

## DAFTAR PUSTAKA

- Al-Yahya, S.A., F. Ameen., K.S. Al-Niaeem., B.A. Al-Sa'adi., S. Hadi., and A.A. Mostofa. Histopathological studies of experimental *Aeromonas hydrophila* infection in blue tilapia, *Oreochromis aureus*. Saudi Journal of Biological Sciences. 25: 182 – 185.
- Austin, B., and D.A. Austin. 2012. Bacterial Fish Pathogens: Disease of Farmed and Wild Fish 5<sup>th</sup> Edition. Springer. Dordrecht, Heidelberg, New York, London.
- Barton, B.A. 2002. Stress in fishes: a diversity of responses with particular reference to changes in circulating corticosteroids. Integrative and Comparative Biology. 42: 517-525.
- Beaz-Hidalgo, R., A. Alperi., N. Bujan., J.L. Romalde., and M.J. Figueras. 2010. Comparison of phenotypical and genetic identification of *Aeromonas* strains isolated from diseased fish. Systematic and Applied Microbiology. 33: 149-153.
- Beaz-Hidalgo, R., and M.J. Figueras. 2013. *Aeromonas* spp. whole genomes and virulence factors implicated in fish disease. Journal of Fish Diseases. 36: 371–388.
- Bebak, J., B. Wagner., B. Burnes., and T. Hanson. 2014. Farm size, seining practices, and salt use: Risk factors for *Aeromonas hydrophila* outbreaks in farm-raised catfish, Alabama, USA. Preventive Veterinary Medicine. <http://dx.doi.org/10.1016/j.prevetmed.2014.11.001>.
- Baßmann, B., M. Brenner., and H.W. Palm. 2017. Stress and Welfare of African Catfish (*Clarias gariepinus* Burchell, 1822) in a Coupled Aquaponic System. Water. 9: 504.
- Becker, A.G., M.A. da Cunha., L.O. Garcia., C.C. Zeppenfeld., T.V. Parodi., G. Maldaner, A.F. Morel., and B. Baldisserotto. Efficacy of eugenol and the methanolic extract of *Condalia buxifolia* during the transport of the silver catfish *Rhamdia quelen*. Neotropical Ichthyology. 11(3):675-681
- Berka, R. 1982. The Transport of Live Fish: A Review. Food and Agriculture Organization of The United Nations. Rome.
- Biswal, A., P.P. Srivastava., P. Pal., S. Gupta., T. Varghese., dan M. Jayant. 2021. A multi-biomarker approach to evaluate the effect of sodium chloride in alleviating the long-term transportation stress of *Labeo rohita* fingerlings. Aquaculture. 531: 735979.
- Biswal, A., P.P. Srivastava., P. Pal., S. Gupta., T. Varghese., dan M. Jayant. 2021. An Integrated biomarker approach for explaining the potency of exogenous glucose on transportation induced stress in *Labeo rohita* fingerlings. Scientific Reports. 11: 5713.
- Bond, C.E. 1979. Biology of Fishes. WB Saunders Company. Philadelphia, London, Toronto.

- BSN. 2004. Air dan Limbah Bagian 9: Cara Uji Nitrit (NO<sub>2</sub>-N) secara Spektrofotometri SNI 06-0689.9-2004. Badan Standarisasi Nasional. Jakarta.
- BSN. 2005. Air dan Limbah Bagian 30: Cara Uji Kadar Amonia dengan Spektrofotometer secara Fenat SNI 06-6989.30-2005. Badan Standarisasi Nasional. Jakarta.
- BSN. 2014. Ikan Lele Dumbo (*Clarias sp.*) Bagian 4: Produksi Benih SNI 6484.4:2014. Badan Standardisasi Nasional. Jakarta.
- Carneiro, P.C.F., E.C. Urbinati., and F. Benhack. 2007. Osmoregulation and Fish Transportation. In: Fish Osmoregulation. Science Publishers. Enfield (NH), Jersey, Plymouth.
- Ciji, A. and M.S. Akhtar. 2019. Nitrite implications and its management strategies in aquaculture: a review. Reviews in Aquaculture. 1 – 31.
- de Abreu, J.S., A.I. Sanabria-Ochoa., F.D. Gonçalves., and E.C. Urbinati. 2008. Stress responses of juvenile matrinxã (*Brycon amazonicus*) after transport in a closed system under different loading densities. Ciência Rural. 38(5): 1413-1417.
- de Aguiar, N.C., P.S. Dias., R.E. Balen., R.A. Bombardelli., L.M.S. Colpini., and F. Meurer. 2020. Dietary sodium chloride effect in Nile tilapia fed with fish meal-free diets. Spanish Journal of Agricultural Research. 18(3): e0610. <https://doi.org/10.5424/sjar/2020183-15753>.
- Delamore, A.P.L., S.O.P. Costa., M.M. da Silveira, and S. Echeverrigaray. 2000. Growth of *Aeromonas* species on increasing concentrations of sodium chloride. Letters in Applied Microbiology. 30: 57–60.
- de Oliveira, C.P.B., C.H.P. Lemos., A.F. e Silva., S.A. de Sousa., A.C.L. Albinati., A.O. Lima., and C.E. Copatti. 2019. Use of eugenol for the anaesthesia and transportation of freshwater angelfish (*Pterophyllum scalare*). Aquaculture. 513: 734409.
- Diatin, I., D. Shafruddin., N. Hude., M. Sholihah., and I. Mutsimir. 2021. Production performance and financial feasibility analysis of farming catfish (*Clarias gariepinus*) utilizing water exchange system, aquaponic, and biofloc technology. Journal of the Saudi Society of Agricultural Sciences. 20: 344 – 351.
- Direktorat Jendral Perikanan Budidaya. 2020. Rencana Strategis Tahun 2020-2024 Direktorat Jendral Perikanan Budidaya. Kementerian Kelautan dan Perikanan Direktorat Jenderal Perikanan Budidaya. Jakarta.
- Easy, R.H. and N.W. Ross. 2010. Changes in Atlantic salmon *Salmo salar* mucus components following short- and long-term handling stress. Journal of Fish Biology. 77: 1616–1631.
- Evans, D.H. 2008. Teleost fish osmoregulation: What have we learned since August Krogh, Homer Smith, and Ancel Keys?. American Journal of Physiology – Regulatory, Integrative and Comparative Physiology. 295: 704–713.
- Evans, D.H. 2011. Osmoregulation in Fishes: An Introduction. In: Encyclopedia of Fish Physiology from Genome to Environment. Academic Press. UK, USA.

- Francis-Floyd, R., C. Watson., D. Petty., and D.B. Pouder. 2009. Ammonia in Aquatic System. The Institute of Food and Agricultural Science (IFAS), University of Florida. Gainesville.
- Frose, R. 1985. Improved Fish Transport in Plastic Bags. ICLARM New Letter 8: 8–9.
- Glass, M.L and F.T. Rantin. 2009. Gas Exchange and Control of Respiration in Air-Breathing Teleost Fish. In: Cardio-Respiratory Control in Vertebrates. Springer. Verlag, Berlin, Heidelberg.
- Guo, H., and B. Dixon. 2021. Understanding acute stress-mediated immunity in teleost fish. Fish and Shellfish Immunology Reports. 2: 100010.
- Hadiroseyani, Y., S. Sukenda., E.H. Surawidjaja., N.B.P. Utomo., dan R. Affandi. 2016. Survival rate of transported ricefield eels, *Monopterus albus* (Synbranchidae), in open and closed system at water salinity level of 0 and 9 g L<sup>-1</sup>. AACL Bioflux. 9(3): 759-767.
- Harmon, T.S. 2009. Methods for reducing stressors and maintaining water quality associated with live fish transport in tanks: a review of the basics. Reviews in Aquaculture. 1: 58–66.
- Hassan, M.A., E.A. Noureldin., M.A. Mahmoud., and N.A. Fita. 2017. Molecular identification and epizootiology of *Aeromonas veronii* infection among farmed *Oreochromis niloticus* in Eastern Province, KSA. Egyptian Journal of Aquatic Research. 43: 161-167.
- Hastuti, S. dan Subandiyono. 2012. Haematological Performances of Jaundice Catfish (*Clarias gariepinus*, Burch). Proceeding of International Conference of Aquaculture Indonesia (ICAI), Semarang, November 23-24<sup>th</sup> 2012.
- He, R., Y. Su., A. Wang, B. Lei., and K. Cui. 2020. Survival and serum biochemical responses of spotted sea bass *Lateolabrax maculatus* during simulated waterless live transportation. Aquaculture Research. 00: 1-11. DOI: 10.1111/are.14685.
- Hong, J., X. Chen., S. Liu., Z. Fu., M. Han., Y. Wang., Z. Gu., and Z. Ma. 2019. Impact of fish density on water quality and physiological response of golden pompano (*Trachinotus ovatus*) flingerlings during transportation. Aquaculture. 507: 260-265.
- Hoseini, S.M., S.K. Gupta., M. Yousefi., E.V. Kulikov., S.G. Drukovsky., A.K. Petrov., A.T. Mirghaed., S.H. Hoseinifar., and H. van Doan. 2022. Mitigation of transportation stress in common carp, *Cyprinus carpio*, by dietary administration of turmeric. Aquaculture. 546: 737380.
- Hwang, P.P. 2011. Mechanisms of Ion Transport in Freshwater Fishes. In: Encyclopedia of Fish Physiology from Genome to Environment. Academic Press. UK, USA.
- Iswanto, B., Imron., R. Suprpto., and H. Marnis. 2015a. Morphological characterization of the african catfish (*Clarias gariepinus* Burchell, 1822) strains introduced to Indonesia. Indonesian Aquaculture Journal. 10(2): 91-99.

- Iswanto, B., R. Suprpto., H. Marnis, dan Imron. 2015b. Karakteristik morfologis dan genetis ikan Lele dumbo dumbo afrika (*Clarias gariepinus* Burchell, 1822) strain Mutiara. *Jurnal Riset Akuakultur*. 10(3): 325-334.
- Janda, J.M. and S.L. Abbot. 2010. The genus *Aeromonas*: taxonomy, pathogenicity, and infection. *Clinical Microbiology Reviews*. 23(1): 35-73.
- Kementerian Kelautan dan Perikanan. 2019. [https://statistik.kkp.go.id/home.php?m=prod\\_ikan\\_prov&i=2#panel-footer](https://statistik.kkp.go.id/home.php?m=prod_ikan_prov&i=2#panel-footer). Diakses pada 2 Desember 2021, pukul 10.17 WIB.
- Khotimah, E.H. 2017. Pengaruh Pengangkutan terhadap Kadar Glukosa Darah dan Profil Hematologi pada Lele Dumbo (*Clarias sp.*). Fakultas Pertanian. Universitas Gadjah Mada. Skripsi.
- Koeypusda, W., and M. Jongjareanjai. 2011. Impact of water temperature and sodium chloride (NaCl) on stress indicators of hybrid catfish (*Clarias gariepinus* Burchell x *C. macrocephalus* Gunther). *Songklanakarin Journal Science Technology*. 33(4): 369-378.
- Leduc, G.R., V.E. Paquet., A.T. Vincent., and S.J. Charette. 2021. Characterization of bacteriophage T7-Ah reveals its lytic activity against a subset of both mesophilic and psychrophilic *Aeromonas salmonicida* strains. *Archives of Virology*. 166: 521–533.
- Madigan, M.T. and J.M. Martinko. 2006. *Brock Biology of Microorganisms* 11<sup>th</sup> Edition. Pearson Prentice Hall. New Jersey.
- Makaras, T., J. Razumiene., V. Gurevičienė., I. Šakinytė., and M. Stankevičiūtė. 2020. A new approach of stress evaluation in fish using  $\beta$ -D-Glucose measurement in fish holding-water. *Ecological Indicators*. 109: 105829.
- Manuel, R., J. Boerrigter., J. Roques., J. van der Heul., R. van den Bos., G. Flik., and H. van de Vis. 2014. Stress in African catfish (*Clarias gariepinus*) following overland transportation. *Fish Physiology and Biochemistry*. 40(1): 33–44.
- Mbanga, B., C. van Dyk., and J.N. Maina. 2018. Morphometric and morphological study of the respiratory organs of the bimodally-breathing African sharptooth catfish (*Clarias gariepinus*): Burchell (1822). *Zoology*. 130: 6–18.
- Mirghaed, A.T., and M. Ghelichpour. 2019. Effects of anesthesia and salt treatment on stress responses, and immunological and hydromineral characteristics of common carp (*Cyprinus carpio*, Linnaeus, 1758) subjected to transportation. *Aquaculture*. 501: 1-6.
- Ng, H.H., and M. Kottelat. 2008. The identity of *Clarias batrachus* (Linnaeus, 1758), with the designation of a neotype (Teleostei: Clariidae). *Zoological Journal of the Linnean Society*. 153: 725-732.
- Oladele, O.O., B.E. Olufemi., G.A. Oladosu., O.L. Ajayi., A.A. Adediji., and I.O. Arasi. 2011. Arborescent organ necrosis syndrome in catfish, *Clarias gariepinus* (Burchell): a case report. *Journal of Fish Diseases*. 34: 801-804.

- Oyoo-Okoth, E., L. Cherop., C.C. Ngugi., V. Chepkirui-Boit., D. Manguya-Lusega., J. Ani-Sabwa., and H. Charo-Karisa. 2011. Survival and physiological response of *Labeo victorianus* (Pisces: Cyprinidae, Boulenger 1901) juveniles to transport stress under a salinity gradient. *Aquaculture*. 319: 226-231.
- Pakhira, C., T.S. Nagesh., T.J. Abraham., G. Dash., and S. Behera. 2015. Stress responses in rohu, *Labeo rohita* transported at different densities. *Aquaculture Reports*. 2: 39-45.
- Pankhurst, N.W. 2011. The endocrinology of stress in fish: An environmental perspective. *General and Comparative Endocrinology*. 170: 265-275.
- Parker, J.L., and J.G. Shaw. 2011. *Aeromonas spp.* clinical microbiology and disease. *Journal of Infection*. 62 (2): 109–118.
- Parodi, T.V., M.A. Cunka., A.G. Becker., C.C. Zeppenfeld., D.I. Martins., G. Koakoski., L.G. Barcellos., B.M. Heinzmanm., and B. Baldisserotto. 2014. Anesthetic activity of the essential oil of *Aloysia triphylla* and effectiveness in reducing stress during transport of albino and grey strains of silver catfish, *Rhamdia quelen*. *Fish Physiology Biochemistry*. 40(2): 323-334.
- Patriace, T. 2009. The importance of glucose determination in the blood of the cyprinids. *Zootehnie și Biotehnologii*. 42(2): 102-106.
- Pessoa, R.B.G., D.S.C. Marques., R.O.H.A. Lima., M.B.M. Oliveira., G.M.S. Lima., E.V.M. Maciel de Carvalho., and L.C.B.B. Coelho. 2020. Molecular characterization and evaluation of virulence traits of *Aeromonas spp.* isolated from the tambaqui fish (*Colossoma macropomum*). *Microbial Pathogenesis*. 147: 104273.
- Pessoa, R.B.G., W.F. de Oliveira., D.S.C. Marques., M.T.S. Correia., E.V.M.M., de Carvalho., and L.C.B.B. Coelho. 2019. The genus *Aeromonas*: A general approach. *Microbial Pathogenesis*. 130: 81–94.
- Pillay, T.V.R. 2004. *Aquaculture and the Environment* 2<sup>nd</sup> Editon. Blackwell Publisher. UK.
- Polakof, S., T.P. Mommsen., and J.L. Soengas. 2011. Glucosensing and glucose homeostasis: From fish to mammals. *Comparative Biochemistry and Physiology*, Part B. 160: 123-149.
- Purbosari, N., E. Warsiki., K. Syamsu., and J. Santoso. Natural versus synthetic anesthetic for transport of live fish: A review. *Aquaculture and Fisheries*. 4: 129-133.
- Rahardjo, M.F., D.S. Syafei., R. Affandi., dan Sulistiono. 2011. *Iktiologi*. Lubuk Agung. Bandung.
- Ramirez-Duarte, W.F., C. Pineda-Quiroga., N. Martínez., and P.R. Eslava-Mocha. 2011. Use of sodium chloride and zeolite during shipment of *Ancistrus triradiatus* under high temperature. *Neotropical Ichthyology*. DOI: 10.1590/S1679-62252011005000036.

- Rasmussen-Ivey, C.R., M.J. Figueras., D. McGarey., and M.R. Liles. 2016. Virulence Factors of *Aeromonas hydrophila*: In the Wake of Reclassification. *Frontier Microbiology*. 7:1337. doi: 10.3389/fmicb.2016.01337.
- Reverter, M., N. Tapissier-Bontemps., D. Lecchini., B. Banaigs., and P. Sasal. 2018. Biological and ecological roles of external fish mucus: a review. *Fishes*. 3(41): 1-19.
- Rosa, R., N.M. Bandarra., and M.L. Nunes. 2007. Nutritional quality of African catfish *Clarias gariepinus* (Burchell 1822): a positive criterion for the future development of the European production of Siluroidei. *International Journal of Food Science and Technology*. 42: 342–351.
- Saanin, H. 1984. *Taksonomi dan Kunci Determinasi*. Bina Cipta. Jakarta.
- Salinas, I. 2015. The mucosal immune system of teleost fish. *Biology*. 4: 525-539.
- Sampaio, F.D.F., and C.A. Freire. 2016. An overview of stress physiology of fish transport: changes in water quality as a function of transport duration. *Fish and Fisheries*. 17: 1055-1072.
- Santos, E.L.R., F.P. Rezende., and S.E. Moron. 2020. Stress-related physiological and histological responses of tambaqui (*Colossoma macropomum*) to transportation in water with tea tree and clove essential oil anesthetics. *Aquaculture*. 523: 735164.
- Schram, E., J.A.C. Roques., W. Abbink., T. Spanings., P. de Vries., S. Bierman., H. van de Vis., and G. Flik. 2010. The impact of elevated water ammonia concentration on physiology, growth and feed intake of African catfish (*Clarias gariepinus*). *Aquaculture*. 306: 108 – 115.
- Schreck, C.B., and L. Tort. 2016. *The Concept of Stress in Fish*. In: *Biology of Stress in Fish Fish Physiology*. Academic Press. London.
- Shrivasta, J., A.K. Sinha., S. Cannaerts., R. Blust., and G.D. Boeck. 2017. Temporal assessment of metabolic rate, ammonia dynamics and ion-status in common carp during fasting: a promising approach for optimizing fasting episode prior to fish transportation. *Aquaculture*. 481: 218 – 288.
- Tacchi, L., L. Lowrey., R. Musharrafieh., K. Crossey., E.T. Larragoite., and I. Salinas. 2015. Effects of transportation stress and addition of salt to transport water on the skin mucosal homeostasis of rainbow trout (*Oncorhynchus mykiss*). *Aquaculture*. 435: 120-127.
- Thomas, J., J. Jerobin., T.S.J. Seelan., S. Thanigaivel., S. Vijayakumar., A. Mukherjee., and N. Chandrasekaran. 2013. Studies on pathogenecity of *Aeromonas salmonicida* in catfish *Clarias batrachus* and control measures by neem nanoemulsion. *Aquaculture*. 396 – 399: 71 – 75.
- Thomas, J., N. Madan., K.S.N. Nambi., S.A. Majeed., A.N. Basha., and A.S.S. Hameed. 2013. Studies on ulcerative disease caused by *Aeromonas caviae*-like bacterium in Indian catfish, *Clarias batrachus* (Linn). *Aquaculture*. 367-379: 146-150.
- Tort, L. 2011. Stress and immune modulation in fish. *Developmental and Comparative Immunology*. 35: 1366 – 1375.



- Urbinati, A.C. and P.C.F. Carneiro. 2006. Sodium chloride added to transport water and physiological responses of *Matrinxã Brycon amazonicus* (Teleost: Characidae). *Acta Amazonica*. 36(4): 569 – 572.
- van de Nieuwegissen, P.G., J. Olwo., S. Kong., J.A.J. Verreth., and J.W. Schrama. 2009. Effects of age and stocking density on the welfare of African catfish, *Clarias gariepinus* Burchell. *Aquaculture*. 288: 69 – 75.
- van der Marel, M., N. Caspari., H. Neuhaus., W. Meyer., M.L. Enss., and D. Steinhagen. 2010. Changes in skin mucus of common carp, *Cyprinus carpio* L., after exposure to water with a high bacterial load. *Journal of Fish Diseases*. 33: 431-439.
- Vincent, A.T., V.E. Paquet., A. Bernatchez., D.M. Tremblay., S. Moineau., and S.J. Charette. 2017. Characterization and diversity of phages infecting *Aeromonas salmonicida* subsp. *Salmonicida*. *Scientific Report*. 7: 7054.
- Wang, W., Y. Zhang., Y. Liu., N. Adanyi., and X. Zhang. 2020. Effects of waterless live transportation on survivability, physiological responses and flesh quality in Chinese farmed sturgeon (*Acipenser schrenckii*). *Aquaculture*. 518: 734834.
- Wedemeyer, G.A. 1996. *Physiology of Fish in Intensive Culture Systems*. Springer. New York.
- Weyl, O.L.F., V.S. Daga., B.R. Ellender., and J.R.S. Vitulle. 2016. A review of *Clarias gariepinus* invasions in Brazil and South Africa. *Journal of Fish Biology*. doi:10.1111/jfb.12958.
- Wurts, W.A. 1995. Using salt to transport live fish. *World Aquaculture*. 26(3): 80-81.
- Yang, Y., T. Wang., C.J.C. Phillips., Q. Shao., E. Narayan., and K. Descovich. 2021. Knowledge of, and attitudes towards, live fish transport among aquaculture industry stakeholders in China: A qualitative study. *Animals*. 11: 2678.
- Zeppenfeld, C.C., C. Toni., A.G. Becker., D.S. Miron., T.V. Parodi., B.M. Heinzmann., L.J.G. Barcellos, G. Koakoski., J.G.S. da Rosa., V.L. Loro., M.A. da Cunha., and B. Baldiseroto. 2014. Physiological and biochemical responses of silver catfish, *Rhamdia quelen*, after transport in water with essential oil of *Aloysia triphylla* (L'Herit) Britton. *Aquaculture*. 418–419: 101–107.
- Zhang, D., D.H. Xu., C.A. Shoemaker., and B.H. Beck. 2020. The severity of motile *Aeromonas* septicemia caused by virulent *Aeromonas hydrophila* in channel catfish is influenced by nutrients and microbes in water. *Aquaculture*. 519: 734989.
- Zhang, Y., X. Xiao., L. Yan., M.T.T. Nga., and X. Zhang. 2017. Survival prediction system for waterless live Chinese Sturgeon transportation based on temperature related glucose changes. *Journal of Food Processing Engineering*. e12646.