

DAFTAR PUSTAKA

- Abubakar, M. B., Aini, I., Omar, A. R., and Hair-Bejo, M. 2011. Cloning and expression of highly pathogenic avian influenza virus full-length nonstructural gene in *Pichia pastoris*. *BioMed. Res. Intl.*
- Alexander, D. J., and Capua, I. 2008. Avian influenza in poultry. *World's Poultry Science Journal*, 64(04): 513-532.
- Andesfha, E., Ramlah, N.K., Djusa, E.R. and Mucharini, H., 2013. Identifikasi molekuler dinamika genetik virus *avian influenza* subtiipe H5N1 *clade* 2.1. 3 dan 2.3. 2. *Buletin Pengujian Mutu Obat Hewan*, 20: 34-45.
- Basuno, E. 2008 Review Dampak Wabah dan Kebijakan Pengendalian Wabah Avian Influenza di Indonesia. *Analisis Kebijakan Pertanian*, 6:4: 314-334.
- Behzadian, F., Goodarzi, Z., Fotouhi, F. and Saberfar, E., 2013. Baculoviral Co-Expression of HA, NA and M1 Proteins of Highly Pathogenic H5N1 Influenza Virus in Insect Cells. *Jundishapur J. Microbiol*, 6(9).
- Bernard R.J and Pasternak. J.J. 2010. Molecular Biotechnology; Principles and Applications of Recombinant DNA. 4th Eds, ASM press, Washington DC: 47-92.
- Bogs, J., J. Veits., S. Gohrbandt., J. Hundt., O. Stech., A. Breithaupt., J. P. Teifke., T. C. Mettenleiter., J. Stech. 2010. Highly Pathogenic H5N1 Influenza Viruses Carry Virulence Determinants beyond the Polybasic Hemagglutinin Cleavage Site. *PLoS ONE* 5(7): e11826.
- Bogs, J., Kalthoff, D., Veits, J., Pavlova, S., Schwemmle, M., Mänz, B., Mettenleiter, T.C. and Stech, J., 2011. Reversion of PB2-627E to-627K during replication of an H5N1 clade 2.2 virus in mammalian hosts depends on the origin of the nucleoprotein. *J. Virol*, 85(20): 10691-10698.
- Bouvier, N. M., and Palese, P. 2008. The biology of influenza viruses. *Vaccine*, 26: D49-D53.
- Boyce, W. M., Sandrock, C., Kreuder-Johnson, C., Kelly, T., and Cardona, C. 2009. Avian influenza viruses in wild birds: a moving target. *Comp Immunol Microb*, 32(4): 275-286.

- Brown T.A. 2006. Gene Cloning and DNA Analysis; an Introduction. 7th Eds, Willey Blackwell, USA: 175-190.
- Butt, K.M., Smith, G.J., Chen, H., Zhang, L.J., Leung, Y.C., Xu, K.M., Lim, W., Webster, R.G., Yuen, K.Y., Peiris, J.M. and Guan, Y., 2005. Human infection with an avian H9N2 influenza A virus in Hong Kong in 2003. *J. Clin Microbiol*, 43(11): 5760-5767.
- Campitelli, L., Ciccozzi, M., Salemi, M., Taglia, F., Boros, S., Donatelli, I., Rezza, G. 2006. H5N1 influenza virus evolution: a comparison of different epidemics in birds and humans (1997-2004). *J. Gen. Virol* 87: 955-960.
- Capua, I. and Marangon, S., 2003. The use of vaccination as an option for the control of avian influenza. *Avian Pathology*, 32(4), 335-343.
- Charlton, B., Crossley, B. and Hietala, S., 2009. Conventional and future diagnostics for avian influenza. *Comp Immunol Microb*, 32(4): 341-350.
- Chen, B.J. and Lamb, R.A., 2008. Mechanisms for enveloped virus budding: can some viruses do without an ESCRT. *Virology*, 372(2), 221-232.
- Chen, L.M., Blixt, O., Stevens, J., Lipatov, A.S., Davis, C.T., Collins, B.E., Cox, N.J., Paulson, J.C. and Donis, R.O., 2012. In vitro evolution of H5N1 avian influenza virus toward human-type receptor specificity. *Virology*, 422(1): 105-113.
- Chen, L.M., Rivailler, P., Hossain, J., Carney, P., Balish, A., Perry, I., Davis, C.T., Garten, R., Shu, B., Xu, X. and Klimov, A., 2011. Receptor specificity of subtype H1 influenza A viruses isolated from swine and humans in the United States. *Virology*, 412(2): 401-410.
- Chen, Y., Xu, F., Fan, X., Luo, H., Ge, S., Zheng, Q., Xia, N., Chen, H., Guan, Y. and Zhang, J., 2008. Evaluation of a rapid test for detection of H5N1 avian influenza virus. *J. Virol. Methods*, 154(1): 213-215.
- Cheung, T.K. and Poon, L.L., 2007. Biology of influenza a virus. *Ann. N.Y. Acad. Sci.*, 1102(1): 1-25.
- Choi, Y.K., Nguyen, T.D., Ozaki, H., Webby, R.J., Puthavathana, P., Buranathal, C., Chaisingh, A., Auewarakul, P., Hanh, N.T.H., Ma, S.K. and Hui, P.Y., 2005. Studies of H5N1 influenza virus infection of pigs by using viruses isolated in Vietnam and Thailand in 2004. *Journal of virology*, 79(16), 10821-10825.

- Clayville, L.R., 2011. Influenza update: A review of currently available vaccines. *Pharmacy and Therapeutics*, 36(10): 659.
- Costa, T.P., Brown, J.D., Howerth, E.W. and Stallknecht, D.E., 2010. Effect of a prior exposure to a low pathogenic avian influenza virus in the outcome of a heterosubtypic low pathogenic avian influenza infection in mallards (*Anas platyrhynchos*). *Avian. Dis*, 54(4): 1286-1291.
- Curran, J.M., Robertson, I.D., Ellis, T.M. and Selleck, P.W., 2013. Evaluation of avian influenza serologic and virologic diagnostic methods in wild anseriformes and charadriiformes. *Avian. Dis*, 58(1): 53-59.
- Curran, J.M., Robertson, I.D., Ellis, T.M., Selleck, P.W. and O'Dea, M.A., 2013. Variation in the responses of wild species of duck, gull, and wader to inoculation with a wild-bird-origin H6N2 low pathogenicity avian influenza virus. *Avian. Dis*, 57(3): 581-586.
- Daoust, P.Y., van de Bildt, M., van Riel, D., van Amerongen, G., Bestebroer, T., Vanderstichel, R., Fouchier, R.A.M. and Kuiken, T., 2012. Replication of 2 subtypes of low-pathogenicity avian influenza virus of duck and gull origins in experimentally infected mallard ducks. *Vet. Pathol*, 1-12.
- Darminto, 2008. Perkembangan Teknologi Pengendalian Penyakit Avian Influenza. Balai Besar Penelitian veteriner, Bogor.
- De Vries, E., Tscherne, D.M., Wienholts, M.J., Cobos-Jiménez, V., Scholte, F., García-Sastre, A., Rottier, P.J. and De Haan, C.A., 2011. Dissection of the influenza A virus endocytic routes reveals macropinocytosis as an alternative entry pathway. *PLoS Pathog*7(3): e1001329.
- Dharmayanti, N.L.P.I., R. Indriani., R. Damayanti., A. Wiyono., R.M.A. Adjid, 2005. Karakter virus Avian Influenza Isolat Indonesia pada Wabah Gelombang ke Dua. *JITV*, 10 (3): 217-225.
- Dharmayanti, N.L.P.I., R. Hartawan., D.A. Hewajuli., Hardiman., H. Wibawa, dan Pudjiatmoko, 2013 Karakteristik Molekuler dan Patogenesitas Virus H5N1 clade 2.3.2 asal Indonesia. *Bulletin Laboratorium Veteriner*, 13: 99-113.
- Dharmayanti, N.L.P.I., D. Kusuma, dan B. Sjamsul. 2012. Mewaspadaai Perkembangan Avian Influenza (AI) dan Keragaman Genetik Virus AI/H5N1 di Indonesia. *Pengembangan Inovasi Pertanian* 5(2): 124-141
- Din Keswannak Aceh, 2013 Laporan surveilan penyakit-penyakit viral pada unggas, DinKeswannak Prov Aceh.

- Ducatez, M.F., Olinger, C.M., Owoade, A.A., De Landtsheer, S., Ammerlaan, W., Niesters, H.G.M., Osterhaus, A.D.M.E., Fouchier, R.A.M. and Muller, C.P., 2006. Avian flu: multiple introductions of H5N1 in Nigeria. *Nature*, 442(7098), 37-37.
- Dudek, S.E., Wixler, L., Nordhoff, C., Nordmann, A., Anhlan, D., Wixler, V. and Ludwig, S., 2011. The influenza virus PB1-F2 protein has interferon antagonistic activity. *Biol chem*, 392(12), 1135-1144.
- Duvvuri, V.R.S.K., B. Duvvuri, W.R. Cuff, G.E. Wu, and J. Wu. 2009. Role of positive selection pressure on the evolution of H5N1 hemagglutinin. *Genomics, Proteomics and Bioinformatics*. 7, 1-10.
- Dwyer, D.E., Smith, D.W., Catton, M.G. and Barr, I.G., 2006. Laboratory diagnosis of human seasonal and pandemic influenza virus infection. *Med J Aust*, 185(10), 48.
- Easterday, B. C., V. S. Hinshaw, and D. A. Halvorson. 1997. *Influenza*, dalam B. W. Calnek, H. J. Barnes, C. W. Beard, L. R. McDougald, and Y. M. Saif (eds). *Diseases of poultry*. Edisi X, Iowa State University Press, Ames, Iowa, USA, 583–605.
- Eisfeld, A.J., Neumann, G. and Kawaoka, Y., 2014. Influenza A virus isolation, culture and identification. *N. Prot*, 9(11), 2663-2681.
- Fereidouni, S.R., Grund, C., Häuslaigner, R., Lange, E., Wilking, H., Harder, T.C., Beer, M. and Starick, E., 2010. Dynamics of specific antibody responses induced in mallards after infection by or immunization with low pathogenicity avian influenza viruses. *Avian. Dis*, 54(1), 79-85.
- Ferreira, H.L., Vangeluwe, D., Van Borm, S., Poncin, O., Dumont, N., Ozhelvaci, O., Munir, M., van den Berg, T. and Lambrecht, B., 2015. Differential Viral Fitness Between H1N1 and H3N8 Avian Influenza Viruses Isolated from Mallards (*Anas platyrhynchos*). *Avian. Dis*, 59(4), 498-507.
- Fournier, E., Moules, V., Essere, B., Paillart, J.C., Sirbat, J.D., Isel, C., Cavalier, A., Rolland, J.P., Thomas, D., Lina, B. and Marquet, R., 2012. A supramolecular assembly formed by influenza A virus genomic RNA segments. *Nucleic acids res*, 40(5), 2197-2209.
- Gambaryan, A., Tuzikov, A., Pazynina, G., Bovin, N., Balish, A. and Klimov, A., 2006. Evolution of the receptor binding phenotype of influenza A (H5) viruses. *Virology*, 344(2), 432-438.

- Gambaryan, A.S., Matrosovich, T.Y., Philipp, J., Munster, V.J., Fouchier, R.A., Cattoli, G., Capua, I., Krauss, S.L., Webster, R.G., Banks, J. and Bovin, N.V., 2012. Receptor-binding profiles of H7 subtype influenza viruses in different host species. *J. Virol*, 86(8), 4370-4379.
- García-Sastre, A., 2012. The neuraminidase of bat influenza viruses is not a neuraminidase. *Proc. Natl. Acad. Sci. U.S.A*, 109 (46), 18635-18636.
- Gerber, M., Isel, C., Moules, V. and Marquet, R., 2014. Selective packaging of the influenza A genome and consequences for genetic reassortment. *Trends. Microbiol*, 22(8), 446-455.
- Gilbert, M., P. Chaitaweessutb, T.S. Parakamawongsa, P.T. Tiensin, W.H. Kalpravid and W.J. Slingenber. 2006. Free-grazing ducks and highly pathogenic avian influenza, Thailand. *EID CDC* 12: 56 – 62.
- Guo, C.T., Takahashi, N., Yagi, H., Kato, K., Takahashi, T., Yi, S.Q., Chen, Y., Ito, T., Otsuki, K., Kida, H. and Kawaoka, Y., 2007. The quail and chicken intestine have sialyl-galactose sugar chains responsible for the binding of influenza A viruses to human type receptors. *Glycobiology*, 17(7), 713-724.
- Gyles, C.L., 2010. Influenza in animals. *Animal Health Res. Rev*, 11(01), 1-2.
- Hagag, I.T., Mansour, S.M., Zhang, Z., Ali, A.A., Ismaiel, E.B.M., Salama, A.A., Cardona, C.J., Collins, J. and Xing, Z., 2015. Pathogenicity of Highly Pathogenic Avian Influenza Virus H5N1 in Naturally Infected Poultry in Egypt. *PLoS ONE* 10(5): 0120061.
- Hamilton, B.S., Whittaker, G.R. and Daniel, S., 2012. Influenza virus-mediated membrane fusion: determinants of hemagglutinin fusogenic activity and experimental approaches for assessing virus fusion. *Viruses*, 4(7), 1144-1168.
- Haryanto, A., B. Krisanti, S.H. Irianingsih and D.W. Yudianingtias. 2012. Molecular Diagnosis of Avian Influenza Virus Type A and Subtype H5N1 by Amplification of its M and H5 gene Using One Step Simplex RT-PCR. *J Vet*. 13 (2), 92-101.
- Haryanto, A., R. Ermawati, M. Purwaningrum, D.W. Yudianingtias, M.H. Wibowo and C.R. Tabbu. 2010. Amplification of Rapid Diagnosis Method for Avian Influenza Virus H5N1 Using Single Step Multiplex RT-PCR. *J Vet*. 11 (4) 210-219.

- Hassan, M.K., Jobre, Y., Arafa, A., Abdelwhab, E.M., Kilany, W.H., Khoulosy, S.G., Bakry, N.R., Baile, E., Ali, A., Ankers, P. and Lubroth, J., 2013. Detection of A/H5N1 virus from asymptomatic native ducks in mid-summer in Egypt. *Arch virol*, 158(6), 1361-1365.
- Hause BM, Collin EA, Liu R, Huang B, Sheng Z, Lu W, Wang D, Nelson EA, Li F. 2014. Characterization of a novel influenza virus in cattle and swine: proposal for a new genus in the *Orthomyxoviridae* family. *mBio* 5(2):e00031-14.
- Hause, B.M., Ducatez. M., Collin. E.A., Ran, Z., Liu, R., *et al.* 2013. Isolation of a Novel Swine Influenza Virus from Oklahoma in 2011 Which Is Distantly Related to Human Influenza C Viruses. *PLoS Pathog* 9(2): e1003176.
- Heider, A., Mochalova, L., Harder, T., Tuzikov, A., Bovin, N., Wolff, T., Matrosovich, M. and Schweiger, B., 2015. Alterations in hemagglutinin receptor-binding specificity accompany the emergence of highly pathogenic avian influenza viruses. *J. Virol*, 89(10), 5395-5405.
- Helmi, T.Z dan B. Panjaitan, 2011. Deteksi dan Identifikasi Virus Avian Influenza pada Beberapa Titik Kritis Cemarkan di Pasar Tradisional: *Laporan Hasil Penelitian Dosen Muda*. FKH-Unsyiah, Aceh.
- Helmi, T.Z., R, Widayanti., A, Haryanto. 2012 Analisis Filogenetik Isolat Virus Avian Influenza Subtipe H5N1 Asal Provinsi Aceh. *JKH.*, 6 (1), 22-27.
- Helmi, T.Z., R, Widayanti., A, Haryanto. 2014 Penentuan Subtipe Virus Avian Influenza dengan Metode *Single Step Multiplex Reverse Transcriptase-Polymerase Chain Reaction* (RT-PCR) Isolat Asal Provinsi Aceh. *JKH.*, 8 (1), 72-75.
- Hill, S.C., Lee, Y.J., Song, B.M., Kang, H.M., Lee, E.K., Hanna, A., Gilbert, M., Brown, I.H. and Pybus, O.G., 2015. Wild waterfowl migration and domestic duck density shape the epidemiology of highly pathogenic H5N8 influenza in the Republic of Korea. *Infect Genet Evol.*, 34, 267-277.
- Horimoto, T. and Kawaoka, Y., 2001. Pandemic threat posed by avian influenza A viruses. *Clin Microbiol Rev*, 14(1), 129-149.
- Hulse-Post, D.J., Sturm-Ramirez, K.M., Humberd, J., Seiler, P., Govorkova, E.A., Krauss, S., Scholtissek, C., Puthavathana, P., Buranathai, C., Nguyen, T.D. and Long, H.T., 2005. Role of domestic ducks in the propagation and biological evolution of highly pathogenic H5N1 influenza viruses in Asia. *Proc. Natl. Acad. Sci.U.S.A.* 102(30), 10682-10687.

- Invitrogen, 2010. Champion™ pET SUMO Protein Expression System, Manual part no. 25-0709. Life Technology.
- Jeong, O.M., Kim, M.C., Kim, M.J., Kang, H.M., Kim, H.R., Kim, Y.J., Joh, S.J., Kwon, J.H. and Lee, Y.J., 2009. Experimental infection of chickens, ducks and quails with the highly pathogenic H5N1 avian influenza virus. *J Vet Sci*, 10(1), 53-60.
- Jones, J.C., Sonnberg, S., Webby, R.J. and Webster, R.G., 2015. Influenza A (H7N9) Virus Transmission between Finches and Poultry. *Emerg Infect Dis*, 21(4), 619.
- Kajihara, M., S. Yoshihiro., S. Kosuke., M. Kenji., O. Masatoshi., T. Ayato, and K. Hiroshi. 2013. The PB2, PA, HA, NP, and NS genes of a highly pathogenic avian influenza virus A/whooper swan/Mongolia/3/2005 (H5N1) are responsible for pathogenicity in ducks, *J. Virol.* 10, 45.
- Kamps BS, Holfmann C, Preiser W. 2007. Avian Influenza. <http://www.InfluenzaReport.com/> [dalam] : Mohamad, Kartono. 2007. Flu Burung. Jakarta : Komnas FBPI.
- Kang, H.M., Choi, J.G., Kim, K.I., Kim, B.S., Batchuluun, D., Erdene-Ochir, T.O., Kim, M.C., Kwon, J.H., Park, C.K. and Lee, Y.J., 2013. Pathogenicity in domestic ducks and mice of highly pathogenic H5N1 clade 2.3. 2.1 influenza viruses recently circulating in Eastern Asia. *Vet Microbiol*, 167(3), 327-333.
- Kapoor, S. and Dhama, K., 2014. *Insight into influenza viruses of animals and humans*. Springer.
- Keawcharoen, J., J. van den Broek., A. Bouma., T. Tiensin., A.D.M.E. Osterhaus, and H. Heesterbeek. 2011. Wild Birds and Increased Transmission of Highly Pathogenic Avian Influenza (H5N1) among Poultry, Thailand. *Emerg Infect Dis*. 17(6), 1016-1022.
- Keswan.Ditjennak, 2015. Perkembangan Kasus Avian Influenza (AI) pada Unggas Kondisi s/d 31 Maret 2015. Online: <http://keswan.ditjennak.pertanian.go.id/index.php/blog/read/berita/perkembangan-kasus-avian-influenza-ai-pada-unggas-kondisi-sd-31-maret-2015>. (Diakses tanggal 16 Januari 2016).
- Koopmans, M., Wilbrink, B., Conyn, M., Natrop, G., van der Nat, H., Vennema, H., Meijer, A., van Steenbergen, J., Fouchier, R., Osterhaus, A. and Bosman, A., 2004. Transmission of H7N7 avian influenza A virus to human beings during a large outbreak in commercial poultry farms in the Netherlands. *Lancet*, 363(9409), 587-593.

- Kovacova, A., G. Ruttkay-Nedecky, I.A. Haverlik, and S. Janecek. 2002. Sequence similarities and evolutionary relationships of influenza virus A hemagglutinins. *Virus Genes*. 24(1), 57-63.
- Krauss, S., Webster, R. G., & Jones, J. C. 2015. Replication Capacity of Avian Influenza A (H9N2) Virus in Pet Birds and Mammals, Bangladesh. *Emerg Infect Dis*. 21, (12), 2174-2177.
- Kuiken, T., 2013. Is low pathogenic avian influenza virus virulent for wild waterbirds?. *Proceedings of the Royal Society of London B: Biological Sciences*, 280(1763), 20130990.
- Lakdawala, S.S., Wu, Y., Wawrzusin, P., Kabat, J., Broadbent, A.J., Lamirande, E.W., Fodor, E., Altan-Bonnet, N., Shroff, H. and Subbarao, K., 2014. Influenza A virus assembly intermediates fuse in the cytoplasm. *PLoS Pathog*, 10(3), 1003971.
- Lee, C. W., and Saif, Y. M. 2009. Avian influenza virus. *Comp Immunol Microb*, 32(4), 301-310.
- Li, Y., Liu, L., Zhang, Y., Duan, Z., Tian, G., Zeng, X., Shi, J., Zhang, L. and Chen, H., 2011. New avian influenza virus (H5N1) in wild birds, Qinghai, China. *Emerg Infect Dis*, 17(2), 265-267.
- Li, Y., Xiao, H., Huang, C., Sun, H., Li, L., Su, J., 4 , Juncai Ma, J., Liu, D., Wang,H., Liu, W., & Gao, G. F. 2015. Distribution of sialic acid receptors and experimental infections with different subtypes of influenza A viruses in Qinghai-Tibet plateau wild pika. *Virol J*, 12(1), 63.
- Londt, B.Z., Nunez, A., Banks, J., Nili, H., Johnson, L.K. and Alexander, D.J., 2008. Pathogenesis of highly pathogenic avian influenza A/turkey/Turkey/1/2005 H5N1 in Pekin ducks (*Anas platyrhynchos*) infected experimentally. *Avian Pathol*, 37(6), 619-627.
- Maines, T.R., Lu, X.H., Erb, S.M., Edwards, L., Guarner, J., Greer, P.W., Nguyen, D.C., Szretter, K.J., Chen, L.M., Thawatsupha, P. and Chittaganpitch, M., 2005. Avian influenza (H5N1) viruses isolated from humans in Asia in 2004 exhibit increased virulence in mammals. *J. Virol*, 79(18), 11788-11800.
- Mänz, B., Schwemmle, M. and Brunotte, L., 2013. Adaptation of avian influenza A virus polymerase in mammals to overcome the host species barrier. *J. Virol*, 87(13), 7200-7209.

- Marinova-Petkova, A., Feeroz, M.M., Alam, S.R., Hasan, M.K., Akhtar, S., Jones-Engel, L., Walker, D., McClenaghan, L., Rubrum, A., Franks, J. and Seiler, P., 2014. Multiple introductions of highly pathogenic avian influenza H5N1 viruses into Bangladesh. *Emerging microbes & infections*, 3(2), e11.
- Marinova-Petkova, A., Georgiev, G., Seiler, P., Darnell, D., Franks, J., Krauss, S., Webby, R.J. and Webster, R.G., 2012. Spread of influenza virus A (H5N1) clade 2.3. 2.1 to Bulgaria in common buzzards. *Emerg Infect Dis*, 18(10), 1596–1602.
- Matsuoka, Y., Matsumae, H., Katoh, M., Einfeld, A.J., Neumann, G., Hase, T., Ghosh, S., Shoemaker, J.E., Lopes, T.J., Watanabe, T. and Watanabe, S., 2013. A comprehensive map of the influenza A virus replication cycle. *BMC systems biology*, 7(1), 1.
- Mei, M., Ye, J., Qin, A., Wang, L., Hu, X., Qian, K. and Shao, H., 2015. Identification of novel viral receptors with cell line expressing viral receptor-binding protein. *Nat Sci Report*, 5, 7935.
- Mok, C.K.P., Lee, H.H.Y., Lestra, M., Nicholls, J.M., Chan, M.C.W., Sia, S.F., Zhu, H., Poon, L.L.M., Guan, Y. and Peiris, J.S.M., 2014. Amino acid substitutions in polymerase basic protein 2 gene contribute to the pathogenicity of the novel A/H7N9 influenza virus in mammalian hosts. *J. Virol*, 88(6), 3568-3576.
- Muramoto, Y., Le, T.Q.M., Phoung, L.S., Nguyen, T., Nguyen, T.H., Sakai-Tagawa, Y., Iwatsuki-Horimoto, K., Horimoto, T., Kida, H., and Kawoaka, Y. 2006. Molecular Characterization of the Hemagglutinin and Neuraminidase Genes of H5N1 Influenza A Viruses Isolat from Poultry in Vietnam from 2004 to 2005. *J Vet Med Sci*. 6 (5): 527-531.
- Murphy F.A., E.P.J. Gibbs., M.C. Horzinek, and M.J. Studdert. 1999 *Veterinary Virology*, Third Edition. *Elsevier Academic Press*.
- Murtini S, Susanti R, Handharyani E. 2008. *Seroprevalensi Avian influenza H5N1 Pada Kucing – Kucing Liar di Bogor*. Di dalam: Priosoeryanto BP, editor. *Proceeding of 10th National Veterinary Scientific Conference of Indonesian Veterinary Medical Association*; Bogor, 19-22 Agu 2008. Jakarta : Perhimpunan Dokter Hewan Indonesia.hlm 313-314.
- Nagarajan, S., C. Tosh., D.K. Smith., J.S.M. Peiris., H.V. Murugkar., R. Sridevi., M. Kumar., M. Katare., R. Jain., Z. Syed., P. Behera., C.L. Cheung., R. Khandia., S. Tripathi., Y. Guan, and S.C. Dubey, 2012. Avian influenza (H5N1) virus of clade 2.3.2 in domestic poultry in India. *PLoS ONE*. 7(2), p.e31844.

- Nagy, A., V. Vostinakova, Z. Pindova, J. Hornickova, L. Cernikova, K. Sedlak, M. Mojzis, Z. Dibarkova and J. Marchova. 2009. Molecular and phylogenetic analysis of the H5N1 Avian Influenza virus caused the first highly pathogenic avian influenza outbreak in poultry in the Czech Republic in 2007. *Vet. Microbiol.* 133: 257 – 263.
- Neumann, G. and Kawaoka, Y., 2006. Host range restriction and pathogenicity in the context of influenza pandemic. *Emerg Infect Dis*, 12(6), 881-886.
- Nidom, C.A., Yamada, S., Nidom, R.V., Rahmawati, K., Alamudi, M.Y., Indrasari, S., Hayati, R.S., Horimoto, K.I. and Kawaoka, Y., 2012. Genetic characterization of H5N1 influenza viruses isolated from chickens in Indonesia in 2010. *Virus genes*, 44(3), 459-465.
- Nooruddin, G.M., Rahman, M.T., Mohammad, M. and Rahman, M.M., 2007. Identification and Characterization of Hemagglutinating Viruses in Native Chickens in Bangladesh. *Int. J. Poult. Sci* 6(12), 912-915.
- Noyola, D.E., Clark, B., O'Donnell, F.T., Atmar, R.L., Greer, J. and Demmler, G.J., 2000. Comparison of a new neuraminidase detection assay with an enzyme immunoassay, immunofluorescence, and culture for rapid detection of influenza A and B viruses in nasal wash specimens. *J. Clin Microbiol*, 38(3), 1161-1165.
- O.I.E., 2009. Manual of standards for diagnostic tests and vaccines. *Office International des Epizooties*, 512-521.
- Offlu, OIE, and FAO. 2015. Influenza A Cleavage Sites http://www.offlu.net/fileadmin/home/en/resource-centre/pdf/Influenza_A_Cleavage_Sites_Aug_2015.pdf
- Olsen, B., Munster, V.J., Wallensten, A., Waldenström, J., Osterhaus, A.D. and Fouchier, R.A., 2006. Global patterns of influenza A virus in wild birds. *science*, 312 (5772), 384-388.
- Palese, P. and Shaw, M.L., 2007. Fields virology. *Orthomyxoviridae: The Viruses and Their Replication*, 5th edn, Philadelphia, PA: Lippincott Williams & Wilkins, *Wolters Kluwer Business*, 1647-1689.
- Payungporn, S., P. Phakdeewirot, S. Chutinimitkul, A. Theamboonlers, J. Keawcharoen, K. Raveerakul, A. Amonsin, and Y. Poovorawan. 2004. Single step multiplex reverse transcription-polymerase chain reaction (RT-PCR) for influenza A virus subtype H5N1 detection. *Viral Immunol.* 17:588-593.

- Perez, D.R., Lim, W., Seiler, J.P., Yi, G., Peiris, M., Shortridge, K.F. and Webster, R.G., 2003. Role of quail in the interspecies transmission of H9 influenza A viruses: molecular changes on HA that correspond to adaptation from ducks to chickens. *J. Virol*, 77(5), 3148-3156.
- Perez, D.R., Lim, W., Seiler, J.P., Yi, G., Peiris, M., Shortridge, K.F. and Webster, R.G., 2003. Role of quail in the interspecies transmission of H9 influenza A viruses: molecular changes on HA that correspond to adaptation from ducks to chickens. *Journal of Virology*, 77(5), 3148-3156.
- Pfeiffer, J., Pantin-Jackwood, M., To, T.L., Nguyen, T. and Suarez, D.L., 2009. Phylogenetic and biological characterization of highly pathogenic H5N1 avian influenza viruses (Vietnam 2005) in chickens and ducks. *J VirusRes*, 142(1), 108-120.
- Phipps LP, Essen SC, Brown IH. 2004. Genetic subtyping of influenza A viruses using RT-PCR with a single set of primers based on conserved sequences within the HA2 coding region. *J Virol Methods*. 122:119-122
- Plotkin, J.B., J. Dushoff, and S.A. Levin. 2002. Hemagglutinin sequence clusters and the antigenic evolution of influenza A virus. *PNAS*. 99(9):6263-6268.
- Puthavathana, P., Auewarakul, P., Charoenying, P.C., Sangsiriwut, K., Pooruk, P., Boonnak, K., Khanyok, R., Thawachsupha, P., Kijphati, R. and Sawanpanyalert, P., 2005. Molecular characterization of the complete genome of human influenza H5N1 virus isolates from Thailand. *J Gen Virol*, 86(2), 423-433.
- Reperant, L.A., Kuiken, T. and Osterhaus, A.D., 2012. Adaptive pathways of zoonotic influenza viruses: from exposure to establishment in humans. *Vaccine*, 30(30), 4419-4434.
- Rosano GL, Ceccarelli EA. Recombinant protein expression in *Escherichia coli*: advances and challenges. Review Article. *Frontiers Microbiol*. 2014;5:171-189.
- Rosemelati, S., Rohmah. A., Endhang. P., Rini. S., Mukti. I., Hary.B.S. 2008. Kloning dan Karakterisasi Gen HA1 Virus Avian Influenza (AI) Subtype H5NI Isolat Lokal Untuk Pembuatan Vaksin Sub Unit. *Prociding Kivnas* 2008. Bogor- Indonesia.
- Sambrook, J., Fritsch, E. F., and Maniatis, T. 1989. *Molecular cloning. A Laboratory Manual*. New York: Cold Spring Harbor Laboratory Press.

- Saptana dan Sumaryanto. 2009. Kebijakan Antisipatif terhadap Peraturan dan Kebijakan Perunggasan Pemerintah DKI 2010. Analisis Kebijakan Pertanian. Volume 7 No. 4, Desember 2009 : 319-335.
- Setiawaty, V., Sudiro, T.M., Ibrahim, F., Pangesti, K.N.A., Itamura, S. and Sedyaningsih, E.R., 2009. Deteksi Antibodi Anti H5N1 dengan Uji Hambatan Hemagglutinasi dan Netralisasi. *J. Res*, 29(1), 11-17.
- Setyawati S, Soejoedono RD, Handharyani E, Sumiarto B. 2010. Deteksi Virus AI H5N1 pada Anak Ayam Umur Satu Hari dengan Teknik Imunohistokimia. *J. Vet* 4(11) 203-209.
- Shih, A.C.C., Hsiau, T.C., Ho M.S., Li, W.H. 2007. Simultaneous amino acid substitutions at antigenic site drive influenza A hemagglutinin evolution. *Proc. Natl. Acad. Sci.U.S.A.*104: 6283-6288.
- Siegel, M., 2006. Flu burung: serangan wabah ganas dan perlindungan terhadapnya. *Terjemahan dari Bird flu: everything you need to know about the next pandemic*. Nilandari A, penerjemah. Bandung: Mizan Pustaka.
- Smith , G.J.D., T.S.P. Naipospos, T.D. Nguyen, M.D. de Jong, D. Vijaykrishna, T.B. Usman, S.S. Hassan, T.V. Nguyen , T.V. Dao, N.A. Bui, Y.H.C. Leung, C.L. Cheung, J.M. Rayner, J.X. Zhang, L.J. Zhang, L.L.M. Poon, K.S. Li, V.C. Nguyen, T.T. Hien, J. Farrar, R.G. Webster, H. Chen, J.S.M. Peiris, and Y. Guan. 2006. Evolution and adaptation of H5N1 influenza virus in avian and human hosts in Indonesia and Vietnam. *J. Virol.* 350:258-268.
- Songserm, T., Amonsin, A., Jam-on, R., Sae-Heng, N., Meemak, N., Pariyothorn, N., Payungporn, S., Theamboonlers, A. and Poovorawan, Y., 2006-a. Avian influenza H5N1 in naturally infected domestic cat. *Emerg Infect Dis*, 12(4), 681-683.
- Songserm, T., Amonsin, A., Jam-on, R., Sae-Heng, N., Pariyothorn, N., Payungporn, S., Theamboonlers, A., Chutinimitkul, S., Thanawongnuwech, R. and Poovorawan, Y., 2006-b. Fatal avian influenza A H5N1 in a dog. *Emerging infectious diseases*, 12(11), 1744.
- Spackman, E., Senne, D.A., Myers, T.J., Bulaga, L.L., Garber, L.P., Perdue, M.L., Lohman, K., Daum, L.T. and Suarez, D.L., 2002. Development of a real-time reverse transcriptase PCR assay for type A influenza virus and the avian H5 and H7 hemagglutinin subtypes. *J. Clin Microbiol*, 40(9), 3256-3260.

- Spackman, E., Swayne, D.E., Suarez, D.L., Senne, D.A., Pedersen, J.C., Killian, M.L., Pasick, J., Handel, K., Pillai, S.P.S., Lee, C.W. and Stallknecht, D., 2007. Characterization of low-pathogenicity H5N1 avian influenza viruses from North America. *J. Virol*, 81(21), 11612-11619.
- Srihanto, E.A, 2014. Kajian Molekuler Patogenesis Virus Avian Influenza Isolat Lampung 2004 – 2013, Buletin Laboratorium Veteriner. 31, (01), 01-04.
- Steinhauer, D.A., 1999. Role of hemagglutinin cleavage for the pathogenicity of influenza virus. *Virology*, 258(1), 1-20.
- Stephenson, I., Heath, A., Major, D., Newman, R.W., Hoschler, K., Junzi, W., Katz, J.M., Weir, J.P., Zambon, M.C. and Wood, J.M., 2009. Reproducibility of serologic assays for influenza virus A (H5N1).
- Stevens, J., Blixt, O., Tumpey, T.M., Taubenberger, J.K., Paulson, J.C. and Wilson, I.A., 2006. Structure and receptor specificity of the hemagglutinin from an H5N1 influenza virus. *science*, 312 (5772), 404-410.
- Sturm-Ramirez, K.M., Hulse-Post, D.J., Govorkova, E.A., Humberd, J., Seiler, P., Puthavathana, P., Buranathai, C., Nguyen, T.D., Chaisingh, A., Long, H.T. and Naipospos, T.S.P., 2005. Are ducks contributing to the endemicity of highly pathogenic H5N1 influenza virus in Asia. *J. Virol*, 79(17), 11269-11279.
- Suarez, D.L. 2008. Avian Influenza dalam Avian Influenza, Blackwell Publishing Blackwell Publishing Professional 2121 State Avenue, Ames, Iowa 50014, USA : 3-22
- Sudarnika, E., dan A. Purnamawati. 2008. *Tata Laksana Peternakan Ayam Buras Rakyat di Kabupaten Tasikmalaya*. dalam: Priosoeryanto, B.P, editor. *Proceeding of 10th National Veterinary Scientific Conference of Indonesian Veterinary Medical Association*; Bogor, 19-22 Agu 2008. Jakarta : Perhimpunan Dokter Hewan Indonesia.hlm 298-301.
- Suguitan, A.L., Matsuoka, Y., Lau, Y.F., Santos, C.P., Vogel, L., Cheng, L.I., Orandle, M. and Subbarao, K., 2012. The multibasic cleavage site of the hemagglutinin of highly pathogenic A/Vietnam/1203/2004 (H5N1) avian influenza virus acts as a virulence factor in a host-specific manner in mammals. *J. Virol*, 86(5), 2706-2714.
- Sun, X., Longping, V.T., Ferguson, A.D. and Whittaker, G.R., 2010. Modifications to the hemagglutinin cleavage site control the virulence of a neurotropic H1N1 influenza virus. *J. Virol*, 84(17), 8683-8690.

- Suwarno, Raharjo, A.P., Fauziah dan Srihanto, E.A. 2006. Karakteristik Virus Avian Influenza dengan Uji Serologik dan Reverse Transcriptase Polymerase Chain Reaction. *Med Ked. Hewan* 22 (2): 74-78
- Suzuki, Y., 2005. Sialobiology of Influenza: Molecular Mechanism of Host Range Variation of Influenza Viruses. *Bio. Pharm. Bull.* 28: 399-408.
- Suzuki, Y., 2009. The highly pathogenic avian influenza H5N1-initial molecular signals for the next influenza pandemic. *Chang Gung Med J*, 32(3), 258-263.
- Swayne, D. E., and D. A. Halvorson. 2003. *Influenza*, dalam *Diseases of Poultry 11th Ed*, Editors Y. M. Saif, H. J. Barnes, J. R. Glisson, A. M. Fadly, L. R. McDougald, D. E. Swayne, ed. Iowa State Press, Ames, USA. Pp: 135– 160.
- Tabbu, C. R. 2000. *Penyakit Ayam dan Penanggulangannya. Penyakit Bakterial, Mikal, dan Viral*. (1). 232 – 243. Penerbit Kanisius. Yogyakarta.
- Takano, R., Nidom, C.A., Kiso, M., Muramoto, Y., Yamada, S., Sakai-Tagawa, Y., Macken, C. and Kawaoka, Y., 2009. Phylogenetic characterization of H5N1 avian influenza viruses isolated in Indonesia from 2003–2007. *Virol*, 390(1), 13-21.
- Thanawongnuwech, R., Amonsin, A., Tantilertcharoen, R., Damrongwatanapokin, S., Theamboonlers, A., Payungporn, S., Nanthapornphiphat, K., Ratanamungkalanon, S., Tunak, E., Songserm, T. and Vivatthanavanich, V., 2005. Probable tiger-to-tiger transmission of avian influenza H5N1. *Emerg Infect Dis*, 11(5), 699-701.
- Thontiravong, A., Kitikoon, P., Wannaratana, S., Tantilertcharoen, R., Tuanudom, R., Pakpinyo, S., Sasipreeyajan, J., Oraveerakul, K. and Amonsin, A., 2012. Quail as a potential mixing vessel for the generation of new reassortant influenza A viruses. *Vet Microbiol*, 160(3), 305-313.
- Tong, S., Li, Y., Rivaller, P., Conrardy, C., Castillo, D.A.A., Chen, L.M., Recuenco, S., Ellison, J.A., Davis, C.T., York, I.A. and Turmelle, A.S., 2012. A distinct lineage of influenza A virus from bats. *Proc. Natl. Acad. Sci*, 109(11), 4269-4274.
- Tong, S., Zhu, X., Li, Y., Shi, M., Zhang, J., Bourgeois, M., Yang, H., Chen, X., Recuenco, S., Gomez, J. and Chen, L.M., 2013. New world bats harbor diverse influenza A viruses. *PLoS Pathog*, 9(10), p.e1003657.

- Tsukamoto, K., Ashizawa, H., Nakanishi, K., Kaji, N., Suzuki, K., Okamatsu, M., Yamaguchi, S. and Mase, M., 2008. Subtyping of avian influenza viruses H1 to H15 on the basis of hemagglutinin genes by PCR assay and molecular determination of pathogenic potential. *J. Clin Microbiol*, 46(9), 3048-3055.
- Urbaniak, K. and Markowska-Daniel, I., 2014. In vivo reassortment of influenza viruses. *Act Bioch Polonica*, 61 (3), 427-431.
- Vascellari, M., Granato, A., Trevisan, L., Basilicata, L., Toffan, A., Milani, A. and Mutinelli, F., 2007. Pathologic findings of highly pathogenic avian influenza virus A/Duck/Vietnam/12/05 (H5N1) in experimentally infected pekin ducks, based on immunohistochemistry and in situ hybridization. *Vet. Pathol*, 44(5), 635-642.
- Wahlgren, J., 2011. Influenza A viruses: an ecology review. *Infect Ecol Epid*, 1.
- Wan, H. and Perez, D.R., 2006. Quail carry sialic acid receptors compatible with binding of avian and human influenza viruses. *Virology*, 346(2), 278-286.
- Wanasawaeng, W., Bunapong, N. and Thanawongnuwech, R., 2008. Growth Characteristics of the Thai H5N1 Avian influenza virus in chicken embryonic eggs and MDCK Cells. In Proceedings, the 15th Congress of FAVA. FAVA-OIE *Joint Symposium on Emerging Diseases*. pp: 27-30.
- Wang, H., Wu, X., Cheng, Y., An, Y. and Ning, Z., 2013. Tissue distribution of human and avian type sialic acid influenza virus receptors in domestic cat. *Act Vet Hungarica*, 61(4), 537-546.
- Webby, R.J., R.G. Webster and J.A. Richt. 2007. Influenza viruses in animal wildlife populations. *Curr. Top Microbiol. Immunol*. 315: 67 – 83.
- Webster R.G., Bean W.J., Gorman O.T., Chambers T.M., and Kawaoka Y. 1992. *Evolution and Ecology of Influenza a Viruses*. *Microbiol. Rev*. 56: 152-159.
- WHO, 2002. WHO Manual on Animal Influenza Diagnosis and Surveillance. Department of Communicable Disease Surveillance and Response. Online: <http://www.who.int/csr/resources/publications/influenza/en/whocdscsrncs20025rev.pdf>. (diakses tanggal 25 Februari 2014).
- WHO, OIE, FAO H, N, & Evolution Working Group. 2008. Toward a unified nomenclature system for highly pathogenic avian influenza virus (H5N1). *Emerg Infect Dis*, 14(7), e1.

- WHO. 2005. Emergencies preparedness, response; Avian influenza – new areas with infection in birds. Online: http://www.who.int/csr/don/2005_10_13/en/. (diakses tanggal 25 Februari 2014).
- WHO. 2008. Review of latest available evidence on risks to human health through potential transmission of avian influenza (H5N1) through water and sewage. Online: [who.int/iris/bitstream/10665/204275/1/WHO_SDE_WSH_06.1_eng.pdf](http://www.who.int/iris/bitstream/10665/204275/1/WHO_SDE_WSH_06.1_eng.pdf). (diakses tanggal 25 Februari 2015).
- WHO. 2012. Continued evolution of highly pathogenic avian influenza A (H5N1): updated nomenclature. WHO/OIE/FAO H5N1 Evolution Working Group. *Influ Other Res Vir.* 6(1): 1-5.
- Wibawa, H., Henning, J., Wong, F., Selleck, P., Junaidi, A., Bingham, J., Daniels, P. and Meers, J., 2011. A molecular and antigenic survey of H5N1 highly pathogenic avian influenza virus isolates from smallholder duck farms in Central Java, Indonesia during 2007-2008. *Virol J*, 8(425): pp 1-17
- Wibawa, H., W.B. Prijono., N.L.P.I Dharmayanti., S.H. Irianingsih., Y. Miswati., A. Rohmah., E. Andesyha., Romlah., R.S.D. Daulay., K. Safitria, 2012. Investigasi wabah penyakit pada itik di Jawa Tengah, Yogyakarta, dan Jawa Timur: Identifikasi sebuah clade baru virus avian influenza subtiipe H5N1 di Indonesia. *Bulletin Laboratorium Veteriner. Balai Besar Veteriner Wates Jogjakarta*, Vol 12(4). Pp:2-9.
- Wibowo, H.W., Asmara, W., dan Tabbu, C.R. 2006. Isolasi dan identifikasi Serologis Virus *Avian Influenza* dari Sampel Unggas yang Diperoleh dari Daerah Istimewa Yogyakarta dan Jawa Tengah. *J. Sain Vet.* 24 (1): 77-83.
- Wibowo, H.W., Susetya, H., Untari, T., Wahyuni, A.E.T.H., Asmara, W., dan Tabbu, C.R. 2007. Identifikasi Molekuler virus *Avian Influenza* yang Diisolasi dari Kasus dengan atau Tanpa Gejala Klinis yang Khas Penyakit *Avian Influenza*. *J. Sain Vet.* 8, (3): 103-110
- Wong, S.S., Yoon, S.W., Zanin, M., Song, M.S., Oshansky, C., Zaraket, H., Sonnberg, S., Rubrum, A., Seiler, P., Ferguson, A. and Krauss, S., 2014. Characterization of an H4N2 influenza virus from Quails with a multibasic motif in the hemagglutinin cleavage site. *Virology*, 468, pp.72-80.
- World Health Organization/World Organisation for Animal Health/Food and Agriculture Organization (WHO/OIE/FAO) H5N1 Evolution Working Group 2014. Revised and updated nomenclature for highly pathogenic avian influenza A (H5N1) viruses. *Influ Other Res Vir.* 8(3), 384–388.

- World Organisation for Animal Health (OIE), OIE Terrestrial Manual 2015, Chapter 2.3.4, Avian influenza [Internet]. 2015. [cited 2015 Oct 1]. Oline: http://www.oie.int/fileadmin/Home/eng/Health_standards/tahm/2.03.04_AI.pdf.
- Wu, Y., Wu, Y., Tefsen, B., Shi, Y. and Gao, G.F., 2014. Bat-derived influenza-like viruses H17N10 and H18N11. *Trends in microbiol*, 22(4), 183-191.
- Wuryatmi. 2005. *Flu Burung Ancaman dan Pencegahan*. Badan informasi Publik Departemen Komunikasi dan Informatika. Jakarta : Depkominfo.
- Yamada, S., K. Shinya., A. Takada., T. Ito., T. Suzuki., Y. Suzuki., Q.M. Le., N. Kasai., H. Kida., T. Horimoto., P. Rivailier., L.M. Chen., R.O. Donis, and Y. Kawaokaa. 2012. Adaptation of a duck influenza A virus in quail. *J. Virol*, 86(3), 1411-1420.
- Yang, S., Chen, Y., Cui, D., Yao, H., Lou, J., Huo, Z., Xie, G., Yu, F., Zheng, S., Yang, Y. and Zhu, Y., 2014. Avian-origin influenza A (H7N9) infection in influenza A (H7N9)-affected areas of China: a serological study. *J Infect Dis*, 209(2), 265-269.
- Yassine, H.M., Lee, C.W., Gourapura, R. and Saif, Y.M., 2010. Interspecies and intraspecies transmission of influenza A viruses: viral, host and environmental factors. *Animal Health Res Rev*, 11(01), 53-72.
- Yuen, K.Y., Chan, P.K.S., Peiris, M., Tsang, D.N.C., Que, T.L., Shortridge, K.F., Cheung, P.T., To, W.K., Ho, E.T.F., Sung, R. and Cheng, A.F.B., 1998. Clinical features and rapid viral diagnosis of human disease associated with avian influenza A H5N1 virus. *The Lancet*, 351(9101), pp.467-471.
- Yuwono, T. 2006. Teori dan Aplikasi Polymerase Chain Reaction. Ed I. Penerbit Andi. Yogyakarta.
- Zheng, D., Y. Yi, and Z. Chen. 2012. Development of Live-Attenuated Influenza Vaccines against Outbreaks of H5N1 Influenza. *Viruses*, 4, 3589-3605.
- Zhou, H., Z. Yu., Y. Hu., J. Tu., W. Zou., Y. Peng., J. Zhu., Y. Li., A. Zhang., Z. Yu., Z. Ye., H. Chen, and M. Jin. 2009. The special neuraminidase stalk-motif responsible for increased virulence and pathogenesis of H5N1 influenza A virus. *PLoS ONE* 4: e6277.
- Zhou, M.Y. and Gomez-Sanchez, C.E., 2000. Universal TA cloning. *Current issues Mol Biol*, 2, 1-8.