

DAFTAR PUSTAKA

- Abdullah, M.S.P., Mohamed, I.N., Syed, I.M.I., Nur, M.M., Malina, J., Mohd, F.D., Wan, A.W.I., dan Ahmad, F.S. 2018. Recent Advances in the Use of Animal-Sourced Gelatine as Natural Polymers for Food, Cosmetics and Pharmaceutical Applications. *Sains Malaysiana* 4(2): 323-336.
- Agustin, A.T. 2013. Gelatin Ikan: Sumber, Komposisi Kimia dan Potensi Pemanfaatannya. *Jurnal Media Teknologi Hasil Perikanan* 1(2): 44-46.
- Agustin, A.T., dan Sompie, M. 2015. Kajian Gelatin Kulit Ikan Tuna (*Thunnus albacares*) yang Diproses Menggunakan Asam Asetat. *Pros. Sem. Nas. Masy. Biodiv. Indon* 1(5): 1186-1189.
- Aisyah, N., H. Nurul, M.E., dan Azhar, F. 2014. Poultry as an Alternative Source of Gelatin. *Health and the Environment Journal* 5(1): 37-49.
- Alfaro, A.T., Fonseca, G.G., Balbinot, E., Machado, A., dan Pretice, C. 2013. Physical and Chemical Properties of Wami Tilapia Skin Gelatin. *Food Science and Technology* 33(3): 592-595.
- Alhana, A., Suptijah, P., dan Tarman, K. 2015. Extraction and Characterization of Collagen from Sea Cucumber Flesh. *Jurnal Pengolahan Hasil Perikanan Indonesia* 18(2): 150-161.
- Allen, G.R., dan Adrim, M. 2003. Coral Reef Fishes of Indonesia. *Zoological Studies* 42(1): 1-72.
- Amiruldin, M. 2007. Pembuatan dan Analisis Karakteristik Gelatin dari Tulang Ikan Tuna (*Thunnus albacores*). Skripsi. Institut Pertanian Bogor, Bogor.
- Arnesen, J.A., dan Gildberg, A. 2007. Extraction and Characterisation of Gelatine from Atlantic Salmon (*Salmo salar*) Skin. *Bioresource Technology* 98: 53-57.
- AOAC. 2005. Official Methods of Analysis of the Association of Official Analytical Chemist, 19th Edition. AOAC Inc., Washington DC.
- Astawan, M, Haryadi, P., dan Mulyani, A. 2002. Analisis Sifat Reologi Gelatin dari Kulit Ikan Cucut. *Jurnal Teknologi dan Industri Pangan* 13(1): 38-46.
- Azara, R. 2017. Pembuatan dan Analisis Sifat Fisikokimia Gelatin dari Limbah Kulit Ikan Kerapuh (*Ephinephelus* sp.). *J. Rekapangan* 11(1): 62-69.

Badan Standardisasi Nasional (BSN). 1995. SNI 06-3735-1995. Gelatin. Badan Standardisasi Nasional, Jakarta.

Bailey, A.J., dan Light, N.D. 1989. "Connective tissue in meat and meat products". Elsevier Applied Science, New York.

Berliana, J.B. 2017. Ekstraksi dan Karakterisasi Gelatin Sisik Ikan Nila (*Oreochromis niloticus*). Skripsi. Universitas Pelita Harapan, Tangerang.

Bigi, A., Panzavolta, S. dan Rubini, K. 2004. Relationship between triple-helix content and mechanical properties of gelatin films. *Journal of Biomaterials* 25: 5675-5680.

Bower, C.K., Avena, B.R.J., Olsen, C.W., McHugh, T.H., dan Bechtel, P.J. 2006. Characterization of Fish-Skin Gelatin Gels and Films Containing the Antimicrobial Enzyme Lysozyme. *Journal of Food Science* 71(5): M141-145.

British Standard 757. 1975. "Methods for Sampling and Testing Gelatine (Physical and Chemical Methods)". British Standard Institution (BSI), Britain.

Burhanuddin, A.I., dan Iwatsuki, Y. 2012. The Grunts (Family Haemulidae) of the Spermonde Archipelago, South Sulawesi. *Jurnal Ilmu dan Teknologi Kelautan Tropis* 4(2): 229-238.

Caballero, B., Finglas, P.M., dan Toldra, F. 2016. "Encyclopedia of Food and Health". Elsevier, Oxford.

Chancharern, P., N. Laohakunjit, O. Kerdchoechuen, dan B. Thumthanaruk. 2016. Extraction of Type A and Type B Gelatin from Jellyfish (*Lobonema smithii*). *International Food Research Journal* 23(1): 419-424.

Chasanah, E. 2000. Acid Extraction of Gelatin from Dried Shark Skin. *Indonesian Food and Nutrition Progress* 7(1).

Cheow, C.S., Norizah, M.S., Kyaw, Z.Y. dan Howell, N.K. 2007. Preparation and Characterisation of Gelatins from the Skins of Sin Croaker (*Johnius dussumieri*) and Shortfin Scad (*Decapterus macrosoma*). *Food Chemistry* 101: 386–391.

Cho, S.M., Gu, Y.S., dan Kim, S.B. 2005. Extraction Optimization and Physical Properties of Yellow Fin Tuna (*Thunnus albacares*) Skin Gelatin Compared to Mammalian Gelatins. *Food Hydrocoll* 19:221-229.

Choi, S.S., dan Regenstein, J.M. 2000. Physicochemical and Sensory Characteristic of Fish Gelatin. *J. of Food Sci* 65(2): 194-199.

- Das, M.P., Suguna, P.R., Karpuram, P., Vijaylakshmi, J.V., dan Renuka, M. 2017. Extraction and Characterization of Gelatin: A Functional Biopolymer. *International Journal of Pharmacy and Pharmaceutical Sciences* 9(9): 239-242.
- Devi, A.P., Kamatchi, K., dan Lee. 2016. Extraction, Characterization and Application of Gelatin from *Carcharhius amblyrhyncho* and *Sphyraena barracuda*. *Journal of Biotechnology and Biochemistry* 2(6): 40-49.
- Dincer, M.T., Agcay, O.Y., Sargin, H., dan Bayram, H. 2015. Functional Properties of Gelatin Recovered from Scales of Farmed Sea Bass (*Decentrarchus labrax*). *Turkish Journal of Veterinary and Animal Sciences* 39:102-109.
- Duhamel, C.J., Hellio, D., dan Djabourov, M. 2002. All Gelatin Networks: Biodiversity and Physical Chemistry. *Langmuir* 18(19): 7208-7217.
- Faizin, A. 2015. Pengaruh Konsentrasi Asam dan Fosforilasi terhadap Sifat Fisik dan Kimia Gelatin Tulang Ikan Lele Dumbo (*Clarias gariepinus*). Skripsi. Universitas Sebelas Maret, Surakarta.
- Food and Agriculture Organization of the United Nation (FAO). 2015. Fisheries and Aquaculture topics: Fisheries Statistics and Information, Topics Fact Sheets. Internet: <https://www.fao.org/fishery/>. Diakses pada 10 Januari 2019.
- Gelatin Food Science. 2002. Gelatin. <http://www.Geltech.co.za/gtml.html>. Internet: Diakses tanggal 7 Desember 2018.
- Gimenez, B., Turnay, J., Lizarbe, M.A., Montero, P., dan Gomez-Guillen, M.C. 2005. Use of Lactic Acid for Extraction of Fish Skin Gelatin. *Food Hydrocolloids* 19: 941-950.
- GMIA. 2012. "Gelatin Handbook: Gelatin Manufacturers Institute of America Members as of January 2012". Massachusetts.
- Gomez-Guillen, M.C., Saravia, A.I., dan Montero, P. 2001. Extraction of Gelatin from Megrim (*Lepidorhombus boscii*) Skins with Several Organic Acid. *J. Food Sci.* 66(2): 213-216.
- Gunayasa, L.A. 2014. Pengembangan Proses Pembuatan Gelatin dari Tulang Ikan Mackerel (*Scomber scombrus*). Skripsi. Institut Pertanian Bogor, Bogor.
- Harris, M.A. 2008. Pemanfaatan Limbah Tulang Ikan Nila (*Oreochromis niloticus*) sebagai Gelatin dan Pengaruh Lama Penyimpanan pada Suhu Ruang. Skripsi. Institut Pertanian Bogor, Bogor.

- Hidayat, G., Dewi, E., dan Rianingsih, L. Characteristics of Bone Gelatin Tilapia (*Oreochromis niloticus*) Processed by Using Hydrolysis with Phosphoric Acid and Papain Enzyme. *JPHPI* 19(1): 69-78.
- Irwandi, J., Faridayanti, S., Mohamed, E.S.M., Hamzah, M.S., Torla, H.H., dan Che, M.Y.B. 2009. Extraction and Characterization of Gelatin from Different Marine Fish Species in Malaysia. *International Food Research Journal* 16: 381-389.
- Jamilah, B., dan Harvinder, K.G. 2002. Properties of Gelatins from Skins of Fish Black Tilapia (*Oreochromis mossambicus*) and Red Tilapia (*Oreochromis nilotica*). *Food Chem* 77: 81-84.
- Jeantet, J., Croguennec, T., Schuck, P., dan Brule, G. 2016. "Handbook of Food Science and Technology 3: Food Biochemistry and Technology". John Wiley & Sons, Inc., New Jersey.
- Juliaisti, R., Legowo, A.M., dan Pramono, Y.B. 2015. Pemanfaatan Limbah Tulang Kaki Kambing sebagai Sumber Gelatin dengan Perendaman Menggunakan Asam Klorida. *Jurnal Aplikasi Teknologi Pangan* 4(1): 5-10.
- Kiew, P.L., dan Don, M.M. 2013. The Influence of Acetic Acid Concentration on the Extracability of Collagen from the Skin of Hybrid Clarias sp. and Its Physicochemical Properties: A Preliminary Study. *Focusing on Modern Food Industry* (FMFI) 2(3): 123-128.
- Kim, H.W., Dong, H.S., Yun, S.C., Hack, Y.K., Ko, E.H., Jae, H.P., Yong, J.K., Ji, H.C., dan Cheon, J.K. 2012. Effects of Soaking pH and Extracting Temperature on the Physicochemical Properties of Chicken Skin Gelatin. *Korean J. Food Sci. Ani. Resour* 32(3): 316-322.
- Kim, S. 2014. "Seafood Processing By-Products: Trends and Applications". Springer, New York.
- Kittiphattanabawon, P., Soottawat, B., Wonnop, V., dan Fereidoon, S. 2010. Effect of Extraction Temperature on Functional Properties and Antioxidative Activities of Gelatin from Shark Skin. *Food Bioprocess Technol* 5(7): 2646-2654.
- Koli, J.M., Basua, S., Nayaka, B.B., Patageb, S.B., Pagarkarb, A.U., dan Gudipatia, V. 2012. Fuctional Characteristics of Gelatin Extracted from Skin and Bone of Tiger-toothed Croaker (*Otolithes ruber*) and Pink Perch (*Nemipterus japonicas*). *Food Bioprod Process* 90: 55-62.

- Kołodziejska, I., Skierka, E., Sadowska, M., Kolodziejski, W., dan Niecikowska, C. 2008. Effect of Extracting Time and Temperature on Yield of Gelatin from Different Fish Offal. *Food Chemistry* 107(2): 700-706.
- Kori, R., Singh, R., dan Zakir, K. 2008. Improvement and Extraction of Gelatin from the Skin of Striped Catfish. *International Journal of Biochemistry and Biotechnology* 7(1): 782-790.
- Kusumaningrum, I., Pranoto, Y., dan Hadiwiyoto, S. 2018. Extraction Optimization and Characterization of Gelatin from Fish Dry Skin of Spanish Mackerel (*Scomberromorus commersoni*). *Earth and Environmental Science* 144: 1-8.
- Liu, H.Y., Han, J., dan Guo, S.D. 2009. Characteristics of the Gelatin Extracted from Channel Catfish (*Ictalurus punctatus*) Head Bones. *LWT-Food Sci Technol* 42: 540-544.
- Lombu, F.V., Agustin, A.T., dan Pandey, E.V. 2015. Pemberian Konsentrasi Asam Asetat pada Mutu Gelatin Kulit Ikan Tuna. *Jurnal Media Teknologi Hasil Perikanan* 3(2): 25-28.
- Mahmood, K., Lubowa, M., Fazilah, A., Hanisah, K., Razak, A., dan Syazana, S. 2016. Review of Fish Gelatin Extraction, Properties and Packaging Applications. *Food Science and Quality Management* 56: 47-59.
- Mahmoodani, F., Ardekani, V.S., See, S. F., Yusom, S.M., dan Babji, A.S. 2014. Optimization and Physical Properties of Gelatin Extracted from Pangasius Catfish (*Pangasius sutchi*) Bone. *J. Food Sci. Technol* 51(11): 3104-3113.
- Miskah, S., Ramadiani, I.M., dan Hanif A.F. 2010. Pengaruh Konsentrasi HCL dan HCl sebagai Pelarut dan Waktu Perendaman pada Pembuatan Gelatin Berbahan Baku Tulang/Kulit Kaki Ayam. *Jurnal Teknik Kimia* 1(17): 1-6.
- Molnes, S.N. 2013. Physical Properties of Gelatin Based Solid Emulsions: Effects on Drug Release in the GI Tract. Thesis. Norwegian University of Science and Technology, Norwegia.
- Mulyani, S., Setyabudi, F.M.C.S., Pranoto, Y., dan Santoso, U. 2016. The Effect of Pretreatment Using Hydrochloric Acid on the Characteristics of Buffalo Hide Gelatin. *J. Indonesian Trop. Anim. Agric* 42(1): 14-22.
- Mulyani, S., Setyabudi, F.M.C.S., Pranoto, Y., dan Santoso, U. 2017. Physicochemical Properties of Gelatin Extracted from Buffalo Hide Pretreated with Different Acids. *Korean J. Food Sci Anim Resour* 37(5): 708-715.

- Munda, M. 2013. Pengaruh Konsentrasi Asam Asetat dan Lama Demineralisasi terhadap Kuantitas dan Kualitas Gelatin Tulang Ayam. Skripsi. Universitas Hasanuddin, Makassar.
- Muyonga, J.H., Cole, C.G.B., dan Duodu, K.G. 2004. Characterisation of Acid Soluble Collagen from Skin of Young and Adult Nile Perch (*Lates niloticus*). *Food Chemistry* 85: 81-89.
- Nelson, Joseph, S., Edwin, J.C., Hector, E.P., Lloyd, T.F., Carter, R.G., Robert, N.L., dan James, D.W. 2004. "Common and Scientific Names of Fishes from the United States, Canada, and Mexico, 6th Ed". American Fisheries Society, Bethesda.
- Niu, L., Zhiou, X., Yuan, C., Bai, Y., Lai, K., Yang, F., dan Huang Y. 2013. Characterization of Tilapia (*Oreochromis niloticus*) Skin Gelatin Extracted with Alkaline and Different Acid Pretreatments. *Food Hydrocoll* 3:336–341.
- Noguera, P., Ubeda, C., Bruno, D., dan Semenas, L. 2015. The Fish Necropsy Manual, Internet: <https://www.necropsymanual.net/en/teleosts-anatomy/>. Diakses pada 7 Agustus 2018.
- Norziah, M.H., Al-Hassan, A., Khairulnizam, A.B., Mordi, M.N. dan Norita, M. 2009. Characterization of Fish Gelatin from Surimi Processing Wastes: Thermal Analysis and Effect of Transglutaminase on Gel Properties. *Food Hydrocolloids* 23: 1610-1616.
- Nurilmala, M., Jacoeb, A.M., dan Dzaky, R.A. 2017. Karakteristik Gelatin Kulit Ikan Tuna Sirip Kuning. *JPHPI* 20(2): 339-350.
- Osorio, F.A., Bilbao, E., Bustos, R., dan Alvarez, F. 2007. Effects of Concentration, Bloom Degree, and pH on Gelatin Melting and Gelling Temperatures Using Small Amplitude Oscillatory Rheology. *International Journal of Food Properties* 10(4): 841-851.
- Pelu, H., Harnawati, S., dan Chasanah, E. 1998. Ekstraksi Gelatin dari Kulit Ikan Tuna Melalui Proses Asam. *Jurnal Penelitian Perikanan Indonesia* 4(2): 66-74.
- Prestes, R.C. 2013. Colágeno e Seus Derivados: Características e Aplicações em Produtos Cárneos. *Revista Unopar Científica Ciências Biológicas e da Saúde* 15(1): 65-74.
- Prihardini, D.I. dan Yunianta. 2016. Ekstraksi Gelatin Kulit Ikan Lencam (*Lethrinus* sp.) untuk Produk Permen Jeli. *Jurnal Pangan dan Agroindustri* 4(1): 356-366.

- Rachmania, R.A., Nisma, F., dan Mayangsari, E. 2013. Ekstraksi Gelatin dari Tulang Ikan Tenggiri Melalui Proses Hidrolisis Menggunakan Larutan Basa. *Media Farmasi* 10(2):18-28.
- Rahayu, F., dan Nurul, H.F. 2015. Pengaruh Waktu Ekstraksi terhadap Rendemen Gelatin dari Tulang Ikan Nila Merah. *Prosiding SEMNASTEK* 2015: 1-6.
- Rahmawati, H. dan Pranoto, Y. 2012. Rendemen dan Komposisi Proksimat Gelatin Kulit Ikan Belut dan Lele pada Keadaan Segar dan Kering. *Fish Scientiae* 2(4): 111-123.
- Rainboth, W.L. 1996. "FAO Species Identification Field Guide for Fishery Purposes. Fishes of the Cambodian Mekong". FAO, Rome.
- Ramshaw, J.A., Peng, Y., Glattauer, V., dan Werkmeister, J.A. 2009. Collagens as Biomaterials. *J. Mater. Sci. Mater. Med* 20(1): S3-S8.
- Rares, R.C., Meity, S., Arie, D.M., dan Jerry, A.D.K. 2017. Pengaruh Waktu Perendaman Dalam Larutan Asam Asetat (HCL) Terhadap Karakteristik Fisik dan Kimia Gelatin Ceker Ayam. *Jurnal Zootek* 37(2): 268-275.
- Ratnasari, I., Yuwono, S.S., Nusyam, H., dan Widjanarko, S.B. 2013. Extraction and Characterization of Gelatin from Different Fresh Water Fishes as Alternative Sources of Gelatin. *International Food Research Journal* 20(6): 3085-3091.
- Remawati. 2016. Ekstraksi dan Karakterisasi Gelatin dari Kulit Sapi menggunakan Metode Hidrolisis Asam. Skripsi. Universitas Syarif Hidayatullah, Jakarta.
- Rusli, A. 2004. Kajian Proses Ekstraksi Gelatin dari Kulit Ikan Patin (*Pangasius hypophthalmus*) Segar. Skripsi. Institut Pertanian Bogor, Bogor.
- Sahoo, R., Dhanapal, K., Reddy, G.V.S., Balasubramanian, A., dan Sravani, K. 2015. Study on the Functional Properties of Gelatin Extracted from the Skin of the Fish Pacu (*Piaractus brachypomus*). *International Journal of Innovative Science, Engineering and Technology* 2(11): 218-232.
- Salvaggio, N., Stroebel, L., dan Zakia, R. 2009. "Basic Photographic Material and Process". Elsivier Inc., Oxford.
- Saputra, R.H., Widiastuti, I., dan Supriadi, A. 2015. Karakteristik Fisik dan Kimia Gelatin Kulit Ikan Patin (*Pangasius pangasius*) dengan Kombinasi Berbagai Asam dan Suhu. *Jurnal Teknologi Hasil Perikanan* 4(1): 29-36.
- Sara, N. 2014. Pengaruh Jenis Bahan dan Waktu Degreasing terhadap Kualitas dan Kuantitas Gelatin Tulang Ayam. Skripsi. Universitas Hasanuddin, Makassar.

- See, S.F., Hong, P.K., Ng, K.L., Wan, A.W.M., dan Babji, A.S. 2010. Physicochemical Properties of Gelatins Extracted from Skins of Different Freshwater Fish Species. *International Food Research Journal* 17: 809-816.
- Selz, Y., Braasch, I., Hoffmann, C., Schmidt, C., Schultheis, C., Schartl, M., dan Volff, J.N. 2007. Evolution of Melanocortin Receptors in Teleost Fish: The Melanocortin Type 1 Receptor. *Gene* 401: 114–122.
- Setiawati, I.H. 2009. Karakterisasi Mutu Fisika Kimia Gelatin Kulit Ikan Kakap Merah (Lutjanus sp.) Hasil Proses Perlakuan Asam. Skripsi. Institut Pertanian Bogor, Bogor.
- Setyowati, H. dan Setyani, W. 2015. Potensi Nanokolagen Limbah Sisik Ikan sebagai Cosmeceutical. *Jurnal Farmasi Sains dan Komunitas*. 12(1): 30-40.
- Sha, X.M., Xong, C.T., Hui, W., dan Yan, S. 2013. Preparation and Properties on Gelatin from Fish Scale. *Advanced Materials Research* 647(2013): 352-356.
- Silvipriya, K.S., Kumar, K.K., Bhat, A.R., Kumar, D.B., John, A., dan Lakshmanan, P. 2015. Collagen: Animal Sources and Biomedical Application. *Journal of Applied Pharmaceutical Science* 5(3): 123-127.
- Simpson, B.K. 2012. “Food Biochemistry Food Processing”. Willey-Blackwell, Canada.
- Siregar, H., Ginting, S., dan Limbong, L.N. 2015. Pengaruh Jenis Pelarut dan Suhu Ekstraksi Kaki Ayam Terhadap Karakteristik Fisik dan Kimia Gelatin yang Dihasilkan. *Jurnal Rekayasa Pangan dan Genetika* 3(2): 171-177.
- Skierka, E., dan Sadowska, M. The Incluence of Different Acids and Pepsin on the Extracability of Collagen from the Skin of Baltic Cod (*Gadus morhua*). *Food Chemistry* 105: 1302-1306.
- Sompie, M., Triatmojo, S., Pertiwiningrum, A., dan Pranoto, Y. 2012. The Effect of Animal Age and Acetic Concentration on Pig Skin Gelatin Characteristics. *J. Indon Trop Anim Agric* 37(3): 176-182.
- Songchotikunpan, P., Tattiyakul, J. dan Supaphol, P. 2008. Extraction and Electrospinning of Gelatin from Fish Skin. *International Journal of Biological Macromolecules* 42: 247–255.
- Squeglia, F., Ruggiero, A., dan Berisio, R. 2018. Collagen Degradation in Tuberculosis Pathogenesis: The Biochemical Consequences of Hosting an Undesired Guest. *Biochemical Journal* 475(19): 3123-3140.

- Sundari, D., Almasyhuri, dan Astuti, L. 2015. Pengaruh Proses Pemasakan Terhadap Komposisi Zat Gizi Bahan Pangan Sumber Protein. *Media Litbangkes* 25(4): 235-242.
- Suryaningrum, T.D., dan Utomo, B.S.B. 2002. Petunjuk Analisis Rumput Laut dan Hasil Olahannya. Pusat Riset Pengolahan Produk dan Sosial Ekonomi Perikanan dan Kelautan. Jakarta.
- Suryanti, S., Marseno, D.W., Indrati, R., dan Irianto, H.E. 2017. Pengaruh Jenis Asam dalam Isolasi Gelatin dari Kulit Ikan Nila (*Oreochromis niloticus*) terhadap Karakteristik Emulsi. *AGRITECH* 37(4): 410-419.
- Taheri, A., Abedian, K.A.M., Gildberg, A., dan Behnam, S. 2009. Extraction and Physicochemical Characterization of Greater Lizardfish (*Saurida tumbil*) skin and Bone Gelatin. *J Food Sci* 74:160–165.
- Talwar, P.K. dan Jhingran, A.G. 2001. “Inland Fishes of India and Adjacent countries”. Oxford and IBH Publishing Co. Pvt. Ltd, New Delhi.
- Taufik, M., Triatmojo, S., Erwanto, Y., dan Santoso, U. 2010. Effect of Broiler Age and Extraction Temperature on Characteristic Chicken Feet Skin Gelatin. *The International Seminar on Tropical Animal Production Community Empowerment and Tropical Animal Industry* (5): 649-656.
- Tazwir, Ayudiarti, D.L., dan Peranginangin, R. 2007. Optimasi Pembuatan Gelatin dari Tulang Ikan Kaci-kaci (*Plectorhinchus chaetodonoides* Lac.) Menggunakan Berbagai Konsentrasi Asam dan Waktu Ekstraksi. *Jurnal Pascapanen dan Bioteknologi Kelautan dan Perikanan* 2(1): 35-43.
- Trilaksani, W., Nurimala, M., dan Setiawati, I.H. 2012. Ekstraksi Gelatin Kulit Kakap Merah (*Lutjanus* sp.) dengan Proses Perlakuan Asam. *Jurnal Pengolahan Hasil Perikanan Indonesia* 15(3): 240-251.
- Ulfah, M. 2011. Pengaruh Konsentrasi Larutan Asam Asetat dan Lama Waktu Perendaman terhadap Sifat-sifat Gelatin Ceker Ayam. *J. Agritech* 31(3): 161-167.
- Wang, W., Li, Z., Liu, J., Wang, Y., Liu, S., dan Sun, M. 2013. Comparison between Thermal Hydrolysis and Enzymatic Proteolysis Processes for the Preparation of Tilapia Skin Collagen Hydrolysates. *Czech Journal Food Science* 31(1): 1–4.
- Wolf, De F.A. 2003. Collagen and Gelatin in Progress in Biotechnology. *Elsevier Science* 23: 133-218.
- Wulandari, A. Supriadi, B., dan Purwanto. 2013. Pengaruh Defatting dan Suhu Ekstraksi terhadap Karakteristik Fisik Gelatin Tulang Ikan Gabus. *Fistech* 2(1): 38-45.

Zakaria, S., dan Nurul, H.A.B. 2015. Extraction and Characterization of Gelatin from Black Tilapia (*Oreochromis niloticus*) Scales and Bones. *ICASETNR* (15): 77-80.

Zhang, Shiying, X., dan Zhang, W. 2011. Pre-treatment Optimization and Properties of Gelatin from Freshwater Fish Scales. *J. Food and Bioproducts Processing* 89: 185-193.

Zulkifli, M., Naiu, A.S., dan Yusuf, N. 2013. Titik Gel dan Titik Leleh Gelatin dari Tulang Ikan Tuna (*Thunnus sp.*) yang Diproses dengan Menggunakan Cuka Aren (*Arenga pinnata*). *Jurnal Ilmiah Perikanan dan Kelautan* 1(3): 147-154.

