino Acids* 2016. <https://doi.org/10.1155/2016/8952520>

- Pan, W., Xu, H., Cui, Y., Song, D., Feng, Y.Q., 2008. Improved liquid-liquid-liquid microextraction method and its application to analysis of four phenolic compounds in water samples. *J. Chromatogr. A*.
<https://doi.org/10.1016/j.chroma.2008.07.004>
- Pan, Z., Qu, W., Ma, H., Atungulu, G.G., McHugh, T.H., 2012. Continuous and pulsed ultrasound-assisted extractions of antioxidants from pomegranate peel. *Ultrason. Sonochem.* 19, 365–372.
<https://doi.org/10.1016/j.ultsonch.2011.05.015>
- Park, E.J., Lee, W.Y., 2010. Tryptophan enhanced accumulation of phenolic compounds via chorismate mutase activation in the *Ganoderma neo-japonicum* mycelia. *J. Appl. Biol. Chem.* 53, 364–370.
<https://doi.org/10.3839/jksabc.2010.056>
- Phang, S.M., Yeong, H.Y., Lim, P.E., Nor, A.R.M., Gan, K.T., 2010. Commercial varieties of *Kappaphycus* and *Euचेuma* in Malaysia. *Malaysian J. Sci.* 29, 214–224. <https://doi.org/10.22452/mjs.vol29no3.4>
- Rajasulochana, P., Krishnamoorthy, P., Dhamotharan, R., 2010. *ARPN Journal of Agricultural and Biological Science* AMINO ACIDS, FATTY ACIDS AND MINERALS IN *Kappaphycus* sps 5, 1–12.
- Rosemary, T., Arulkumar, A., Paramasivam, S., Mondragon-portocarrero, A., Miranda, J.M., 2019. Biochemical, Micronutrient and Physicochemical Properties of the Dried Red Seaweeds *Gracilaria edulis* and *Gracilaria corticata* 1–14.
- Salim, Z., Ernawati, 2015. *Info Komoditi RUMPUT LAUT*, 2013.
- Setyaningsih, W., Saputro, I.E., Carrera, C.A., Palma, M., Barroso, C.G., 2017a. 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 Chem.*
<https://doi.org/10.1016/j.foodchem.2016.12.034>
- Setyaningsih, W., Saputro, I.E., Palma, M., Barroso, C.G., 2017b. Optimization of the ultrasound-assisted extraction of tryptophan and its derivatives from rice (*Oryza sativa*) grains through a response surface methodology. *J. Cereal Sci.* 75, 192–197. <https://doi.org/10.1016/j.jcs.2017.04.006>
- Shamsabadi, F.T., Khoddami, A., Fard, S.G., Abdullah, R., Othman, H.H., Mohamed, S., 2013. Comparison of tamoxifen with edible seaweed (*Euचेuma cottonii* L.) Extract in suppressing breast tumor. *Nutr. Cancer* 65, 255–262.
<https://doi.org/10.1080/01635581.2013.756528>
- Shirsath, S.R., Sonawane, S.H., Gogate, P.R., 2012. Intensification of extraction of

- natural products using ultrasonic irradiations-A review of current status. *Chem. Eng. Process. Process Intensif.* 53, 10–23.
<https://doi.org/10.1016/j.cep.2012.01.003>
- Sicaire, A.G., Abert Vian, M., Fine, F., Carré, P., Tostain, S., Chemat, F., 2015. Experimental approach versus COSMO-RS assisted solvent screening for predicting the solubility of rapeseed oil. *OCL - Oilseeds fats, Crop. Lipids* 22.
<https://doi.org/10.1051/ocl/2015010>
- Steenbergen, L., Jongkees, B.J., Sellaro, R., Colzato, L.S., 2016. Tryptophan supplementation modulates social behavior: A review. *Neurosci. Biobehav. Rev.* 64, 346–358. <https://doi.org/10.1016/j.neubiorev.2016.02.022>
- Suantika, G., Situmorang, M.L., Khakim, A., Wibowo, I., Aditiawati, P., Suryanarayan, S., Nori, S.S., Kumar, S., Putri, F., 2018. Effect of Red Seaweed *Kappaphycus alvarezii* on Growth, Survival, and Disease Resistance of Pacific White Shrimp *Litopenaeus vannamei* Against *Vibrio harveyi* in the Nursery Phase. *J. Aquac. Res. Dev.* 09. <https://doi.org/10.4172/2155-9546.1000523>
- Subbaraju, G. V, Kannababu, S., Vijayakumar, K., 2005. Spectrophotometric Estimation of L- 5-Hydroxytryptophan in *Griffonia simplicifolia* Extracts and Dosage Forms. *Int. J. Appl. Sci. Eng.* 3, 111–116.
- Szabo, M.R., Radu, D., Gavrilas, S., Chambre, D., Iditoiu, C., 2010. Antioxidant and antimicrobial properties of selected spice extracts. *Int. J. Food Prop.*
<https://doi.org/10.1080/10942910802713149>
- Tanna, B., Brahmabhatt, H.R., Mishra, A., 2019. Phenolic, flavonoid, and amino acid compositions reveal that selected tropical seaweeds have the potential to be functional food ingredients. *J. Food Process. Preserv.* 43, 1–10.
<https://doi.org/10.1111/jfpp.14266>
- Tatiya, A.U., Tapadiya, G.G., Kotecha, S., Surana, S.J., 2011. Effect of solvents on total phenolics, antioxidant and antimicrobial properties of *Bridelia retusa* Spreng. stem bark. *Indian J. Nat. Prod. Resour.* 2, 442–447.
- Tomšik, A., Pavlič, B., Vladić, J., Ramić, M., Brindza, J., Vidović, S., 2016. Optimization of ultrasound-assisted extraction of bioactive compounds from wild garlic (*Allium ursinum* L.). *Ultrason. Sonochem.* 29, 502–511.
<https://doi.org/10.1016/j.ultsonch.2015.11.005>
- Topuz, O.K., Gokoglu, N., Yerlikaya, P., Ucak, I., Gumus, B., 2016. Optimization of Antioxidant Activity and Phenolic Compound Extraction Conditions from Red Seaweed (*Laurencia obtusa*). *J. Aquat. Food Prod. Technol.* 25, 414–422.
<https://doi.org/10.1080/10498850.2013.868844>
- Trabelsi, N., Megdiche, W., Ksouri, R., Falleh, H., Oueslati, S., Soumaya, B.,

- Hajlaoui, H., Abdelly, C., 2010. Solvent effects on phenolic contents and biological activities of the halophyte *Limoniastrum monopetalum* leaves. *LWT - Food Sci. Technol.* <https://doi.org/10.1016/j.lwt.2009.11.003>
- Vieira, G.S., Cavalcanti, R.N., Meireles, M.A.A., Hubinger, M.D., 2013. Chemical and economic evaluation of natural antioxidant extracts obtained by ultrasound-assisted and agitated bed extraction from jussara pulp (*Euterpe edulis*). *J. Food Eng.* 119, 196–204. <https://doi.org/10.1016/j.jfoodeng.2013.05.030>
- Vilkhu, K., Mawson, R., Simons, L., Bates, D., 2008. Applications and opportunities for ultrasound assisted extraction in the food industry - A review. *Innov. Food Sci. Emerg. Technol.* 9, 161–169. <https://doi.org/10.1016/j.ifset.2007.04.014>
- Wahyudin, Y., 2013. Nilai Sosial Ekonomi Rumput Laut: Studi Kasus Kecamatan Tanimbar Selatan Dan Selaru, Kabupaten Maluku Tenggara Barat, Provinsi Maluku. *Maj. Ilm. Globe* 15, 77–85. <https://doi.org/https://doi.org/10.24895/MIG.2013.15-1.75>
- Wandansari, B.D., Suci, N., Jurusan, M., 2013. FERMENTASI RUMPUT LAUT *Eucheuma cottonii* OLEH *Lactobacillus plantarum* 1, 64–69.
- Wang, L., Weller, C.L., 2006. Recent advances in extraction of nutraceuticals from plants. *Trends Food Sci. Technol.* 17, 300–312. <https://doi.org/10.1016/j.tifs.2005.12.004>
- Wang, T., Jónsdóttir, R., Ólafsdóttir, G., 2009. Total phenolic compounds, radical scavenging and metal chelation of extracts from Icelandic seaweeds. *Food Chem.* 116, 240–248. <https://doi.org/10.1016/j.foodchem.2009.02.041>
- Wink, M., 2010. Introduction: Biochemistry, Physiology and Ecological Functions of Secondary Metabolites. *Biochem. Plant Second. Metab. Second Ed.* 40, 1–19. <https://doi.org/10.1002/9781444320503.ch1>
- Wojeicchowski, J.P., Ferreira, A.M., Abranches, D.O., Mafra, M.R., Coutinho, J.A.P., 2020. Using COSMO-RS in the Design of Deep Eutectic Solvents for the Extraction of Antioxidants from Rosemary. *ACS Sustain. Chem. Eng.* 8, 12132–12141. <https://doi.org/10.1021/acssuschemeng.0c03553>
- Wong Paz, J.E., Muñiz Márquez, D.B., Martínez Ávila, G.C.G., Belmares Cerda, R.E., Aguilar, C.N., 2015. Ultrasound-assisted extraction of polyphenols from native plants in the Mexican desert. *Ultrason. Sonochem.* 22, 474–481. <https://doi.org/10.1016/j.ultsonch.2014.06.001>
- Yagoub, A.A., Ma, H., Zhou, C., 2017. Ultrasonic-assisted extraction of protein from rapeseed (*Brassica napus* L.) meal: Optimization of extraction conditions and structural characteristics of the protein. *Int. Food Res. J.* 24, 621–629.

- Yang, L., Wang, C., Yu, H., Yang, M., Wang, S., Chiu, A.S.F., Wang, Y., 2020. Can an island economy be more sustainable? A comparative study of Indonesia, Malaysia, and the Philippines. *J. Clean. Prod.* 242, 118572. <https://doi.org/10.1016/j.jclepro.2019.118572>
- Yanuarti, R., Nurjanah, N., Anwar, E., Hidayat, T., 2017. Profile of Phenolic and Antioxidants Activity from Seaweed Extract *Turbinaria conoides* and *Eucheuma cottonii*. *J. Pengolah. Has. Perikan. Indones.* 20, 230. <https://doi.org/10.17844/jphpi.v20i2.17503>
- Zhang, Q.W., Lin, L.G., Ye, W.C., 2018. Techniques for extraction and isolation of natural products: A comprehensive review. *Chinese Med. (United Kingdom)* 13, 1–26. <https://doi.org/10.1186/s13020-018-0177-x>
- 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>