

DAFTAR PUSTAKA

- Adhani, R., dan Husaini. 2017. *Logam Berat sekitar Manusia*. Lambung Mangkurat University Press. Banjarmasin.
- Agency, E.P. 1998. *Status of Pesticides in Registration, reregistration, and special review*. USEP. Agency. Washington. D.C. Nat. Center for Environmental Publ. and Info. 462 p.
- Aksari, Y.D., Perwitasari, D., Butet, N.A. 2015. Kandungan logam berat (Cd, Hg, dan Pb) pada ikan sapu-sapu, *Pterygoplichthys pardalis* (Castelnau, 1855) di Sungai Ciliwung. *Jurnal Ikhtologi Indonesia*, **15** (3): 257-266.
- Al-Attar, A.M. 2005. Biochemical Effects of Short-term Cadmium Exposure on the Freshwater Fish, *Oreochromis niloticus*. *Journal of Biological Sciences*. **5** (3) : 260-265.
- Amalia, W.R., Bunda, H., Akhmad, N. 2016. Kandungan Kadmium (Cd) pada Air, Daging serta Mikroanatomi Insang Ikan Kelabau (*Osteochillus melanopleurus*) di Muara Sungai Martapura. *Prosiding Seminar Nasional*, 84-92.
- Ambreen, F., and Javed, M. 2016. Effects of 30 Day Sub-Lethal Exposure of Cadmium and Lead Mixture on DNA Damage in Fish. *The Journal of Animal & Plant Sciences*. **26** (3) : 674-679
- Amutha, C., and Subramanian, P. 2013. Cadmium Alters The Reproductive Endocrine Disruption and Enhancement of Growth in The Early and Adult Stages of *Oreochromis mossambicus*. *Fish Physiology and Biochemistry*. **39** (2) : 351-361.
- Aryulina, D., Muslim, C., Manaf, S., Winarni, E.W. 2006. *Biologi 3*. ESIS. Jakarta. 356 hal.
- Bryan, G.W. 1976. *Heavy Metal Contamination in the Sea*. Dalam: Johnston R., editor. *Marine Polution*. New York: Academic Press.
- Cholifah, E.D. 2016. *Pengaruh Induksi Hormon Oocyte Developer (Oodev) terhadap Kematangan Gonad Calon Induk Ikan Nilem (Osteochilus hasselti)*. Skripsi. Fakultas Perikanan dan Kelautan, Universitas Airlangga, Surabaya.
- Cholik, F., Poernomo, R.P., Jauzi, A. 2005. *Aquakultur : Tumpuan Harapan Masa Depan Bangsa*. Masyarakat Perikanan Nusantara dan Taman Akuarium Air Tawar – TMII, Jakarta.

- Chouchene, L., Pellegrini, E., Gueguen, M.M., Hinfrey, N., Brion, F., Piccini, B., Kah, O., Said, K., Messaoudi, I., Pakdel, F. 2016. Inhibitory effect of cadmium on estrogen signaling in zebrafish brain and protection by zinc. *Journal of Applied Toxicology*, **36** (6) : 863-871.
- Connel, D.W., dan Miller, G.J. 1995. *Kimia dan Ekotoksikologi Pencemaran*. Universitas Indonesia Press. Jakarta.
- Cowi. 2003. Cadmium Review. *Nordic Council of Minister Report*, **1** (4) : 1-26.
- Darmono. 2001. *Lingkungan Hidup dan Pencemaran : Hubungannya dengan Toksikologi Senyawa Logam*. Universitas Indonesia Press. Jakarta.
- Djuhanda, T. 1981. *Dunia Ikan*. Armiko. Bandung. 191 hal.
- Effendie, M.I. 1997. *Biologi perikanan*. Yayasan Pustaka Nusatama. Yogyakarta. 363 hal.
- Emilia, I., Suheryanto, Hanafiah, Z. 2013. Distribusi Logam Kadmium dalam Air dan Sedimen di Sungai Musi Kota Palembang. *Jurnal Penelitian Sains*, **16**(2): 59-64.
- Fang, B., and Zhu, X. 2014. High Content of Five Heavy Metals in Four Fruits : Evidence from a Case Study of Pujiang Country, Zhejiang Province, China. *Food Control*, **39**: 62-67.
- Fauzi, R.P., Masykuri, M., Sunarto. 2015. *Nostoc Commune* Vaucher Ex Borneo dan Flahault sebagai Fikoremediator Logam Berat Kadmium (Cd(II)). *Jurnal Ekosains*, **7**(2) : 1-21.
- Flagellata, P., Sri, W., Muhammad, J., Hammy, Gholib, Armansyah, T.T.R., Muslim, A. 2018. Immunohistochemical Study of the Immunoreactive Follicle Stimulating Hormone (ir-FSH) Cells Distribution in Pituitary Gland of Rat (*Rattus norvegicus*). *Jurnal Medika Veterinaria*, **12**(1) : 1-8.
- Fujaya, Y. 2004. *Fisiologi Ikan*. PT. Rineka Cipta. Jakarta. 179 hal.
- Gallego, S.M., Pena, L.B., Barcia, R.A., Azpilicueta, C.E., Lannone, M.F., Rosales, E.P., Zawoznik, M.S., Groppa, M.D., Benavides, M.P. 2012. Untravelling Cadmium Toxicity and Tolerance in Plants : Insight into Regulatory Mechanisms. *Environ. and Exp. Botany*, **83** : 33-46.
- Geneaid. 2017. *Total RNA Mini Kit Protocol*. Geneaid Biotech Ltd. New Taipei. Taiwan

- Hachfi, L., Sylvain, C., Remy, S. 2012. Impact of Endocrine Disrupting Chemicals (EDCs) on Hypothalamic-Pituitary-Gonad-Liver (HPGL) Axis in Fish. *World Journal of Fish and Marine Sciences*, **4** (1) : 14-30.
- Hadi, F., Arifeen, M.Z.U., Aziz, T., Nawab, S., Nabi, G. 2015. Phytoremediation of Cadmium by *Ricinus communis* L. In Hydroponic Condition. *Journal Agricultur American-Eurasian & Environ*, **15**(6): 2 p.
- Hakim, A.L. 2016. *Bioakumulasi Logam Berat Kadmiun (Cd) pada Udang Windu (Penaeus monodon) di Tambak Tradisional Kecamatan Jabon, Kabupaten Sidoarjo*. Skripsi. Fakultas Perikanan dan Kelautan, Universitas Airlangga, Surabaya.
- Hardjamulia, A., dan Atmawinata, S. 1980. *Teknik Hipofisasi Beberapa Jenis Ikan Air Tawar*. Lokakarya Nasional Teknologi Tepat Guna Bagi Pengembangan Perikanan Budidaya Air Tawar Bogor, Bogor. 1-16 hal.
- Hassanzadeh, Nasrin, Mortazavi, Samar. 2016. Sublethal Effects of Cadmium Chloride to Testis of Zebrafish (*Danio rerio*). *Journal of the Persian Gulf*, **7** (23) : 51-60.
- Hayati, A. 2019. *Biologi Reproduksi Ikan*. Airlangga University Press. Surabaya. 110 hlm.
- Hayati, A., Rose, I.U., Dwi, W. 2014. Pengaruh Kadmiun terhadap Struktur Histologis Insang Ikan Lele (*Clarias batrachus*). *Journal of Mathematics and Science*, **17**(2) : 42-45.
- Hutagalung, H.P. 1984. Logam Berat dalam Lingkungan Laut. *Jurnal OCEANA*, **9**(1) : 1-10.
- Irawan, F., Bhagawati, D., Sugiharto. 2009. Anatomi dan Sistem Rangka Ikan Nilem Seruni, Mangut, dan Nilem Gunung (*Osteochilus* spp.). *Prosiding Seminar Nasional VI* : 217-224.
- Istarani, F., dan Pandebesie, E.S. 2014. Studi Dampak Arsen (As) dan Kadmiun (Cd) terhadap Penurunan Kualitas Lingkungan. *Jurnal Teknik POMITS*, **3**(1) : 1-6.
- Jadhao, A.G., Paul, P.L., Rao, P.D. 1994. Effect of cadmium chloride on the pituitary, thyroid and gonads in the catfish, *Clarias batrachus* (Linn.). *Funct Dev Morphol*, **4**(1): 39-44.
- Javed, M.T., Tanwir, K., Akram, M.S., Shahid, M., Niazi, N.K., Lindberg, S. 2019. Phytoremediation of Cadmium-Polluted Water/Sediment by Aquatic Macrophytes : Role of Plant-Induced pH Changes. *Cadmium Toxicity and Tolerance in Plants: From Physiology to Remediation*. 1-38.

- Julhidah. 2017. *Kadar Logam Kadmium (Cd) dan Timbal (Pb) pada Hati, Ginjal, dan Daging Ikan Kembung (Rastraliger kanagurta) di Pantai Losari Makassar*. Skripsi. Fakultas Sains dan Teknologi, UIN Alauddin, Makassar.
- Junaidi, Azrita, Hafrijal, S. 2015. Fecundity of Bonylip Barb (*Osteochilus vittatus* Cyprinidae) in Different Waters Habitats. *International Journal of Fisheries and Aquatic Studies*.
- Juniawan, A., Rumhayati, B., Lamuyanto, B. 2013. Karakteristik Lumpur Lapindo dan Fluktuasi Logam Berat Pb dan Cu pada Sungai Porong dan Aloo. *Jurnal Sains dan Terapan Kimia*, 7(1) : 1-10.
- KAPABIOSYSTEM. 2017. *KAPA SYBR® FAST One-Step qRT-PCR Master Mix (2X) Kit protocol*. Manufacturing, R&D Cape Town. South Africa.
- Kraak, G.V.D., Suzuki, K., Peter, R.E., Itoh, H., Kawauchi, H. 1992. Properties of common carp gonadotropin I and gonadotropin II. *General and Comparative Endocrinology*, 85: 217-229
- Kumari, M., and Dutt, N.G. 1991. Cadmium-induced histomorphological changes in the testis and pituitary gonadotrophic hormone secreting cells of the cyprinid *Puntius sarana*. *Ital J Zool*, 58 : 71-76.
- Kurniaji, A. 2015. *Endrokinologi Ikan (Pengamatan Kelenjar Endrokin Ikan Mas dan Lele)*. Tesis. Ilmu Akuakultur Sekolah Pascasarjana, Institut Pertanian Bogor, Bogor.
- Lacroix, A., and Hontela, A. 2004. A Comparative assessment of the adrenotoxic effects of cadmium in two teleost species, rainbow trout *Oncorhynchus mykiss* and yellow perch *Perca flavescens*. *Aquat Toxicol*, 67 : 13-21.
- Lafuente, A., Cano, P., Esquifino, A.I. 2003. Are cadmium effects on plasma gonadotropins, prolactin, ACTH, GH and TSH levels, dosedependent?. *Biometals*, 16: 243-50.
- Liyana, S.H., Luthriana, A.S., Agustono. 2019. Evaluasi Pengaruh Hormon Gonadotropin pada Tingkat Kematangan Gonad Ikan Botia (*Chromobotia macracanthus*). *Jurnal Perikanan Pantura (JPP)*, 2 (2) : 96-105.
- Matsuwaki T, Kayasuga Y, Yamanouchi K, Nishihara M. 2006. Maintenance of gonadotropin secretion by glucocorticoids under stress conditions through the inhibition of prostaglandin synthesis in the brain. *Endocrinology*. 147 : 1087-1093.

- Muhajir. 2009. *Studi Kandungan Logam Berat Kadmium (Cd) pada Kerang Darah (Anadara granosa) dari Beberapa Pasar Kota Malang*. Skripsi. Jurusan Biologi, Fakultas Sains dan Teknologi, UIN Maulana Malik Ibrahim, Malang.
- Nagahama, Y., Yoshikuni, M., Yamashita, M., Tokumoto, T., Katsu, Y. 1995. Regulation of oocyte growth and maturation in fish. *Current Topics in Development Biology*, **30** : 103-145.
- Nampoothiri, L.P., dan Gupta, S. 2006. Simultaneous effect of lead and cadmium on granulosa cells : a cellular moder for ovarian toxicity. *Reproductive Toxicology*, **21** : 179-185.
- Obaiah, J., Vivek, C., Padmaja, B., Sridhar, D., Peera, K. 2020. Cadmium Toxicity Impact On Aquatic Organisms-Oxidative Stress: Implications For Human Health, Safety And Environmental Aspects-A Review. *International Journal Of Scientific & Technology Research*, **9** (3) : 4172-4185.
- Odum. 1971. *Fundamental of ecology*. Third Edition. W.B Soynders Co. Philadelphia. 697 p.
- Olsson, P.E., Kling, P., Petterson, C., Silversand, C. 1995. Interaction of cadmium and estradiol-17 beta on metallothionein and vitellogenin synthesis in rainbow trout (*Oncorhynchus mykiss*). *Biochem J*, **307** :197-203.
- Palar, H. 2004. *Pencemaran dan Toksikologi Logam Berat*. PT. Rineka Cipta. Jakarta.
- _____. 2008. *Pencemaran dan Toksikologi Logam Berat Cetakan ke-4*. PT. Rineka Cipta. Jakarta.
- Prabowo, R., Purwanto, Sunoko, H.R. 2016. Akumulasi Cadmium (Cd) pada Ikan Nilem sebagai Bioindikator Pencemaran Logam Berat di Sungai Kaligarang. *Jurnal MIPA*, **39**(1) : 1-10.
- Prado, M., Boix, A., Holst, C.V. 2013. Development of A Real-Time PCR Method for The Simultaneous Detection of Mackerel and Horse Mackerel. *Food Control*, **34** : 19-23.
- Prayogo, N.A., Hidayati, A., Siregar, A.S., Yunasfi. 2016. Uji Toksisitas Letal dan Subletal Logam Berat Merkuri (Hg) terhadap Ikan Nilem (*Osteochilus hasselti*). *OmniAkuatika*. **12** (1) : 86-94.
- Prayogo, N.A., Siregar, A.S., Sukardi, P. 2016. The Disruptive Effect Mercurychloride (HgCl) on Gene Expression of cGnRH-II, sGnRH, and Estradiol Level in Silver Sharkminnow (*Osteochillus hasseltii* C.V.). *Turkish Journal of Fisheries and Aquatic Sciences*, **16** : 1003-1009.

- Prayogo, N.A., Pramono, T.B., Siregar, A.S., Sukardi, P., Kawaichi, M. 2019. Effects of Photoperiods on the Cloned GtH Genes in Hard-Lipped Barb (*Osteochillus hasseltii*). *BIOTROPIA*, **26**(3) : 191-200.
- Purbonegoro, T. 2017. Faktor-faktor yang Mempengaruhi Toksisitas Bahan Pencemar terhadap Organisme Perairan. *Oseana*, **42** (2) : 12-22.
- Putra, W.K.A., dan Tengku, S.R. 2017. Pengaruh Hormon Pregnan Mare Serum (PMSG) Murni dan Kombinasi terhadap Gonadosomatik Indeks, Hepatosomatik Indeks Ikan Bawal Bintang (*Trachinotus blochii*). *Journal of Aquaculture Science*, **2**(2) : 61-71.
- Rachman, B., Agus, S., Dwi, H.Y. 2015. *Inovasi Produksi Telur pada Ikan Nilem (Osteochilus haseltii) melalui Induksi Hormon dan Pengkayaan Nutrisi*. Tehnikal Report. Balai Besar Perikanan Budidaya Air Tawar Sukabumi, Sukabumi.
- Radiopoetro. 1997. *Zoologi*. Erlangga. Jakarta.
- Rafiuddin, M.A. 2014. *Kloning, Karakterisasi dan Rekayasa Ekspresi Gen Follicle Stimulating Hormone Subunit B pada Ikan Patin Siam Pangasianodon hypophthalmus untuk mempercepat Pematangan Gonad*. Tesis. Sekolah Pascasarjana Institut Pertanian Bogor, Bogor.
- Rizald, M.R. 2010. *Toksikologi Kelautan*. Sekretariat Dewan Kelautan Indonesia. Jakarta.
- Roberts, D. S., Hu, Y., Lund, I. V., Brooks-Kayal, A. R., Russek, S. J. 2006. Brain-Derived Neurotrophic Factor (BDNF)-Induced Synthesis of Early Growth Response Factor 3 (Egr3) Controls the Levels of Type I GABA Receptor $\alpha 4$ Subunits in Hippocampal Neurons. *Journal of Biological Chemistry*, **281** (40).
- Rumahlatu, D., Corebima, A.D., Amin, M., Rachman, F. 2012. Kadmium dan efeknya terhadap Ekspresi Protein Metallothionein pada *Deadema setosum* (Echinoidea; Echinodermata). *Jurnal Penelitian Perikanan*, **1**(1) : 26-35.
- Saanin, H. 1984. *Taksonomi dan Kunci Identifikasi Ikan Jilid I dan II*. Bandung : Bina Tjipta.
- Sahetapy, J.M. 2011. *Toksisitas Logam Berat Timbal (Pb) dan Pengaruhnya pada Konsumsi Oksigen dan Respon Hematologi Juvenil Ikan Kerapu Macan*. Tesis. Pasca Sarjana IPB. Bogor.
- Setiabudi, D. 2008. *Pematangan Gonad Akhir*. Skripsi. Fakultas Perikanan dan Ilmu Kelautan, Departemen Budidaya Perairan, Institut Pertanian Bogor, Bogor.

- Shah, S.L., and Altindag, A. 2005. Effects of Heavy Metal Accumulation on the 96-h LC₅₀ Values in Tench *Tinca tinca* L., 1758. *Turk J Anim Sci*, **29** : 139-144.
- Shanthanagouda, A.H., and Sachin O. K. 2018. Breeding and spawning of fishes: Role of endocrine gland. *International Journal of Fisheries and Aquatic Studies*, **6(4)** : 472-478.
- Simoniello, P., Francesca, T., Rosaria, S., Silvana, F., Chiara, M.M. 2010. Cadmium in *Podaris sicula* Disrupts Prefollicular Oocyte Recruitment by Mimicking FSH Action. *The Open Zoology Journal*, **3**: 37-41.
- Siregar, A.S., and Prayogo, N.A. 2017. The Disruptive effect of mercury chloride (HgCl) on Gene Expression of Gonadotrophin Hormones and Testosteron Level in Male Silver Sharkminnow (*Osteochilus hasseltii* C.V) (Teleostei : Cyprinidae). *The European Zoological Journal*, **84(1)** : 436-443.
- Soemirat, J. 2005. *Toksikologi Lingkungan*. Gadjah Mada University Press. Yogyakarta
- Suparjo, M.N. 2010. Kerusakan Jaringan Insang Ikan Nila (*Oreochromis niloticus* L) Akibat Deterjen. *Jurnal Saintek Perikanan*, **5(2)** : 1-7.
- Supriharjono. 1978. *Kondisi Kualitas Air di Saluran-Saluran Daerah Persawahan, Persawahan-Pemukiman dan Pemukiman, Delta Upang Sumatera Selatan*. Pasca Sarjana Institut Pertanian Bogor, Bogor.
- Supriharyono. 2002. *Pelestarian dan Pengelolaan Sumber Daya Alam di Wilayah Pesisir Tropis*. Gramedia Pustaka Umum. Jakarta.
- Suryono, A. 2006. Bioakumulasi Logam Berat melalui Sistem Jaringan Makanan dan Lingkungan pada Kerang Bulu *Anadara inflata*. *Jurnal Ilmu Kelautan*, **9(1)** :1-9.
- Susanto. 2001. *Budidaya Ikan Air Tawar*. Jakarta : Penebar Swadaya.
- Sutamihardja. 2006. *Toksikologi Lingkungan*. Buku Ajar Program Studi Ilmu Lingkungan Universitas Indonesia. Jakarta.
- Sutrisno dan Kuntastuti, H. 2015. Pengelolaan Cemaran Kadmium pada Lahan Pertanian di Indonesia. *Buletin Palawija*, **13(1)** : 83-91.
- Swanson, P., Dickey, J.T., Campbell, B., 2003. Biochemistry and physiology of fish gonadotropins. *Fish Physiology and Biochemistry*, **28** : 53-59.

- Tahapari, E., dan Raden, R.S.P.S.D. 2013. Peningkatan Performa Reproduksi Ikan Patin Siam (*Pangasianodon hypophthalmus*) pada Musim Kemarau Melalui Induksi Hormonal. *Berita Biologi*, **12**(2) : 203-209.
- Thermo Scientific. 2016. DNase I, RNase-free : Removal of genomic DNA from RNA preparations. Thermo Fisher Scientific Inc. California.
- Vetillard, A., and Bailhache, T., 2005. Cadmium : An Endocrine Disrupter That Affects Gene Expression in the Liver and Brain of Juvenile Rainbow Trout. *Biology of Reproduction*, **72**: 119-126.
- Wijayanti, G.E., Soeminto, Simanjuntak, S.B.I. 2009. Profil Hormon Reproduksi dan Gametogenesis pada Gurame (*Osphronemus gourami* Lac) Betina. *Jurnal Akuakultur Indonesia*, **8**(1) : 77-89.
- Willoughby, S. 1999. *Manual of Salmonid Farming*. London : Black Well Science.
- Zahri, A., Agus, O.S., Muhammad, Z.J. 2018. Profil Hormon FSH, LH, dan estradiol serta kadar glukosa darah sidat, *Anguilla bicolor bicolor* (Mc Clelland, 1844) yang dirangsang hormone HCG, MT, E2 dan Anti Dopamin. *Jurnal Iktiologi Indonesia*, **18**(1) : 57-67.

