

DAFTAR PUSTAKA

- Association of Official Analytical Chemist. 2005. Official Methods of Analysis. Association of Official Analytical Chemist Inc. Mayland. USA.
- Benelhadj, S., A. Gharsallaoui, P. Degraeve, H. Attia, & D. Ghorbel. 2016. Effect of pH on the functional properties of *Arthrospira platensis* protein isolate. Food chemistry. 194: 1056–1063
- Benjakul, S., V. Wonnop, & K. Yuwathida. 2004. The effect of whitening agents on the gel-forming ability and whiteness of surimi. International Journal of Food Science and Technology. 39: 773-781
- Bertsch, P., L. Böcker, A. Palm, J. Bergfreund, P. Fischer, & A. Mathys, 2023. *Arthrospira platensis* protein isolate for stabilization of fluid interfaces: effect of physicochemical conditions and comparison to animal-based proteins. Food Hydrocolloids. 136: 108290.
- Cahyani, R. T., T. Alawiyah, N. Fadilla, dan A. Ramadani. 2024. Potensi limbah genjer udang windu (*Penaeus monodon*) sebagai bahan baku pengolahan isolat dan hidrolisat isolat protein. Jurnal Yudharta. Vol. 15(1): 112–119.
- Cando, D., B. Herranz, A. J. Borderías, H. M. Moreno. 2015. Effect of high pressure on reduced sodium chloride surimi gels. Food Hydrocolloids. Vol. 51: 176-187
- Chang-Lee, M. V., L. E. Lampila, & D. L. Crawford. 1990. Yield and composition of surimi from pacific whiting (*Merluccius productus*) and the effect of various protein additives on gel strength. Journal of Food Science. 55(1): 83-86.
- Chen, C., Chi, Y. J., Zhao, M. Y., & Xu, W. 2012. Influence of degree of hydrolysis on functional properties, antioxidant and ACE inhibitory activities of egg white protein hydrolysate. Food Science and Biotechnology. Vol. 21, 27-34.
- Cheng, J., Z. Sun, J. Ma, Y. Liu, dan H. Zhang. 2014. pH-dependent solubility and emulsifying properties of soy protein isolate. Food Hydrocolloids. 37:139-147.
- Costa, M., S. L. Barreiro, F. P. Martins, and C. B. Díaz. 2021. Polyphenolic antioxidants in lipid emulsions: partitioning effects and interfacial phenomena. National Library of Medicine. 10(3): 539.
- Darmanto, Y. S., T. W. Agustini, & F. Swastawati. 2012. Efek kolagen dari berbagai jenis tulang ikan terhadap kualitas miofibril protein ikan selama proses dehidrasi (effect of various fish bone collagens on the quality of myofibril fish protein during dehydration process). Jurnal Teknologi dan Industri Pangan. 23(1): 36-36.
- Dasir, D., S. Suyatno, & R. Rosmiah. 2019. Analisis karakteristik fisik dan kimia surimi ikan lele dengan perlakuan jenis dan lama penyimpanan dingin. In Seminar Nasional Lahan Suboptimal.
- Dewi, K. E. S., & A. A. Fatah. 2021. Merespon potensi ekonomi pasar produk perikanan eropa dan tuntutan perlindungan lingkungan. 2.

- Djonu, A., & H. Nursyam. 2022. Penambahan isolat protein kedelai (ISP) untuk meningkatkan nutrisi kamaboko ikan lele (*Clarias gariepinus*). Jurnal Bahari Papadak. Vol. 3(1): 231-235.
- Fahrizal., N. Arpi, S. Rohaya, R. Febriani. 2018. Surimi from freshwater fish with cryoprotectant sucrose, sorbitol, and sodium tripolyphosphate. In IOP conference series: Earth and environmental science. IOP Publishing, 207(1).
- Faizal, M. H. 2024. Isolasi dan Karakterisasi Sifat Fisikokimia Isolat Protein dari Hasil Samping Ekstraksi Fikosianin *Arthrospira platensis*. Skripsi, Universitas Gadjah Mada, Yogyakarta.
- Fischman, D. A. 1967. An electron microscope study of myofibril formation in embryonic chick skeletal muscle. The Journal of Cell Biology. Vol. 32(3): 557.
- Hamada Sato. 2016. Main Protein Components in Frozen Surimi Contributed to Heat Induced Gel Formation.
- Hanifah, A. Y. 2024. Pendugaan Umur Simpan Produk Brownies Krispi Spirulina (*Arthrospira platensis*) dengan Metode Accelerated Shelf Life Testing (Aslt). Skripsi, Universitas Gadjah Mada, Yogyakarta.
- Hassan MA, Balange AK, Senapati SR, Xavier KA. 2017. Effect of different washing cycles on the quality of *Pangasius hypophthalmus* surimi. Fishery Technology. 54: 51-59.
- Haura, H., M. Martunis, dan F. Fahrizal. 2022. Karakteristik organoleptik biskuit substitusi tepung uwi ungu (*Dioscorea alata*) dan isolat protein kedelai. Jurnal Ilmiah Mahasiswa Pertanian. 7(1):374-381.
- Hudson BJF, 1992. Biochemistry of Foods Proteins. London: Elsevier Applied Sci.
- Ilma, P. R. A., Nocianitri, K. A., & Hapsari, N. M. I. 2019. Pengaruh penambahan isolat protein kedelai terhadap karakteristik kamaboko ikan barramundi (*Lates calcalifer*). Jurnal Ilmu dan Teknologi Pangan, 8(3), 313-322.
- Jannah, C. 2010. Perubahan Karakteristik Surimi Komposisi Ikan Lele Dumbo (*Clarias gariepinus*) dengan Ikan Nila Hitam (*Oreochromis niloticus*) Selama Penyimpanan Suhu Dingin. Fakultas Perikanan dan Ilmu Kelautan. Institut Pertanian Bogor. Skripsi.
- Ju, S. J., Kucklick, J. R., Kozlova, T., & Harvey, H. R. 1997. Lipid accumulation and fatty acid composition during maturation of three pelagic fish species in lake baikal. Journal of Great Lakes Research. Vol. 23(3).
- Kabinawa, I. N. K. 2016. Pangan dan herbal hayati menyehatkan dari mikroalga spirulina. Jurnal Aplikasi Teknologi Pangan. Vol. 3(3).
- Kallista, F.A. 2021. Pengaruh Konsentrasi Tepung Putih Telur terhadap Mutu Surimi Lele Dumbo (*Clarias gariepinus*). Fakultas Teknologi Pertanian. Universitas Gadjah Mada. Disertasi.
- Klompong, V., Benjakul, S., Kantachote, D., & Shahidi, F. 2007. Antioxidative activity and functional properties of protein hydrolysate of yellow stripe trevally

(*Selaroides leptolepis*) as influenced by the degree of hydrolysis and enzyme type. Food chemistry. 102(4).

- Kolanus, J. P. M. 2020 Functional properties and chemical composition of dried surimi mackerel (*Scomberomorus* sp) with different cryoprotectants and drying methods. In Journal of Physics: Conference Series. 1463 (1): 012022. IOP Publishing.
- Koli, D. K., S. G. Rudra, A. Bhowmik, & S. Pabbi. 2022. Nutritional, functional, textural and sensory evaluation of spirulina enriched green pasta: a potential dietary and health supplement. Foods. 11(7): 979.
- Kudre, T., Benjakul, S., & Kishimura, H. 2013. Effects of protein isolates from black bean and mungbean on proteolysis and gel properties of surimi from sardine (*Sardinella albella*). LWT-Food Science and Technology. 50(2): 511-518.
- Kumar, K. S., K. Ganesan, K. Selvaraj, & P. S. Rao. 2014. Studies on the functional properties of protein concentrate of Kappaphycus alvarezii edible seaweed. Food Chemistry. 153: 353–360
- Kusuma, B., Dayutia, S., Waluyo, E., Perdanaa, A. W., Fahmia, A. S., & Habibieb, I. Y. 2020. Proximate and physical characteristics of premium fish patties (*Clarias* sp.) substituted with chicken meat (*Gallus domesticus*) formulations. Journal of Fisheries and Marine Research. 4(3): 389–392.
- Laksono, U. T., Lasmi, L., Sasongko, L. W., & Nofreeana, A. 2022. Studi potensi ikan gulamah (*Johnius trachycephalus*) sebagai bahan baku surimi dan produk olahan berbasis daging ikan. Manfish Journal. 3(2): 119-127.
- Lanier, T. C., & MacDonald, G. A. 1992. Cryoprotection of surimi. In pacific whiting harvesting, processing, marketing, and quality assurance: a workshop. G. Sylvia and mt morrissey [eds.] Oregon Sea Grant ORESU-W-92-001 (pp. 20-28).
- Latifa, B. N., Darmanto, Y. S., & Riyadi, P. H. 2014. Pengaruh penambahan karagenan, egg white dan isolat protein kedelai terhadap kualitas gel surimi ikan kurisi (*Nemipterus nematophorus*). Jurnal Pengolahan dan Bioteknologi Hasil Perikanan. 3(4): 89-97.
- Lee, N. dan Park, J. W. 1998. Calcium compounds to improve gel functionality of pacific whiting and alaska pollock surimi. Journal of Food Science. 63: 969-974.
- Leng, L., Zou, H., Wang, Y., Yu, C., & Qi, H. 2022. Seaweed slurry improved gel properties and enhanced protein structure of silver carp (*Hypophthalmichthys molitrix*) surimi. Foods. 11(19), 3115.
- Liu J, Wang X, Ding Y. 2013. Optimization of adding konjac glucomannan to improve gel properties of low-quality surimi. Carbohydr Polym. 92: 484-489.
- Liu, Y., Li, X., Chen, Z., Yu, J., Wang, F., & Wang, J. 2014. Characterization of structural and functional properties of fish protein hydrolysates from surimi processing by-products. Food chemistry. 151: 459-465.
- Lozober, H. S., Z. Okun, & A. Shpigelman. 2021. The impact of highpressure homogenization on thermal gelation of *Arthrospira platensis* (spirulina) protein concentrate. Innovative Food Science Emerging Technologies. 74: 102857.

- Lucas, B. F., A. P. C. da Rosa, L. F. de Carvalho, M. G. de Morais, T. D. Santos, J. A. V. Costa. 2019. Snack bar enriched with spirulina for schoolchildren nutrition. *Food Science and Technology*. 4(10): 1-7
- Mahreni. 2022. Pemisahan mineral dari ekstraksi alga coklat menggunakan membran mikro filtrasi (MF) dan ultra filtrasi (UF) review. *Eksergi*. 19(1): 20–28.
- Mandal, R. B., Jha, D. K., Shrestha, M. K., Pant, J., Rai, S., & Pandit, N. P. 2014. Cage-pond integration of African catfish (*Clarias gariepinus*) and Nile tilapia (*Oreochromis niloticus*) with carps. *Aquaculture Research*. 45(8): 1311-1318.
- Nasution, Z., Nur Atiqah, A., Fisal, A., & Wan Hafiz, W. Z. S. 2011. Potential utilization of african catfish (*Clarias gariepinus*) in production of surimi-Based products. *Proceedings of UMTAS*, p128.
- Niwa, E. 1985. Functional Aspects of Surimi. In: *Proceeding of the International Symposium on Engineered Seafood Including Surimi*. R.E. Marthim (ed.). Collete R.I and National Fisheries Institute. Seattle. Washington DC.. 141 – 147.
- Nugroho, A., dan P. Ekawatiningsih. 2020. Pemanfaatan spirulina dan ikan salem pada produk spirulina farfalle salem woku untuk meningkatkan potensi perikanan indonesia. *Jurnal Pendidikan Teknik Boga Busana*. 15(1): 1-7.
- Nur, M. M. A., T. M. Setyoningrum, H. N. A. Suwardi, B. Alfitamara, A. Kurniawan, V. A. Prananda, D. N. Afni, S. Alodia, dan R. Pamularsih. 2021. Potensi Spirulina platensis sebagai sumber kosmetik dan bioplastik. *Eksergi*. 12(2): 82–88.
- Nurhayati, N., & Peranginangin, R. 2009. Prospek pemanfaatan limbah perikanan sebagai sumber kolagen. *Squalen Bulletin of Marine and Fisheries Postharvest and Biotechnology*. 4(3): 83-92.
- Nurhidayah, B., Soekendars, E., & Erviani, A. E. 2019. Kandungan kolagen sisik ikan bandeng (*Chanos-chanos*) dan sisik ikan nila (*Oreochromis niloticus*). *BIOMA: Jurnal Biologi Makassar*. 4(1): 39-47.
- Oktasari, T., Suparmi, dan R. Karnila. 2015. Pembuatan isolat protein ikan gurami (*Osphronemus gouramy*) dengan metode pH berbeda. *Jurnal Fakultas Perikanan dan Ilmu Kelautan Universitas Riau*. 5:1-12.
- Onacik-Gür, S., Żbikowska, A., & Majewska, B. 2018. Effect of Spirulina (*Spirulina platensis*) addition on textural and quality properties of cookies. *Italian Journal of Food Science*. 30(1).
- Pan-Utai, W., Iamtham, S., Roytrakul, S., Settachaimongkon, S., Wattanasiritham, L. S., Boonbumrung, S. & Sithtisarn, S. 2022. *Arthrospira platensis* mutagenesis for protein and C-Phycocyanin improvement and proteomics approaches. *Life*. 12(6): 911.
- Park, J. W. 2000. Ingredient technology and formulation development. *Food Science and Technology-New York-Marcel Dekker*.. 343–392
- Prawira, A. 2008. Pengaruh Penambahan Tepung Alginat (Na-Alginat) Terhadap Mutu Kamaboko Berbahan Dasar Surimi Ikan Gabus (*Channa striata*). Institut Pertanian Bogor. Skripsi.

- Putri, T. W., N. I. Sari, & S. Sumarto. 2016. The Effect of Addition Spirulina to the Catfish (*Pangasius hypophthalmus*) Fish Protein Concentrate Ice 44 Cream on the Consumer Acceptance. Riau University. Doctoral dissertation.
- Quan, T. H., & Benjakul, S. 2019. Impact of salted duck egg albumen powder on proteolysis and gelling properties of sardine surimi. *Journal of texture studies*. 50(5): 434-442.
- Ramadhan, F. D., Pratama, R. I., dan W. Lili. 2022. The effect of soy protein isolate addition on gel strenght of Ariid catfish (*Arius thalassinus*) Surimi. *Journal of Food Science*, 8.
- Rahmawati, S. I., S. Hidayatullah, dan M. Suprayatmi. 2017. Ekstraksi fikosianin dari *Spirulina platensis* sebagai biopigmen dan antioksidan. *Jurnal Pertanian*. 8(1): 36–45.
- Rizkita, A. D., Saldaw, A., Rohman, A. A. R. L., Yohanes, K., & Gibran, S. S. (2023). Encapsulation of catfish bone gelatin. *Jurnal Farmasi Dan Sains*. 7(1): 68–80.
- Saanin, H. 1984. Taksonomi dan Kunci Identifikasi Ikan Jilid I dan II. Binacipta, Jakarta.
- Sahubawa, L., & Pratomo, S. A. 2022. Nutritional composition and consumer preference level from hanpen fish cake based on African catfish surimi and cassava flour. In *IOP Conference Series: Earth and Environmental Science*. 1118(1): 012072.
- Sakamoto, H., Kumazawa, Y., Toiguchi, S., Seguro, K., Soeda, T., & Motoki, M. 1995. Gel strength enhancement by addition of microbial transglutaminase during onshore surimi manufacture. *Journal of Food Science*. 60(2), 300-304.
- Sefrienda, A. R., J. Jasmadi, H. Novianty, I. T. Suryaningtyas, D. Kurnianto, & Y. Andriana. 2023. Protein evaluation of phycocyanin extraction by-product from *Spirulina* sp. *AIP Conference Proceedings*. 2902(1)
- Shahidi, F., Han, X. Q., & Synowiecki, J. 1995. Production and characteristics of protein hydrolysates from capelin (*Mallotus villosus*). *Food chemistry*. 53(3): 285-293.
- Somjid, P., Panpipat, W., Cheong, L. Z., & Chaijan, M. 2022. Comparative effect of cricket protein powder and soy protein isolate on gel properties of Indian mackerel surimi. *Foods*, 11(21), 3445., J. M. 1975. Muscle Filament Structure and Muscle Contraction. *Annual review of biophysics and bioengineering*. 4(1): 137-163.
- Subagio, Ahmad, Wiwik S. W., Mukhammad F., dan Yuli W. 2004. Characterization of Myofibrillar Protein from Goldband Goat Fish (*Upeneus moluccensis*) and Bigeye Scad Fish (*Selar crumenophthalmus*). *Jurnal Teknologi dan Industri Pangan*. Vol. XV No. 1 Th. 2012. Universitas Jember.
- Suprijana, O., Hidayat, A. T., & Soedjanaatmadja, U. M. 2002. Bekatul padi sebagai sumber produksi minyak dan isolat protein. *Bionatura*. 4(2): 218312.
- Supriyanti, F., Dwiyanti, G., & Muliani, P. 2013. Surimi dari ikan beloso (*Saurida tumbil* sp.) dan analisis kandungan gizinya. *Jurnal Sains dan Teknologi Kimia*. 4(2): 125-134.
- Suryaningrum, T.D., Ikasari, D., & Syamdidi. 2009. Penambahan bahan pembentuk gel

- dalam pembuatan surimi dari ikan patin (*Pangasius hypophthalmus*). Jurnal Pascapanen dan Bioteknologi Kelautan dan Perikanan. 4(1): 37-47.
- Suryaningrum, D., Hastarini, E., Utomo, B. S. B., & Ayudiarti, D. L. 2014. Teknologi Pengolahan Surimi dan Produk Olahannya. Penerbit ITB, Bandung.
- Susanti, E. 2019. Analisis kekuatan gel surimi ikan lele (*Clarias gariepinus*) hasil ozonisasi selama penyimpanan pada suhu $4 \pm 1^{\circ}\text{C}$. Pasundan Food Technology Journal. 6(2): 91.
- Sych, J., Lacroix, C., Adamounou, L. T., & Castaigne, F. 1990. Cryoprotective effects of some materials on cod-surimi proteins during frozen storage. Journal of Food Science. 55(5): 1222-1227.
- Ubadillah A. dan Hersoelistyorini, W. 2010. Kadar protein dan sifat organoleptik nugget rajungan dengan substitusi ikan lele (*Clarias gariepinus*). Jurnal Pangan dan Gizi. 1(2): 45-54
- Wang, Y., H. Yan, Y. Zhuang, Y. Tian, & H. Yang. 2023. Effect of soy protein isolate, egg white protein and whey protein isolate on the flavor characteristics of silver carp (*Hypophthalmichthys molitrix*) surimi. LWT. 186: 115237
- Wangko, S. 2014. Jaringan otot rangka sistem membran dan struktur halus unit kontraktil. Jurnal Biomedik: JBM, 6(3).
- Walayat, N., Xiong, H., Xiong, Z., Moreno, H. M., Nawaz, A., Niaz, N., & Randhawa, M. A. 2022. Role of cryoprotectants in surimi and factors affecting surimi gel properties: a review. Food Reviews International, 38(6), 1103–1122.
- Wawasto, A., Santoso, J., & Nurilmala, M. 2018. Karakteristik surimi basah dan kering dari ikan baronang (*Siganus sp.*). JPHPI. 21(2):367-376.
- Welfredo G. Y., Villatus, A. C., Soriano, M. G.G, Santos, M. N. 2007. Milkfish production and processing technologies in the Philippines.
- Wikantyasning, E. R., Nurhakimah, U. F., Sula, R. D., & Astuti, K. F. 2019. Optimasi formulasi esens sheet mask kombinasi ekstrak spirulina platensis dan nanopartikel bentonit dengan metode simplex lattice design. Pharmacon: Jurnal Farmasi Indonesia, 16(1), 18-27.
- Wiradimadja, M. M. D., Pratama, R. I., & Rizal, A. 2017. Karakterisasi mutu surimi segar dan kamaboko ikan nila berdasarkan perbedaan proses pencucian menggunakan NaCl dan NaHCO_3 . Jurnal Perikanan Kelautan. 8(2): 140-144.
- Vatria, B., dan T. S. Nugroho. 2022. Karakteristik mutu sosis ikan nila (*Oreochromis niloticus*) dengan penambahan isolat protein kedelai sebagai emulsifier alami. Manfish Journal. 2(3).
- Xu, F., Pan, M., Li, J., Ju, X., Wu, J., Cui, Z., & Wang, L. 2021. Preparation and characteristics of high internal phase emulsions stabilized by rapeseed protein isolate. Lwt, 149: 111753.
- Yücetepe, A., Saroğlu, Ö., & Özçelik, B. 2019. Response surface optimization of ultrasound-assisted protein extraction from *Spirulina platensis*: investigation of

the effect of extraction conditions on techno-functional properties of protein concentrates. *Journal of food science and technology*. 56: 3282-3292.

- Yuliani, Y., T. W. Agustini, E. N. Dewi, D. N. Afifah. 2023. Purifikasi fikosianin dari *Spirulina platensis* hasil intervensi kemangi (*Ocimum basilicum*) pada konsentrasi amonium sulfat berbeda. *Jurnal Pengolahan Hasil Perikanan Indonesia*. 26(3)
- Zaghib, I., S. Arafa, M. Félix, M. Hassouna, & A. Romero. 2016. Enhancement of the gelling properties of sardine surimi with transglutaminase and optimization of its activity using response surface methodology.
- Zhang, Y., R. Hou, B. Zhu, G. Yin, J. Zhang, W. Zhao, & Z. Li. 2022. Changes on the conformational and functional properties of soybean protein isolate induced by quercetin. *Frontiers in Nutrition*. 9: 966750.