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VI. DAFTAR PUSTAKA

Aldous, E.W., Mynn, J.K., Banks, J., and Alexander, D.J., 2003, A molecular epidemiological study of avian paramyxovirus type 1 (Newcastle disease virus) isolates by phylogenetic analysis of a partial nucleotide sequence of the fusion protein gene, *Avian Pathology*, 32, 239–257.

Alexander, D.J., 2000, Newcastle disease and other avian paramyxoviruses, *Revue Scientifique et Technique, Office Internationaledes Epizooties.*, 19 (**2**), 443-462.

Alexander, D.J., 2003, Newcastle disease, other avian paramyxoviruses, and pneumovirus infections, In*: Disease of Poultry,* ed. Syaif, Y.M., Barnes, H.J., Fadly, A.M., Glysson, J.R., McDouggald, L.B., Swyne, D.E., Blackwell Publishing Professional, IOWA, USA, 64–89.

Alexander, D.J., Aldous, E.W., and Fuller, C.M., 2012, The long view: a selective review of 40 years of Newcastle disease research, *Avian Pathology*, 41(**4**), 329-335.

Anonim, 2010, *User Manual: One Shot® BL21(DE3), One Shot® BL21(DE3)pLysS, One Shot® BL21(DE3)pLysE Competent Cells*, Life Technologies Corporation, Carlsbad.

Anonim, 2016, *Vector Information: pBT7-N-His*, Bioneer, Korea.

Armour, N.K. and Garcia, M., 2014, Current and future applications of viral-vectored recombinant vaccines in poultry, *The Poultry Informed Professional*, 134, 1-9.

Arora, P., Lachchaura, B.D., and Garg, S.K., 2010, Evaluation of immunogenic potential of 75 kDa and 56 kDa proteins of newcastle disease virus (NDV), *Indian Journal of Experimental Biology*, 48, 889-895.

Bradford, M.M., 1976, A rapid and sensitive method for the quantitation of microgram quantities of protein utilizing the principle of protein-dye binding, *Analytical Biochemistry*, 72, 248–254.

Burgess, R.R., 2009, Refolding solubilized inclusion body proteins, in: *Methods in Enzymology, vol. 463*, Guide to Protein Purification 2nd edition, ed. Burgess, R.R., and Deutscher, M.P., Elsevier, New York, 259–281.

Chang, A. and Dutch, R.E., 2012, Paramyxovirus fusion and entry: multiple paths to a common end, *Viruses*, 4, 613–636.

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Chen, B.Y., Janes, H.W., and Chen, S., 2002, Computer programs for PCR primer design and analysis, *In: Methods in Molecular Biology, Vol. 192: PCR Cloning Protocols, 2nd Edition*, Ed. Chen, B.Y. and Janes, H.W., Humana Press Inc., Totowa, New Jersey, 20.

Chen, L., Colman, P.M., Cosgrove, L.J., Lawrence, M.C., Lawrence, L.J., Tulloch, P.A., and Gorman, J.J., 2001, Cloning, expression, and crystallization of the fusion protein of newcastle disease virus, *Virology*, 290, 290-299.

Chen, Y., Xing, X., Ye, F., Kuang, Y., and Luo, M., 2007, Production of MBP–HepA fusion protein in recombinant Escherichia coli by optimization of culture medium, *Biochemical Engineering Journal*, 34, 114–121.

Choi, K., Lee, E., Jeon, W., and Kwon, J., 2005, Antigenic and immunogenic investigation of the virulence motif of the Newcastle disease virus fusion protein, *Journal of Veterinary Science*, 11(**3**), 205-211.

Cooper, G.M., 2000, *The Cell: A Molecular Approach, 2nd Edition*, ASM Press, Sunderland, *http://www.ncbi.nlm.nih.gov/books/NBK9839*, diakses pada tanggal 13 Juli 2015.

Czegledi, A., Ujvari, D., Somogyi, E., Wehmann, E., Werner, O., and Lomniczi, B., 2006, Third genome size category of avian paramyxovirus serotype 1 (Newcastle disease virus) and evolutionary implications, *Virus Research*, 120, 36–48.

De Leeuw, O. and Peeters, B., 1999, Complete nucleotide sequence of Newcastle disease virus: evidence for the existence of a new genus within the subfamily *Paramyxovirinae*, *Journal of General Virology*, 80, 131–136.

De Mattos, J. C. P. , Dantas, F. J. S., Caldeira-de-Arau´ jo, A., and Moraes, M. O., 2004, Detection of DNA strand breaks through the alteration of plasmid topology, *Biochemistry And Molecular Biology Education*, 32 (**4**), 254–257.

Dharmayanti, N.L.P.I., Hartawan, R., Hewajuli, D.A., and Indriani, R., 2014, Phylogenetic analysis of genotype VII of new castle disease virus in Indonesia, *African Journal of Microbiology Research*, 8 (**13**), 1368-1374.

Donovan, R.S., Robinson, C.W., and Glick, B.R., 1996, Optimizing inducer and culture conditions for expression of foreign proteins under the control of the lac promoter, *Journal of Industrial Microbiology and Biotechnology*, 16, 145–154.

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Dortmans, J.C., Koch, G., Rottier, P.J., and Peeters, B.P., 2011, Virulence of Newcastle disease virus: what is known so far?, *Veterinary Research*, 42, 122.

Dortmans, J.C., Rottier, P.J., Koch, G., and Peeters, B.P., 2010, The viral replication complex is associated with the virulence of Newcastle disease virus, *Journal of Virology*, 84 (**19**), 10113–10120.

Emini, E.A., Hughes, J.V., Perlow, D.S., and Boger, J., 1985, Induction of hepatitis A virus-neutralizing antibody by a virus-spesific syntetic peptide, *Journal of Virology*, 55, 836-839.

Ganar, K., Das, M., Sinha, S., and Kumar, S., 2014, Newcastle disease virus: Current status and our understanding, *Virus Research*, 184, 71-81.

Grand, L.R.L., White, M., Siegel, E.B., and Barnard, R.T., 2012, Recombinant vaccines: Development, production, and application, In: *Pharmaceutical Biotechnology: Drug Discovery and Clinical Application, 2nd Edition*, ed. Kayser, O. and Warzecha, H., Wiley-VCH Verlag GmbH & Co. KGaA, 423-449.

Haryanto, A., Purwaningrum, M., Verawati, S., Irianingsih, S.H., and Wijayanti, N., 2015, Pathotyping of local isolates Newcastle disease virus from field specimens by RT-PCR and restriction endonuclease analysis, *Procedia Chemistry*, 14, 85-90.

Hong, S.J., Lee, Y.H., Khan, A.R., Ullah, I., Lee, C., Park, C.K., and Shin, J.H., 2014, Cloning, expression, and characterization of thermophilic L-asparaginase from *Thermococcus kodakarensis* KOD1, *Journal of Basic Microbiology*, 54, 500–508.

Jonasson, P., Liljeqvist, S., Nygren, P.A., and Stahl, S., 2002, Genetic design for facilitated production and recovery of recombinant proteins in *Escherichia coli*, *Biotechnology and Applied Biochemistry*, 35, 91–105.

Kalendar, R., Lee, D., and Schulman, A.H., 2014, FastPCR software for PCR, in silico PCR, and oligonucleotide assembly and analysis, In: *DNA Cloning and Assembly Methods*, Methods in Molecular Biology, vol. 1116, ed. Valla, S. *and* Lale, R., Springer Science Business Media, New York, 271-302.

Kang, Y., Li, Y., Yuan, R., Li, X., Sun, M., Wang, Z., Feng, M., Jiao, P., and Ren, T., 2014, Phylogenetic relationships and pathogenicity variation of two Newcastle disease viruses isolated from domestic ducks in Southern China, *Virology Journal*, 11 (**147**).

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Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Karplus, P.A. and Schulz, G.E., 1985, Prediction of chain flexibility in protein, *Naturwissenschaften*, 72, 212-213.

Kim, L.M., King, D.J., Curry, P.E., Suarez, D.L., Swayne, D.E., Stallknecht, D.E., Slemons, R.D., Pedersen, J.C., Senne, D.A., Winker, K., and Afonso, C.L., 2007, Phylogenetic diversity among low virulence Newcastle disease viruses from waterfowl and shorebirds and comparison of genotype distributions to poultry-origin isolates, *Journal of Virology*, 81, 12641–12653.

Kim, S.H., Wanasen, N., Paldurai, A., Xiao, S., Collins, P.L., and Samal, S.K., 2013, Newcastle Disease Virus fusion protein is the major contributor to protective immunity of genotype-matched vaccine, *Plos One*, 8 (**8**).

King, A.M.Q., Adams, M.J., Carstens, E.B., and Lefkowitz, E.J., 2012, *Virus Taxonomy: Classification and Nomenclature of Viruses: Ninth Report of the International Committee on Taxonomy of Viruses*, Elsevier Academic Press, San Diego, 672-678.

Kolaskar, A.S. and Tongaonkar, P.C., 1990, A semi-empirical method for prediction of antigenic determinants on protein antigens, *FEBS Letter*, 276.

Kumar, S., Nayak, B., Collins, P.L., and Samal, S.K., 2011, Evaluation of the newcastle disease virus F dan HN proteins in protective immunity by using recombinant avian paramyxovirus type 3 vector in chickens, *Journal of Virology*, 85 (**13**), 6521-6534.

Lamb, R. and Parks, G., 2007, Paramyxoviridae: the viruses and their replication, In: *Fields Virology, 5th edition*, ed. Knipe, D.M., Howley, P.M., Griffin, D.E., Lamb, R.A., Martin, M.A., Roizman, B.,Straus, S.E., Lippincott Williams & Wilkins, Philadelphia, 1449–1496.

Larentis, A.L., Nicolau, J.F.M.Q., Esteves, G.S., Vareschini, D.T., de Almeida, F.V.R., dos Reis, M.G., Galler, R., and Medeiros, M.A., 2014, Evaluation of pre-induction temperature, cell growth at induction and IPTG concentration on the expression of a leptospiral protein in *E. coli* using shaking flasks and microbioreactor, *BMC Research* Notes, 7, 671.

Larentis, A.L., Sampaio, H.C.C., Martins, O.B., Rodrigues, M.I., and Alves, T.L.M., 2011, Influence of induction conditions on the expression of carbazole dioxygenase components (CarAa, CarAc, and CarAd) from *Pseudomonas stutzeri* in recombinant *Escherichia coli* using experimental design, *Journal of Industrial Microbiology and Biotechnology*, 38, 1045–1054.

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Makrides, S.C., 1996, Strategies for achieving high-level expression of genes in *Escherichia coli*, *Microbiological Reviews*, 60 (**3**), 512–538.

Middelberg, A., 2002, Preparative protein refolding, *Trends in Biotechnology*, 20 (**10**), 437.

Miller, P.J., King, D.J., Afonso, C.L., and Suarez, D.L., 2007, Antigenic differences among Newcastle disease virus strains of different genotypes used in vaccine formulation affect viral shedding after a virulent challenge, *Vaccine*, 25, 7238-7246.

Morrison, T.G., 2003, Structure and function of a paramyxovirus fusion protein, *Biochimica et Biophysica Acta*, 1614, 73-84.

Nascimento, I.P. and Leite, L.C.C., 2012, Recombinant vaccines and the developmentof new vaccine strategies, *Brazilian Journal of Medical and Biological Research*, 45 (**12**), 1102-1111.

OIE, 2012, Newcastle Disease, *In: Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, 7th Edition*, World Organization for Animal Health, Paris, 1-19.

OIE, 2015, Old Classification of Diseases Notifiable to the OIE: List A, *http://www.oie.int/en/animal-health-in-the-world/the-world-animal-health-information-system/old-classification-of-diseases-notifiable-to-the-oie-list-a/*, diakses pada tanggal 11 Juli 2015.

Park, J.K., Lee, D.H., Yuk, S.S., Tseren-Ochir, E.O., Kwon, J.H., Noh, J.Y., Kim, B.Y., Choi, S.W., Kang, S.M., Lee, J.B., Park, S.Y., Choi, I.S., and Song, C.H., 2014, Virus-like particle vaccine confers protection against a lethal newcastle disease virus challenge in chickens and allows a strategy of differentiating infected from vaccinated animals, *Clinical and Vaccine Immunology*, 21 (**3**), 360-365.

Peng, L., Xua, Z., Fang, X., Wang, F., and Cen, P., High-level expression of soluble human β-defensin-2 in *Escherichia coli*, *Process Biochemistry*, 39, 2199–2205.

Ramos, C.R.R., Abreu, P.A.E., Nascimento, A.L.T.O., and Ho, P.L., 2004, A high copy T7 Escherichia coli expression vector for production of recombinant proteins with a minimal N-terminal His-tagged fusion peptide, *Brazillian Journal of Medical and Biological Research*, 37, 1103-1109.

Roohani, K., Tan, S.W., Yeap, S.K., Ideris, A., Bejo, M.H., and Omar, A.R., 2015, Characterisation of genotype VII Newcastle disease virus (NDV) isolated from NDV vaccinated chickens, and the efficacy of La Sota and

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Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

recombinant genotype VII vaccines against challenge with velogenic NDV, *Journal of Veterinary Science*, 16 (**4**), 447-457.

Rosano, G.L. and Ceccarelli, E.A., 2014, Recombinant protein expression in *Escherichia coli*: advances and challenges, *Frontiers in Microbiology*, 5 (**172**), 1-17.

Sambrook, J. and Russel, D.W., 2001, *Molecular Cloning: A Laboratoy Manual*, CHSL Press, New York.

Sezonov, D.J.P., Joseleau-Petit., and Richard D., 2007, *Escherichia coli* physiology in Luria-Bertani Broth, *Journal of Bacteriology*, 189, 8746-8749.

Sorensen, H.P. and Mortensen, K.K., 2005[a], Advanced genetic strategies for recombinant protein expression in *Escherichia coli*, *Journal of Biotechnology*, 115, 113–128.

Sorensen, H.P. and Mortensen, K.K., 2005[b], Soluble expression of recombinant proteins in the cytoplasm of *Escherichia coli*, *Microbial Cell Factories*, 4 (**1**).

Susanti, 2015, Ekspresi dan purifikasi protein rekombinan LipL32 dari *Leptospira interrogans* serovar Hardjo, *Tesis*, Sekolah Pascasarjana UGM.

Terpe, K., 2003, Overview of tag protein fusions: from molecular and biochemical fundamentals to commercial systems, *Applied Microbiology and Biotechnology*, 60, 523-533.

Virella, G., 2001, *Medical Immunology 5th edition*, Informa Healthcare, New York, 54.

Volonte, F., Marinelli, F., Gastaldo, L., Sacchi, S., Pilone, M.S., Pollegioni, L., and Molla, G., 2008, Optimization of glutaryl-7-aminocephalosporanic acid acylase expression in *E. coli*, *Protein Expression and Purification*, 61,131–137.

Wacker, M.J. and Godard, M.P., 2005, Analysis of one step and two step real-time RT-PCR using SuperScript III, *Journal of Biomolecular Techniques*, 16, 266–271.

Wilson, K. and Walker, J., 2010, *Principles and Techniques of Biochemistry and Molecular Biology, 7th Edition*, Cambridge University Press, Cambridge.

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Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Wu, K.W., Chien, C.Y., Li, S.W., King, C.C., and Chang, C.H., 2012, Highly conserved influenza A virus epitope sequences as candidates of H3N2 flu vaccine targets, *Genomics*, 100 (**2**), 102–109.

Xiao, S., Paldurai, A., Nayak, B., Samuel, A., Bharoto, E.E., Prajitno, T.Y., Collins, P.L., and Samal, S.K., 2012, Complete genome sequences of Newcastle disease virus strains circulating in chicken populations of Indonesia, *Journal of Virology*, 5969-5970.

Yang, Z., Zhang, L., Zhang, Y., Zhang, T., Feng, Y., Lu, X., Lan, W., Wang, J., Wu, H., Cao, C., and Wang, X., 2011, Highly efficient production of soluble proteins from insoluble inclusion bodies by a two-step-denaturing and refolding method, *PLoS ONE*, 6 (**7**), e22981.

Yusoff, K. and Tan, W.S., 2001, Newcastle disease virus: macromolecules and opportunities, *Avian Pathology*, 30, 439-455.