

DAFTAR PUSTAKA

- Affandhi, R.A.A., 2016. Isolasi dan Karakterisasi Kondroitin Sulfat dari Kaki Ayam Hasil Limbah Peternakan. *Skripsi*. Universitas Airlangga.
- Affandhi, R.A.A., Ekowati, J., Sugijanto, N.E.N., 2018. Extraction, Isolation, and Analysis of Chondroitin Sulphate from Chicken Shank by Spectrophotometric Method. *Research J. Pharm and Tech*, 11(12), p.5327-5331
- Agrawal, C.M., Ong, J.L., Appleford, M.R., & Mani, G., 2014. *Introduction to Biomaterials Basic Theory with Engineering Applications*. USA : Cambridge University., p.227.
- Badan POM RI., 2004. *Keputusan Kepala Badan Pengawas Obat dan Makanan Republik Indonesia Nomor HK.00.05.23.3644 Tentang Ketentuan Pokok Pengawasan Suplemen Makanan*. Jakarta : BPOM
- Benito-Arenas, R., Doncel-Pérez, E., Fernández-Gutiérrez, M., Garrido, L., García-Junceda, E., Revuelta, J., Fernández-Mayoralas, A., 2018. A holistic approach to unravelling chondroitin sulfation: Correlations between surface charge, structure and binding to growth factors. *Carbohydrate Polymers*, 202, p.211–218.
- Bishnoi, M., Jain, A., Hurkat, P., & Jain, S. K., 2016. Chondroitin sulphate: a focus on osteoarthritis. *Glycoconjugate Journal*, 33(5), p.693–705.
- Blanco, M., Fraguas, J., Sotelo, C. G., Pérez-Martín, R. I., & Vázquez, J.A., 2015. Production of chondroitin sulphate from head, skeleton and fins of *Scyliorhinus canicula* by-products by combination of enzymatic, chemical precipitation and ultrafiltration methodologies. *Marine Drugs*, 13(6), p.3287–3308.
- Bougatef, H., Krichen, F., Capitani, F., Amor, I. Ben, Maccari, F., Mantovani, V., Sila, A., 2018. Chondroitin sulfate/dermatan sulfate

- from corb (*Sciaena umbra*) skin: Purification, structural analysis and anticoagulant effect. *Carbohydrate Polymers*, Vol.196, p.272–278.
- Bougatef, H., Krichen, F., Capitani, F., Ben, I., Gargouri, J., Maccari, F., Sila, A., 2019. International Journal of Biological Macromolecules Purification, compositional analysis, and anticoagulant capacity of chondroitin sulfate / dermatan sulfate from bone of corb (*Sciaena umbra*). *International Journal of Biological Macromolecules*, Vol.134, p.405–412.
- Cahyanto, A., Kosasih, E., Aripin, D., & Hasratiningsih, Z., 2017. Fabrication of hydroxyapatite from fish bone waste using reflux method. *IOP Conf. Series : Materials Science and Engineering* 172, p.1-5
- Challener, C.A., 2018. Evolving UF/DF Capabilities. *Biopharma International*, Vol.31, No.1, p.24-27
- Chavier, X., & Conrozier, T., 2017. Access to highly purified chondroitin sulfate for appropriate treatment of osteoarthritis : a review. *Wichtig International*, 1(1), p.134-144
- Coppa, G. V., Gabrielli, O., Buzzega, D., Zampini, L., Galeazzi, T., MacCari, F., Volpi, N., 2011. Composition and structure elucidation of human milk glycosaminoglycans. *Glycobiology*, 21(3), p.295–303.
- Dewayani, G.M., 2016. Penerapan Metode Air Blast Freezing (ABF) pada Pembekuan Ikan Salmon Chum (*Oncorhynchus keta*) di PT. Marine Cipta Agung, Pasuruan, Jawa Timur. *Laporan Praktek Kerja Lapangan*. Universitas Airlangga.
- Djeral, L., Lortat-Jacob, H., & Kwok, J., 2017. Chondroitin sulfates and their binding molecules in the central nervous system. *Glycoconjugate Journal*, 34(3), p.363–376.

- Food and Agriculture Organization (FAO)., 2019. Globefish Highlights A Quarterly Update On World Seafood Markets, FAO. Diakses 7 Agustus 2020 dari <http://www.fao.org/3/ca5307en/ca5307en.pdf>
- Food and Drug Administration (FDA)., 2016. Generally Recognized As Safe (“GRAS”) Notification for Chondroitin Sodium Sulfate, FDA. Diakses 15 Juni 2020 dari <https://www.fda.gov/media/100238/download>.
- Fraguas, J., Reis, R. L., & Ricardo, I. P., 2019. Optimal isolation and characterisation of chondroitin sulfate from Rabbit fish (*Chimaera monstrosa*). *Carbohydrate Polymers*, Vol.210, p.302-313
- Garnjanagoonchorn, W., Wongekalak, L., & Engkagul, A., 2007. Determination of chondroitin sulfate from different sources of cartilage. *Chemical Engineering and Processing: Process Intensification*, Vol.46(5), p.465–471.
- Goyanes, S.N., & D’Accorso, N.B. eds., 2017. *Industrial Applications of Renewable Biomass Product, Past, Present, and Future*. Switzerland : Springer International., p.136.
- Gui, M., Song, J., Zhang, L., Wang, S., Wu, R., Ma, C., & Li, P., 2015. Chemical characteristics and antithrombotic effect of chondroitin sulfates from sturgeon skull and sturgeon backbone. *Carbohydrate Polymers*, Vol.123, p.454–460.
- Habicher, J., Haitina, T., Eriksson, I., Holmborn, K., Dierker, T., Ahlberg, P. E., & Ledin, J., 2015. Chondroitin/dermatan sulfate modification enzymes in zebrafish development. *PLoS ONE*, Vol.10(3), p.1–18.
- Hanindika, D., Alamsjah, M. A., & Sugijanto, N. E., 2014. Pengembangan Metode Isolasi Kondroitin Sulfat dari Tulang Rawan Sotong (*Sephia phraonis*), Pari (*Raja sp.*), dan Hiu (*Carcharinus falciformes*). *Jurnal Ilmiah Perikanan dan Kelautan* Vol.6 No.2, p.129-132.

- Kemenkes RI., 2018. *Hasil Utama RISKESDAS 2018*. Jakarta : Balitbang Kemenkes RI.
- Kementerian Kelautan dan Perikanan (KKP)., 2015. *National Plan of Action (NPOA) Conservation and Management of Shark and Rays 2016-2020*. Jakarta : Kementerian Kelautan dan Perikanan.
- Khwaldia, K., 2019. Chondroitin and Glucosamine. In S.M. Nabavi & A.S. Silva, eds. *Nonvitamin and Nonmineral Nutritional Supplements*. United Kingdong : Elsevier Inc. Ch.2.3.
- Krichen, F., Bougatef, H., Capitani, F., Ben Amor, I., Koubaa, I., Gargouri, J., Bougatef, A., 2018. Purification and structural elucidation of chondroitin sulfate/dermatan sulfate from Atlantic bluefin tuna (*Thunnus thynnus*) skins and their anticoagulant and ACE inhibitory activities. *RSC Advances*, Vol.8(66), p.37965–37975.
- Krichen, F., Bougatef, H., Sayari, N., Capitani, F., Ben Amor, I., Koubaa, I., Bougatef, A., 2018. Isolation, Purification and Structural Characteristics of Chondroitin Sulfate from Smooth hound Cartilage: In vitro Anticoagulant and Antiproliferative Properties. *Carbohydrate Polymers*, Vol.197, p.451–459.
- Krichen, F., Volpi, N., Sila, A., Maccari, F., Mantovani, V., Galeotti, F., Bougatef, A., 2017. Purification, structural characterization and antiproliferative properties of chondroitin sulfate/dermatan sulfate from tunisian fish skins. *International Journal of Biological Macromolecules*, Vol.95, p.32–39.
- Leoci, R., 2014. *Animal by-product (ABPs) : origins, uses, and European regulation*. Italia : Universitas Studiorum S.r.l., p.109-110.
- Lin, N., Mo, X., Yang, Y., & Zhang, H., 2017. Purification and sequence characterization of chondroitin sulfate and dermatan sulfate from fishes. *Glycoconjugate Journal*, Vol.34(2), p.241–253.

- López-Álvarez, M., González, P., Serra, J., Fraguas, J., Valcarcel, J., & Vázquez, J. A., 2020. Chondroitin sulfate and hydroxyapatite from *Prionace glauca* shark jaw: Physicochemical and structural characterization. *International Journal of Biological Macromolecules*, Vol.156, p.329–339.
- Maccari, F., Galeotti, F., & Volpi, N., 2015. Isolation and structural characterization of chondroitin sulfate from bony fishes. *Carbohydrate Polymers*, Vol.129, p.143–147.
- Marliana, A., Fitriani, E., Ramadhan, F., Suhandono, S., Yuliani, K., & Windarti, T., 2015. Synthesis and Characterization of Hidroxypatite from Fish Bone Waste. *AIP Conference Proceedings*, Vol.1669, Issue 1, p.040006-1 – 040006-6
- Martel-Pelletier, J., Farran, A., Montell, E., Vergés, J., & Pelletier, J. P., 2015. Discrepancies in composition and biological effects of different formulations of chondroitin sulfate. *Molecules*, Vol.20(3), p.4277–4289.
- Masdika, I.P.I.Y, Wibawa, I.G.D, Joenputri, N., 2020. Profile of Quality of Life Among Knee Osteoarthritis Patients : A Descriptive Study. *International Journal of Medical and Health Research*, Vol.6, Issue 4, p.1-3.
- Mercola., 2014. Bone Broth—A Most Nourishing Food for Virtually Any Ailment. Diakses 28 Juni 2020 dari <http://articles.mercola.com/sites/articles/archive/2014/11/23/nourishing-bone-broth.aspx>.
- Nakano, T., Ikawa, N., Ozimek, L., (2000). An economical method to extract chondroitin sulphate-peptide from bovine nasal cartilage. *Canadian Agricultural Engineering*, Vol.42(4), p.205–208.
- Novoa-Carballal, R., Pérez-Martín, R., Blanco, M., Sotelo, C. G., Fassini, D., Nunes, C., Vázquez, J. A., 2017. By-products of *Scyliorhinus*

- canicula, *Prionace glauca* and *Raja clavata*: A valuable source of predominantly 6S sulfated chondroitin sulfate. *Carbohydrate Polymers, Vol.157*, p.31–37.
- Ogundipe, O.D., 2015. Isolation and Characterisation of A Novel Glycosaminoglycan with Anticancer Activity. *Tesis*. Salford University.
- Poli, B.M., 2005. Quality and Certification of Fishery Products From Both Capture and Farming in The Same Market Place. In : FAO, eds. *Interaction Between Aquaculture and Capture Fisheries : A Methodological Prespective*. Roma : FAO, p.144-165.
- Purnawan, H., 2019. Relasi Manusia dengan Binatang dalam Theologi Hindu. *Skripsi*. Universitas Islam Negeri Syarif Hidayatullah.
- Rani, A., Baruah, R., & Goyal, A., 2017. Physicochemical, antioxidant and biocompatible properties of chondroitin sulphate isolated from chicken keel bone for potential biomedical applications. *Carbohydrate Polymers, Vol.159*, p.11–19.
- Ren, Z., Ji, Y., Wang, Y., & Dong, L., 2018. Chondroitin sulfate from *Scophthalmus maximus* for treating osteoarthritis. *International Journal of Biological Macromolecules, Vol.108*, p.1158–1164.
- Shi, Y. gang, Meng, Y. cheng, Li, J. rong, Chen, J., Liu, Y. hua, & Bai, X., 2014. Chondroitin sulfate: Extraction, purification, microbial and chemical synthesis. *Journal of Chemical Technology and Biotechnology, Vol.89(10)*, p.1445–1465.
- Sucharew, H., & Macaluso, M., 2019. Methods for research evidence synthesis: The scoping review approach. *Journal of Hospital Medicine, Vol.14(7)*, p.416–418.
- Susmiati, Y., Nuruddin, M., & Nursalim, A., 2017. Pemurnian Bioetanol dengan Distilasi Rektifikasi Tipe ‘Sieve Tray’ untuk Menghasilkan FGR (Fuel Grade Etanol). *Jurnal Ilmiah INOVASI, Vol. 17 No.1*.

- Suwarni, Tresnati, J., Omar, S.B.A., & Tuwo, A., 2019. Some Reproductive Biology Studies of Rabbit Fish *Siganus canaliculatus* (Park, 1797) from the Southern Coastal Waters of Jenepono, South Sulawesi, Indonesia. *Biosciences Biotechnology Research Asia, Vol 16*(3), p.617-624.
- Syukriya, A. J., & Faridah, H. D., 2019. Kajian Ilmiah dan Teknologi Sebab Larangan Suatu Makanan dalam Syariat Islam. *Journal of Halal Product and Research, Volume 2 Nomor 1*, p.44-50
- United States Pharmacopeial Convention., 2018. *The United States Pharmacopeia 41 -National Formulary 32 (USP37-NF32)*. 37th Edition. Rockville USA: United States Pharmacopeial Convention Inc, p.4539-4541, 4543
- Valcarcel, J., García, M. R., Sampayo, L. F., & Vázquez, J. A., 2020. Marine chondroitin sulfate of defined molecular weight by enzymatic depolymerization. *Carbohydrate Polymers, Vol.229*, 115450.
- Vázquez, J. A., Fraguas, J., Novoa-Carvallal, R., Reis, R. L., Antelo, L. T., Pérez-Martín, R. I., & Valcarcel, J., 2018. Isolation and chemical characterization of chondroitin sulfate from cartilage by-products of blackmouth catshark (*Galeus melastomus*). *Marine Drugs, Vol.16*(10), p.344-358
- Vázquez, J. A., Fraguas, J., Novoa-Carvallal, R., Reis, R. L., Pérez-Martín, & Valcarcel, J., 2019. Optimal Isolation and Characterisation of Chondroitin Sulfate from Rabbit Fish (*Chimaera monstrosa*). *Carbohydrate Polymers, Vol.210*, p.302-312.
- Volpi, N., 2019. Chondroitin sulfate safety and quality. *Molecules, Vol.24*(8), p.1447-1459.
- Zhou, C., Mi, S., Li, J., Gao, J., Wang, X., & Sang, Y., 2020. Purification, characterisation and antioxidant activities of chondroitin sulphate

extracted from *Raja porosa* cartilage. *Carbohydrate Polymers*, *Vol.241*, p.1–8.

Zhu, W., Ji, Y., Wang, Y., He, D., Yan, Y., Su, N., Xing, X.H., 2018. Structural characterization and in vitro antioxidant activities of chondroitin sulfate purified from *Andrias davidianus* cartilage. *Carbohydrate Polymers*, *Vol.196*, p.398–404.