

DAFTAR PUSTAKA

- Abe, Y., Tamura, T., Torii, S., Wakamori, S., Nagai, M., Mitsuhashi, K., Mine, J., Fujimoto, Y., Nagashima, N., Yoshino, F., Sugita, Y., Nomura, T., Okamatsu, M., Kida, H., and Sakoda, Y. 2016. Genetic and antigenic characterization of bovine viral diarrhea viruses isolated from cattle in Hokkaido, Japan. *Journal of Veterinary Medical Science*, 78(1): 61–70.
- Agapov, E. V., Murray, C. L., Frolov, I., Qu, L., Myers, T. M., and Rice, C. M. 2004. Uncleaved NS2-3 is required for production of infectious bovine viral diarrhea virus. *Journal of Virology*, 78(5): 2414–2425.
- Ahn, B. C., Walz, P. H., Kennedy, G. A., and Kapil, S. 2005. Biotype, genotype, and clinical presentation associated with bovine viral diarrhea virus (BVDV) isolates from cattle. *International Journal of Applied Research In Veterinary Medicine*, 3(4): 319-325.
- Ammari, M., McCarthy, F. M., Nanduri, B., and Pinchuk, L. M. 2010. Analysis of Bovine Viral Diarrhea Viruses-infected monocytes: identification of cytopathic and non-cytopathic biotype differences. *BMC Bioinformatics*, 11(Suppl 6): S9.
- Ammari, M., McCarthy, F., Nanduri, B., Pinchuk, G., and Pinchuk, L. 2012. Understanding the Pathogenesis of Cytopathic and Noncytopathic Bovine Viral Diarrhea Virus Infection Using Proteomics. *Proteomics Application in Biology*, Heazlewood, J. (Ed), InTech, 53-66.
- Anonim, 2015, Bovine Viral Diarrhoea, in *OIE Terrestrial Manual*, pp.:1-22.
- Baker, J. C. 1995. The clinical manifestations of bovine viral diarrhea infection. *Veterinary Clinics of North America-Food Animal Practice*, 11(3), 425–445.
- Bazzucchi, M., Bertolotti, L., Giammarioli, M., Rossi, E., Petrini, S., Rosati, S., and De Mia, G.M. 2017. Complete Genome Sequence of a Bovine Viral Diarrhea Virus Subgenotype 1g. *Genome Announcements*, 5(17), 318-319.
- Bazzucchi, M., Bertolotti, L., Giammarioli, M., and De Mia, G.M. 2018. Complete genome sequences of a cytopathic/noncytopathic pair of bovine viral diarrhea virus subtype 1a viruses. *Archives of Virology*, 163(2018): 3171-3172.

- Becher, P., Orlich, M., Kosmidou, A., König, M., Baroth, M., and Thiel, H. J. 1999. Genetic diversity of pestiviruses: identification of novel groups and implications for classification. *Virology*, 262(1999): 64–71.
- Becher, P., Ramirez, R. A., Orlich, M., Rosales, S. C., König, M., Schweizer, M., Stalder, H., Schirrneier, H., and Thiel, H.J. 2003. Genetic and antigenic characterization of novel pestivirus genotypes: Implications for classification. *Virology*, 311(2003): 96–104.
- Becher, P., and Tautz, N., 2011. RNA recombination in pestiviruses: cellular RNA sequences in viral genomes highlight the role of host factors for viral persistence and lethal disease. *RNA Biology*, 8(2): 216–224.
- Bedeković, T., Lemo, N., Lojkić, I., Beck, A., Lojkić, M., and Madić, J. 2011. Implementation of immunohistochemistry on frozen ear notch tissue samples in diagnosis of bovine viral diarrhoea virus in persistently infected cattle. *Acta Veterinaria Scandinavica*, 53(65): 1-4.
- Bolin, S. R., Matthews, P. J., and Ridpath, J. F. 1991. Methods for detection and frequency of contamination of fetal calf serum with bovine viral diarrhoea virus and antibodies against bovine viral diarrhoea virus.. *Journal of Veterinary Diagnostic Investigation* 3(1991): 199-203.
- Bolin, S. R., and Ridpath, J. F. 1998. “Prevalence of Bovine Viral Diarrhoea Virus Genotypes and Antibody against Those Viral Genotypes in Fetal Bovine Serum.” *Journal of Veterinary Diagnostic Investigation*, 10(2): 135–39.
- Bolin, S. R. 2002. Bovine Viral Diarrhoea Virus in Mixed Infection. In: *Polymicrobial Diseases*: NCBI Bookshelf (Brogden, K. A., and Guthmiller, J. M., eds.). A service of the National Library of Medicine, National Institutes of Health, ASM Press, Washington, DC. pp: 1-28.
- Booth, R. E., Thomas, C. J., El-Attar, L. M., Gunn, G., and Brownlie, J. 2013. A phylogenetic analysis of Bovine Viral Diarrhoea Virus (BVDV) isolates from six different regions of the UK and links to animal movement data. *Veterinary Research*, 44(43): 1-14.
- Brodersen, B. W. 2014. Bovine viral diarrhoea virus infections: manifestations of infection and recent advances in understanding pathogenesis and control. *Veterinary Pathology*, 51(2): 453–464.

- Brownlie, J., Thompson, I., and Curwen, A. 2000. Bovine virus diarrhoea virus-strategic decisions for diagnosis and control. In *Practice*, (April 2000): 176-187.
- Budiharta, S., dan Suardana, I. W. 2007. *Buku Ajar Epidemiologi dan Ekonomi Veteriner*. Penerbit Universitas Udayana, hal: 146-147.
- Castro, M. D., Stoffregen, W. C., Brigman, G. P., and Hillard, K. A. 1997. A method to detect bovine viral diarrhoea virus contamination in cell cultures using immunoperoxidase staining. *Journal of Veterinary Diagnostic Investigation*, 9(1997): 427-431.
- Callens, N., Brugger, B., Bonnafous, P., Drobecq, H., Gerl, M. J., Krey, T., Roman-Sosa, G., Rumenapf, T., Lambert, O., Dubuisson, J., and Rouille, Y. 2016. Morphology and Molecular Composition of Purified Bovine Viral Diarrhoea Virus Envelope. *PLoS Pathogens*, 12(3): e1005476.
- Chase, C. C. L. 2013. The impact of BVDV infection on adaptive immunity. *Biologicals*, 41(1): 52-60.
- Chernick, A., Godson, D. L., and van der Meer, F. 2014. Metadata beyond the sequence enables the phylodynamic inference of bovine viral diarrhoea virus type 1a isolates from Western Canada. *Infection, Genetics and Evolution*, 28(2014): 367-374.
- Chernick, A., and van der Meer, F. 2017. Evolution of Bovine viral diarrhoea virus in Canada from 1997 to 2013. *Virology*, 509(2017): 232-238.
- Chernick, A., Ambagala, A., Orsel, K., Wasmuth, J. D., van Marle, G., van der Meer, F. 2018. Bovine viral diarrhoea virus genomic variation within persistently infected cattle. *Infection, Genetics and Evolution*, 58(2018): 218-223.
- Choi, K. H., Gallei, A., Becher, P., and Rossmann, M. G. 2006. The Structure of Bovine Viral Diarrhoea Virus RNA-Dependent RNA Polymerase and Its Amino-Terminal Domain. *Structure*, 14(7): 1107-1113.
- Collen, T., and Morrison, W. I. 2000. CD4(+) T-cell responses to bovine viral diarrhoea virus in cattle. *Virus Research*, 67(1): 67-80.
- Collett, M. S. 1996. Genomic structure of BVDV. In: *Bovine Viral Diarrhoea Virus: A 50 year review*. Cornell University Press, Ithaca, NY.

- Collins, M. E., Desport, M., and Brownlie, J. 1999. Bovine viral diarrhea virus quasispecies during persistent infection. *Virology*, 259(1): 85–98.
- Collins, M. E., Heaney, J., Thomas, C. J., Brownlie, J. 2009. Infectivity of pestivirus following persistence of acute infection. *Veterinary Microbiology*, 138(2009): 289–296.
- Colitti B, Nogarol C, Bertolotti L, Rosati S. 2018. Complete genome sequence of bovine viral diarrhea virus subgenotype 2a strain CN10.2015.821, isolated in Piedmont, Italy. *Genome Announcement*, 6(11): e00170-18.
- Curti, E., and Jaeger, J. 2013. Residues Arg283, Arg285, and Ile287 in the nucleotide binding pocket of bovine viral diarrhea virus NS5B RNA polymerase affect catalysis and fidelity. *Journal of Virology*, 87(1): 199–207.
- Damman, A., Viet, A., Arnoux, S., Petit, E., and Ezanno, P. 2015. Modelling the spread of bovine viral diarrhea virus (BVDV) in a beef cattle herd and its impact on herd productivity. *Veterinary Research*, 46(12): 1–14.
- Darweesh, M. F., Rajput, M. K. S., Braun, L. J., Ridpath, J. F., Neill, J. D., and Chase, C. C. L. 2015. Characterization of the cytopathic BVDV strains isolated from 13 mucosal disease cases arising in a cattle herd. *Virus Research*, 195(2015): 141–147.
- Deregt, D., and Prins, S. 1998. A Monoclonal Antibody-Based Immunoperoxidase Monolayer (Micro-Isolation) Assay for Detection of Type 1 and Type 2 Bovine Viral Diarrhea Viruses, *Canadian Journal of Veterinary Research*, 62(1998): 152-155.
- Deregt, D., Dubovi, E. J., Jolley, M. E., Nguyen, P., Burton, K. M., and Gilbert, S. A. 2005. Mapping of two antigenic domains on the NS3 protein of the pestivirus bovine viral diarrhea virus. *Veterinary Microbiology*, 108(2005): 13–22.
- Deregt, D., 2005. Introduction and History. In *Bovine Viral Diarrhea Virus Diagnosis, Management and Control*. (Goyal, S. M. and Ridpath, J. F., eds), 1st Ed. Blackwell Publishing, Iowa, USA, pp.: 3-33.
- Ditjenakeswan. 2018. Tabel Populasi dan Produksi Peternakan di Indonesia diakses melalui www.pertanian.go.id/indikator/tabel-4-pop-prod-nak.pdf
- Dow, N., Chernick, A., Orsel, K., van Marle, G., van der MEer, F. 2015. Genetic Variability of Bovine Viral Diarrhea Virus and Evidence for a Possible

Genetic Bottleneck during Vertical Transmission in Persistently Infected Cattle. *PLoS ONE*, 10(7): e0131972.

Dubovi, E. J. 2013. Biologicals Laboratory diagnosis of bovine viral diarrhea virus. *Biologicals*, 41(2013): 8–13.

Eiras, C., Arnaiz, I., Sanjuan, M. L., Yus, E., and Dieguez, F. J. 2012. Bovine viral diarrhea virus: Correlation between herd seroprevalence and bulk tank milk antibody levels using 4 commercial immunoassays. *Journal of Veterinary Diagnostic Investigation*, 24(3): 549-553.

Fang, C-Y., Wu C-C., Fang C-L., Chen, W-Y., and Chen, C-L. 2017. Long-term growth comparison studies of FBS and FBS alternatives in six head and neck cell lines. *PLoS ONE*, 12(6): e0178960.

Fernandez-Sainz, I., Holinka, L. G., Gladue, D., O'Donnell, V., Lu, Z., Gavrilov, B. K., Risatti, G. R., and Borca, M. V. 2011. Substitution of Specific Cysteine Residues in the E1 Glycoprotein of Classical Swine Fever Virus Strain Brescia Affects Formation of E1-E2 Heterodimers and Alters Virulence in Swine. *Journal of Virology*, 85(14): 7264 - 7272.

Firat, I., Ak, S., Bozkurt, H. H., Ak, K., Turan, N., and Bagcigil, F. 2002. Distribution of bovine viral diarrhoea virus (BVDV) in the genital system tissues of cattle. *Veterinarski Arhiv*, 72(5): 235–248

Franke, J., Abs, V., Zizzadoro, C., and Abraham, G. 2014. Comparative study of the effects of fetal bovine serum versus horse serum on growth and differentiation of primary equine bronchial fibroblasts. *BMC Veterinary Research*, 10(119): 1-9.

Fulton, R. W., Whitley, E. M., Johnson, B. J., Ridpath, J. F., Kapil, S., Burge, L. J., Cook, B.J., and Confer, A. W. 2009. Prevalence of bovine viral diarrhea virus (BVDV) in persistently infected cattle and BVDV subtypes in affected cattle in beef herds in south central United States. *Canadian Journal of Veterinary Research*, 73(4): 283–291.

Fulton, R. W. 2013. Host response to bovine viral diarrhea virus and interactions with infectious agents in the feedlot and breeding herd. *Biologicals*, 41 (2013) 31-38.

Gao, Y., Wang, S., Du, R., Wang, Q., Sun, C., Wang, N., Zhang, P., Zhang, L. 2011. Isolation and Identification of Bovine Viral Diarrhea Virus from Sika Deer in China. *Virology Journal*, 8(2011): 83.

- Gao, S., Du, J., Shao, J., Lang, Y., Lin, T., Cong, G., Zhao, F., Belák, S., Liu, L., Chang, H., and Yin, H. 2014. Genome analysis reveals a novel genetically divergent subgenotype of bovine viral diarrhea virus in China. *Infection, Genetics and Evolution*, 21(2014): 489–491.
- Giangaspero, M., Harasawa, R., Weber, L., and Belloli, A. 2008. Taxonomic and epidemiological aspects of the bovine viral diarrhoea virus 2 species through the observation of the secondary structures in the 5' genomic untranslated region. *Veterinaria Italiana*, 44(2): 319-345.
- Gilbert, S., Burton, K. M., Prins, S. E., and Deregt, D. 1999. Typing of Bovine Viral Diarrhea Viruses Directly from Blood of Persistently Infected Cattle by Multiplex PCR Typing of Bovine Viral Diarrhea Viruses Directly from Blood of Persistently Infected Cattle by Multiplex PCR. *Journal of Clinical Microbiology*, 37(6): 2020–2023.
- Glew, E. J., Carr, B. V., Brackenbury, L. S., Hope, J. C., Charleston, B., and Howard, C. J. 2003. Differential effects of bovine viral diarrhoea virus on monocytes and dendritic cells. *Journal of General Virology*, 84(2003): 1771–1780.
- Goens, S. D. 2002. The evolution of bovine viral diarrhea: A review. *Canadian Veterinary Journal*, 43(2002): 946–954.
- Goyal, S. M. 2005. Diagnosis. In *Bovine Viral Diarrhea Virus Diagnosis, Management and Control*. (Goyal, S. M. and Ridpath, J. F., eds), 1st Ed. Blackwell Publishing, Iowa, USA, pp.: 197-208.
- Gripshover, E. M., Givens, M. D., Ridpath, J. F., Brock, K. V., Whitley, E. M., and Sartin, E. A. 2007. Variation in Erns viral glycoprotein associated with failure of immunohistochemistry and commercial antigen capture ELISA to detect a field strain of bovine viral diarrhea virus. *Veterinary Microbiology*, 125(2007): 11–21.
- Gunn, G. J., Saatkamp, H. W., Humphry, R. W., and Stott, A. 2005. Assessing economic and social pressure for the control of bovine viral diarrhoea virus. *Preventive Veterinary Medicine*, 72(2005): 149–162.
- Heuer, C., Healy, A., and Zerbini, C. 2007. Economic Effects of Exposure to Bovine Viral Diarrhea Virus on Dairy Herds in New Zealand. *Journal of Dairy Science*, 90(12): 5428–5438.

- Hietala, S.K., and Crossley, B.M. 2005. Virus Replication. In *Bovine Viral Diarrhea Virus Diagnosis, Management and Control*. (Goyal, S. M. and Ridpath, J. F., eds), 1st Ed. Blackwell Publishing, Iowa, USA, pp.: 81-90.
- Hilbe, M., Stalder, H., Peterhans, E., Haessig, M., Nussbaumer, M., Egli, C., Schelp, C., Zlinszky, K., and Ehrensperger, F. 2007. Comparison of five diagnostic methods for detecting bovine viral diarrhea virus infection in calves. *Journal of Veterinary Diagnostic Investigation*, 19(2007): 28–34.
- Houe, H. 1992. Age Distribution of Animals Persistently Infected with Bovine Virus Diarrhea Virus in Twenty-two Danish Dairy Herds. *Canadian Journal of Veterinary Research*, 56(1992): 194-198.
- Houe, H. 1995. Epidemiology of bovine viral diarrhea virus. *The Veterinary Clinics of North America-Food Animal Practice*, 11(3): 521–547.
- Houe, H., Baker, J. C., Maes, R. K., Wuryastuti, H., Wasito, R., Ruegg, P. L., and Lloyd, J. W. 1995. Prevalence of cattle persistently infected with bovine viral diarrhea virus in 20 dairy herds in two counties in central Michigan and comparison of prevalence of antibody-positive cattle among herds with different infection and vaccination status. *Journal of Veterinary Diagnostic Investigation*, 7(3): 321–326.
- Houe, H. 1999. Epidemiological features and economical importance of bovine virus diarrhoea virus (BVDV) infections. *Veterinary Microbiology*, 64(1999): 89-107.
- Houe, H. 2003. Economic impact of BVDV infection in dairies. *Biologicals*, 31(2003), 137–143.
- Howard, C.J. 1990. Immunological responses to bovine virus diarrhoea virus infections. *Revue scientifique et technique-Office international des Epizooties*, 1990, 9 (1): 95-103.
- Hui, H.U.O., Mingfu, W.U., and Junwei, W. 2011. Transient Expression of BVDV N pro Gene in vitro and Distribution of Fusion Protein in Cells. *Journal of Northeast Agricultural University*, 18(March): 2009–2012.
- Irianingsih, S.H., Waluyati, D.E., Mulyawan, H., dan Tjatur Rasa, F.S. 2014. *Kajian Pendahuluan Infeksi Persisten Bovine Viral Diarrhea (IP-BVD) pada Sapi Perah*. Prosiding Konferensi Ilmiah Veteriner Nasional ke-13, Perhimpunan Dokter Hewan Indonesia, Palembang, hal: 233-235.

- Isken, O., Langerwisch, U., Schönherr, R., Lamp, B., Schröder, K., Duden, R., Rümenapf, T. H., and Tautz, N. 2014. Functional characterization of bovine viral diarrhea virus nonstructural protein 5A by reverse genetic analysis and live cell imaging. *Journal of Virology*, 88(1): 82–98.
- Iqbal, M., and McCauley, J. W. 2002. Identification of the glycosaminoglycan-binding site on the glycoprotein Erns of bovine viral diarrhoea virus by site directed mutagenesis. *Journal of General Virology*, 83(2002): 2153-2159.
- Iqbal, M., Poole, E., Goodbourn, S., and McCauley, J. W. 2004. Role for Bovine Viral Diarrhea Virus Erns Glycoprotein in the Control of Activation of Beta Interferon by Double-Stranded RNA. *Journal of Virology*, 78(1): 136-145.
- Jenckel, M., Höper, D., Schirrmeier, H., Reimann, I., Goller, K.V., Hoffmann, B., and Beer, M. 2014. Mixed triple: allied viruses in unique recent isolates of highly virulent type 2 bovine viral diarrhea virus detected by deep sequencing. *Journal of Virology*, 88(12): 6983-92.
- Jordan, R., Wang, L., Graczyk, T. M., Block, T. M., and Romano, P. R. 2002. Replication of a cytopathic strain of bovine viral diarrhea virus activates PERK and induces endoplasmic reticulum stress-mediated apoptosis of MDBK cells. *Journal of Virology*, 76(19): 9588–9599.
- Lindberg, A.L., and Alenius, S., 1999. Principles for eradication of bovine viral diarrhoea virus (BVDV) infections in cattle populations. *Veterinary Microbiology*, 64(2-3): 197–222.
- Kameyama, K., Sakoda, Y., Tamai, K., Nagai, M., Akashi, H., and Kida, H. 2006a. Genetic recombination at different points in the Npro-coding region of bovine viral diarrhea viruses and the potentials to change their antigenicities and pathogenicities. *Virus Research*, 116(2006): 78–84.
- Kameyama, K., Sakoda, Y., Tamai, K., Igarashi, H., Tajima, M., Mochizuki, T., Namba, Y., and Kida, H. 2006b. Development of an immunochromatographic test kit for rapid detection of bovine viral diarrhea virus antigen. *Journal of Virological Methods*, 138(2006): 140–146.
- Kameyama, K. I., Sakoda, Y., Matsuno, K., Ito, A., Tajima, M., Nakamura, S., and Kida, H. 2008. Cleavage of the NS2-3 protein in the cells of cattle persistently infected with non-cytopathogenic bovine viral diarrhea virus. *Microbiology and Immunology*, 52(2008): 277–282.

- Kampa, J., Ståhl, K., Renström, L. H. M., and Alenius, S. 2007. Evaluation of a commercial Erns -capture ELISA for detection of BVDV in routine diagnostic cattle serum samples. *Acta Veterinaria Scandinavia*, 7(49): 1–7.
- Karimy, M.F. 2016. *Ragam Genetik Bovine Viral Diarrhea Virus Genotipe 1 (Singer dan CP) dan Genotipe 2 (890, Ngawi dan Ngambal) pada NPro Region*. Tesis. PS Bioteknologi Sekolah PascaSarjana, Universitas Gadjah Mada, Yogyakarta.
- Kapil, S., Walz, P., Wilkerson, M., and Minocha, H. 2005. Immunity and Immunosuppression. In *Bovine Viral Diarrhea Virus Diagnosis, Management and Control*. (Goyal, S. M. and Ridpath, J. F., eds), 1st Ed. Blackwell Publishing, Iowa, USA, pp.: 157-170.
- Klemens O, Dubrau D, and Tautz N. 2015. Characterization of the determinants of NS2-3-independent virion morphogenesis of pestiviruses. *Journal of Virology*, 89(22):11668 –11680.
- Kosakovsky, P., and Frost, S. D. W. 2005. Not So Different After All: A Comparison of Methods for Detecting Amino Acid Sites Under Selection. *Molecular Biology and Evolution*, 22(5): 1208-1222.
- Krey, T., Bontems, F., Vonnrhein, C., Vaney, M-C., Bricogne, G., Rumenapf, T., and Rey, F. A. 2012. Crystal Structure of the Pestivirus Envelope Glycoprotein Erns and Mechanistic Analysis of Its Ribonuclease Activity. *Structure*, 20(2012): 862–873.
- Kuca, T., Passler, T., Newcomer, B. W., Neill, J. D., Galik, P. K., Riddell, K. P., Zhang, Y., Walz, P. H. 2018. Identification of Conserved Amino Acid Substitutions During Serial Infection of Pregnant Cattle and Sheep with Bovine Viral Diarrhea Virus. *Frontiers in Microbiology*, 9(June 2018): 1109.
- Kuhne, S., Schroeder, C., Holmquist, G., Wolf, G., Horner, S., Brem, G, and Ballagi, A. 2005. Detection of bovine viral diarrhoea virus infected cattle- testing tissue samples derived from ear tagging using an Erns capture ELISA. *Journal of Veterinary Medicine series B-Infectious Disease and Veterinary Public Health*, 52(6): 272-277.
- Kumar, S., Stecher, G., Li, M., Knyaz, C., and Tamura, K. 2018. MEGA X: Molecular Evolutionary Genetics Analysis across computing platforms. *Molecular Biology and Evolution*, 35(6): 1547-1549.

- Kummerer, B.M., Stoll, D., and Meyers, G. 1998. Bovine viral diarrhea virus strain Oregon: a novel mechanism for processing of NS2 3 based on point mutations. *Journal of Virology*, 72(5), 4127-2138.
- Kummerer, B.M., and Meyers, G. 2000. Correlation between point mutations in NS2 and the viability and cytopathogenicity of Bovine viral diarrhea virus strain Oregon analyzed with an infectious cDNA clone. *Journal of Virology*, 74(1), 390-400.
- Lackner, T., Mu, A., Pankraz, A., Becher, P., Thiel, H., Gorbalenya, A.E., and Tautz, N. 2004. Temporal Modulation of an Autoprotease Is Crucial for Replication and Pathogenicity of an RNA Virus. *Journal of Virology*, 78(19): 10765-10775.
- Lackner, T., Muller, A., Konig, M., Thiel, H.-J., and Tautz, N. 2005. Persistence of Bovine Viral Diarrhea Virus Is Determined by a Cellular Cofactor of a Viral Autoprotease. *Journal of Virology*, 79(15): 9746-9755.
- Lang, Y., Gao, S., Du, J., Shao, J., Cong, G., Lin, T., Zhao, F., Liu, L., Chang, H. 2014. Polymorphic genetic characterization of E2 gene of bovine viral diarrhea virus in China. *Veterinary Microbiology*, 174(2014): 554–559.
- Lanyon, S. R., and Reichel, M. P. 2013. Understanding the Impact and Control of Bovine Viral Diarrhoea in Cattle Populations. *Springer Science Reviews*, 1(1-2): 85-93.
- Lanyon, S. R., and Reichel, M. P. 2014. Bovine viral diarrhoea virus ('pestivirus') in Australia: To control or not to control?. *Australian Veterinary Journal*, 92(8): 277-282.
- Lanyon, S. R., Hill, F. I., Reichel, M. P., and Brownlie, J. 2014. Bovine viral diarrhoea : Pathogenesis and diagnosis. *The Veterinary Journal*, 199(2014): 201–209.
- Li, Y., Wang, J., Kanai, R., and Modis, Y. 2013. Crystal structure of glycoprotein E2 from bovine viral diarrhea virus. *Proceedings of The National Academy of Sciences of The United States of America*, 110(17): 6805–6810.
- Liang, D., Chen, L., Ansari, I. H., Gil, L. H. V. G., Topliff, C. L., Kelling, C. L., and Donis, R. O. 2009. A replicon trans -packaging system reveals the requirement of nonstructural proteins for the assembly of bovine viral diarrhea virus (BVDV) virion. *Virology*, 387(2): 331–340.

- Liebner-Tenorio, E.M. 2005. Pathogenesis. In *Bovine Viral Diarrhea Virus Diagnosis, Management and Control*. (Goyal, S. M. and Ridpath, J. F., eds), 1st Ed. Blackwell Publishing, Iowa, USA, pp.: 121-143.
- Lindenbach, B. D., Thiel, H.-J., and Rice, C. M. 2007. Flaviviridae: The Viruses and Their Replication. In *Fields Virology*. (Knipe, D. M. and Howley, P. M., eds), 5th Ed. Lippincott-Raven Publishers, Philadelphia, pp.: 1101–1151.
- Liu, L., Xia, H., Wahlberg, N., Belák, S., and Baule, C. 2009. Phylogeny, classification and evolutionary insights into pestiviruses. *Virology*, 385(2009): 351–357.
- Liu, H., Li, Y., Gao, M., Wen, K., Jia, Y., Liu, X., Zhang, W., Ma, B., and Wang, J. 2012. Complete Genome Sequence of a Bovine Viral Diarrhea Virus 2 from Commercial Fetal Bovine Serum. *Journal of Virology*, 86(18): 10233.
- Luzzago, C., Lauzi, S., Ebranati, E., Giammarioli, M., Moreno, A., Cannella, V., Masoero, L., Canelli, E., Guercio, A., Caruso, C., Ciccozzi, M., DeMia, G. M., Acutis, P. L., Zehender, G., and Peletto, S. 2014. Extended Genetic Diversity of Bovine Viral Diarrhea Virus and Frequency of Genotypes and Subtypes in Cattle in Italy between 1995 and 2013. *BioMed Research International*, 2014 (June): 1-8.
- Mahlum, C. E., Haugerud, S., Shivers, J. L., Rossow, K. D., Goyal, S. M., Collins, J. E., and Faaborg, K. S. 2002. Detection of bovine viral diarrhea virus by TaqMan reverse transcription polymerase chain reaction. *Journal of Veterinary Diagnostic Investigation*, 14(2): 120–125.
- Makoschey, B., Sonnemans, D., Bielsa, J. M., Franken, P., Mars, M., Santos, L., and Ivarez, M. 2007. Evaluation of the induction of NS3 specific BVDV antibodies using a commercial inactivated BVDV vaccine in immunization and challenge trials. *Vaccine*, 25(32): 6140–6145.
- Mari, V., Losurdo, M., Lucente, M.S., Lorusso, E., Elia, G., Martella, V., Patruno, G., Buonavoglia, D., and Decaro, N. 2016. Multiplex real-time RT-PCR assay for bovine viral diarrhea virus type 1, type 2 and HoBi-like pestivirus. *Journal of Virological Methods*, 229(March 2016): 1-7.
- Marino, S. M., and Gladyshev, V. N. 2012. Analysis and Functional Prediction of Reactive Cysteine Residues. *Journal Biological Chemistry*, 287(7): 4419-4425.

- Mishra, N., Vilcek, S., Jain, P., Pitale, S. S., and Pradhan, H. K. 2006. Genetic Analysis of Indian Bovine Viral Diarrhea Virus 1 Isolates in NPro and Entire Gene Region Coding Structural Proteins. *Acta Virologica*, 50(1): 39-44.
- Mishra, N., Behera, S.P., Kalaiyarasu, S., Nema, R.K., Dubey, P., and Rajukumar, K. 2018. Complete Genome Sequences Analysis of an Indian Cattle strain of Bovine Viral Diarrhoea 2 (BVDV-2). *Indian Journal of Experimental Biology*, 56(May 2018): 322-326.
- Myers, T. M., Kolupaeva, V. G., Mendez, E., Baginski, S. G., Frolov, I., Hellen, C. U., and Rice, C. M. 2001. Efficient translation initiation is required for replication of bovine viral diarrhea virus subgenomic replicons. *Journal of Virology*, 75(9): 4226–4238.
- Nagai, M., Sakoda, Y., Mori, M., Hayashi, M., Kida, H., and Akashi, H. 2003. Insertion of Cellular Sequence and RNA Recombination in The Structural Protein Coding Region of Cytopathogenic Bovine Viral Diarrhoea Virus. *Journal of General Virology*, 84(2003): 447-452.
- Nagai, M., Hayashi, M., Sugita, S., Sakoda, Y., Mori, M., Murakami, T., Ozawa, T., Yamada, N., and Akashi, H. 2004. Phylogenetic analysis of bovine viral diarrhea viruses using five different genetic regions. *Virus Research*, 99(2): 103–113.
- Nagai, M., Hayashi, M., Itou, M., Fukutomi, T., Akashi, H., Kida, H., and Sakoda, Y. 2008. Identification of new genetic subtypes of bovine viral diarrhea virus genotype 1 isolated in Japan. *Virus Genes*, 36(1): 135–139.
- Nagayama, K., Oguma, K., and Sentsui, H. 2015. Survey on Vertical Infection of Bovine Viral Diarrhea Virus from Fetal Bovine Sera in the Field. *Journal of Veterinary Medical Science*, 77(11): 1531–1534.
- Nam, B., Zheng, Y., Zhang, J., Shuck, K.M., Timoney, P.J, and Balasuriya, U.B.R. 2015. Complete Genome Sequence of Noncytopathic Bovine Viral Diarrhea Virus 1 Contaminating a High-Passage RK-13 Cell Line. *Genome Announcements*, 3(5): e01115-15.
- Neill, J. D., 2005. Interactions of Virus and Host. In *Bovine Viral Diarrhea Virus Diagnosis, Management and Control*. (Goyal, S. M. and Ridpath, J. F., eds), 1st Ed. Blackwell Publishing, Iowa, USA, pp.: 177-195.

- Neill, J.D. 2013. Molecular biology of bovine viral diarrhea virus. *Biologicals*, 41(1): 2–7.
- Neill, J.D., Bayles, D.O., and Ridpath, J.F. 2014. Simultaneous rapid sequencing of multiple RNA virus genomes. *Journal of Virological Methods*, 201(2014): 68-72.
- Newcomer, B.W., Neill, J.D., Marley, M.S., Ridpath, J.F., and Givens, M.D. 2013. Mutations induced in the NS5B gene of bovine viral diarrhea virus by antiviral treatment convey resistance to the compound. *Virus Research*, 174(2013): 95-100.
- Newcomer, B. W., and Givens, D. 2016. Diagnosis and Control of Viral Diseases of Reproductive Importance Infectious Bovine Rhinotracheitis and Bovine Viral Diarrhea. *Veterinary Clinic of North America-Food Animal Practice*, 32(2): 425-441.
- Novackova, M., Jackova, A., Kolesarova, M., and Vilcek, S. 2008. Genetic Analysis of Bovine Viral Diarrhea Virus 2 Isolate from Slovakia. *Acta Virologica*, 52(2008): 161-166.
- Ohmann, H. B. 1990. Electron microscopy of bovine virus diarrhoea virus. *Revue Scientifique et Technique (International Office of Epizootics)*, 9(1): 61–73.
- Omari, K. E., Iourin, O., Harlos, K., Grimes, J. M., and Stuart, D. I. 2013. Structure of a Pestivirus Envelope Glycoprotein E2 Clarifies Its Role in Cell Entry. *Cell Reports*, 3(2013): 30–35
- Peterhans, E., and Schweizer, M. 2010. Pestiviruses: How to outmaneuver your hosts. *Veterinary Microbiology*, 142(2010): 18–25.
- Peterhans, E., Bachofen, C., Stalder, H., and Schweizer, M. 2010. Cytopathic bovine viral diarrhea viruses (BVDV): Emerging pestiviruses doomed to extinction. *Veterinary Research*, 41(6): 44.
- Pogranichniy, R. M., Schnur, M. E., Raizman, E. A., Murphy, D. A., Negron, M., and Thacker, H. L., 2011. Isolation and Genetic Analysis of Bovine Viral Diarrhea Virus from Infected Cattle in Indiana. *Veterinary Medicine International*, 2011(March 2011): 925910.
- Polak, M.P., Rola J., and Żmudziński, J.F. 2008. Contamination of Foetal Bovine Serum with Bovine Viral Diarrhoea Virus (BVDV). *Bulletin of The Veterinary Institute in Pulawy*, 52(2008): 501-505.

- Potgieter, L. N. D. 1995. Immunology of Bovine Viral Diarrhea Virus. *Veterinary Clinics of North America: Food Animal Practice*, 11(3): 501-520.
- Prastyowati, A. 2015. *Deteksi dan Identifikasi Infeksi Persisten Bovine Viral Diarrhea Virus dalam Kelompok Sapi Perah*. Tesis. PS Bioteknologi, Sekolah PascaSarjana, Universitas Gadjah Mada, Yogyakarta.
- Primawidyan, A., Indrawati, A., dan Lukman, D.W. 2016. Deteksi Penyakit Bovine Viral Diarrhea pada Sapi Potong Impor melalui Pelabuhan Tanjung Priok. *Acta Veterinaria Indonesiana*, Fakultas Kedokteran Hewan IPB, 4(1): 7-13.
- Reichel, M. P., Lanyon, S. R., and Hill, F. I. 2018. Perspectives on Current Challenges and Opportunities for Bovine Viral Diarrhoea Virus Eradication in Australia and New Zealand. *Pathogens*, 7(14): 1-10.
- Ridpath, J.F., Hietala, S. K., Sorden, S., and Neill, J.D. 2002. Evaluation of the reverse transcription-polymerase chain reaction/probe test of serum samples and immunohistochemistry of skin sections for detection of acute bovine viral diarrhea infections. *Journal Veterinary Diagnostic Investigation*, 14(4): 303–307.
- Ridpath, J.F. 2005. Classification and Molecular Biology. In *Bovine Viral Diarrhea Virus Diagnosis, Management and Control*. (Goyal, S. M. and Ridpath, J. F., eds), 1st Ed. Blackwell Publishing, Iowa, USA, pp.: 65-80.
- Ridpath, J.F. 2013. Immunology of BVDV vaccines. *Biologicals*, 41(1): 14-19.
- Ronecker, S., Zimmer, G., Herrler, G., Greiser-Wilke, I., and Grummer, B. 2008. Formation of bovine viral diarrhea virus E1–E2 heterodimers is essential for virus entry and depends on charged residues in the transmembrane domains. *Journal of General Virology*, 89(2008): 2114–2121.
- Rumenapf, T., Stark, R., Heimann, M., and Thiel, H. J. 1998. N-Terminal Protease of Pestivirus: Identification of Putative Catalytic Residues by Site-Directed Mutagenesis. *Journal of Virology*, 72(3): 2544-2547.
- Saepullo, M., and Sendow, I. 2015. Identification and Characterization of Bovine Viral Diarrhea Virus from Indonesian Cattle. *Jurnal Veteriner*, 16(1), 1–7.
- Saliki, J.T., Fulton, R. W., Hull, S. R., and Dubovi, E. J. 1997. Microtiter Virus Isolation and Enzyme Immunoassays for Detection of Bovine Viral Diarrhea Virus in Cattle Serum. *Journal of Clinical Microbiology*, 35(4): 803–807.

- Saliki, J. T., Huchzermeier, R. O. Y., and Dubovi, E. J. 2000. Evaluation of a New Sandwich ELISA Kit That Uses Serum for Detection of Cattle Persistently Infected with BVD Virus. *Annals of New York Academy of Science*, 916(1): 358–363.
- Saliki, J.T., and Dubovi, E. J. 2004. Laboratory diagnosis of bovine viral diarrhea virus infections. *Veterinary Clinics of North America – Food Animal Practice*, 20(1): 69–83.
- Santman-Berends, I., Mars, M. H., Duijn, L. Van, and Schaik, G. Van. 2015. Evaluation of the epidemiological and economic consequences of control scenarios for bovine viral diarrhea virus in dairy herds. *Journal of Dairy Science*, 98(11): 7699-7716.
- Sato, A., Tateishi, K., Shinohara, M., Naoi, Y., Shiokawa, M., Aoki, H., Ohmori, K., Mizutani, T., Shirai, J., and Nagai, M. 2016. Complete Genome Sequencing of Bovine Viral Diarrhea Virus 1, Subgenotypes 1n and 1o. *Genome Announcements*, 4(1): e01744-15.
- Sayers, R. G., Sayers, G. P., Graham, D. A., and Arkins, S. 2015. Impact of three inactivated bovine viral diarrhoea virus vaccines on bulk milk p80 (NS3) ELISA test results in dairy herds. *Veterinary Journal*, 205(1): 56–61.
- Schweizer, M., and Peterhans, E. 2001. Noncytopathic Bovine Viral Diarrhea Virus Inhibits Double-Stranded RNA-Induced Apoptosis and Interferon Synthesis Noncytopathic Bovine Viral Diarrhea Virus Inhibits Double-Stranded RNA-Induced Apoptosis and Interferon Synthesis. *Journal of Virology*, 75(10): 4692–4698.
- Smith, R. L., Sanderson, M. W., Jones, R., Guessan, Y. N., Renter, D., Larson, R., and White, B. J. 2014. Economic risk analysis model for bovine viral diarrhea virus biosecurity in cow-calf herds. *Preventive Veterinary Medicine*, 113(4): 492–503.
- Soltan, M. A., Wilkes, R. P., Elsheery, M. N., Elhaig, M. M., Riley, M. C., and Kennedy, M. A. 2015a. Circulation of bovine viral diarrhea virus - 1 (BVDV-1) in dairy cattle and buffalo farms in Ismailia Province, Egypt. *Journal of Infection in Developing Countries*, 9(12): 1331–1337.
- Soltan, M. A., Wilkes, R. P., Elsheery, M. N., Elhaig, M. M., Riley, M. C., and Kennedy, M. A. 2015b. Complete Genome Sequence of Bovine Viral Diarrhea Virus-1 Strain Egy/Ismailia/2014, Subtype 1b. *Genome Announcements*, 3(6): 11262.

- Stalder, H., Schweizer, M., and Bachofen, C. 2015. Complete Genome Sequence of a Bovine Viral Diarrhea Virus Subgenotype 1e Strain Isolated in Switzerland. *Genome Announcements*, 3(3): e00636-15.
- Sudarisman. 2011. Bovine Viral Diarrhea Pada Sapi di Indonesia Dan Permalahannya. *Wartazoa*, 21(1): 18–24
- Tautz, N., Tews, B. A., and Meyers, G. 2015. The Molecular Biology of Pestivirus. *Advances in Virus Research*, 93(2015): 47-160.
- Toplak, I., Kuhar, U., Kušar, D., Papic', B., Koren, S., and Toplak, N. 2016. Complete genome sequence of a bovine viral diarrhea virus subgenotype 1e strain, SLO/2407/2006, isolated in Slovenia. *Genome Announcement*, 4(6): e01310-16.
- Untari, T. 1997. *Non-cytopathic Bovine Viral Diarrhea Virus pada Kelompok Sapi Perah Penderita Gangguan Reproduksi*. Tesis. PS Bioteknologi Sekolah PascaSarjana, Universitas Gadjah Mada, Yogyakarta.
- Vilcek, S., Paton, D. J., Durkovic, B., Strojny, L., Ibata, G., Moussa, A., Loitsch, A, Rossmann, W., Vega, S., Scicluna, M.T., and Palfi, V. 2001. Bovine viral diarrhoea virus genotype 1 can be separated into at least eleven genetic groups. *Archives of Virology*, 146(1): 99–115.
- Vilcek, S., Durkovic, B., Kolesarova, M., Greiser-Wilke, I., and Paton, D. 2004. Short note Genetic diversity of international bovine viral diarrhoea virus (BVDV) isolates: identification of a new BVDV-1 genetic group. *Veterinary Research*, 35(2004): 609-615.
- Vilcek, S., Durkovic, B., Kolesarova, M., and Paton, D. J. 2005. Genetic diversity of BVDV: Consequences for classification and molecular epidemiology. *Preventive Veterinary Medicine*, 72(1–2): 31–35
- Walz, P., Grooms, D. L., Passler, T., Ridpath, J. F., Tremblay, R., Step, D., Callan, R.J., and Givens, M.D. 2010. Control of bovine viral diarrhea virus in ruminants. *Journal of Veterinary Internal Medicine*, 24(3), 476–486.
- Wang, W., Shi, X., Tong, Q., Wu, Y., Xia, M. Q., Ji, Y., Xue, W. and Wu, H. 2014. A bovine viral diarrhea virus type 1a strain in China: isolation, identification, and experimental infection in calves. *Virology Journal*, 11(2014): 8.

- Wang, F. I., Deng, M. C., Huang, Y. L., and Chang, C. Y. 2015. Structure and Functions of Pestivirus Glycoproteins: Not Simply Surface Matters. *Viruses*, 7(2015): 3506-3529.
- Weiskircher, E., Aligo, J., Ning, G. and Konan, K. V. 2009. Bovine viral diarrhea virus NS4B protein is an integral membrane protein associated with Golgi markers and rearranged host membranes. *Virology Journal*, 6(2009): 185.
- Winarso, B., Sajuti, R., dan Muslim, C. 2005. Tinjauan Ekonomi Ternak Sapi Potong di Jawa Timur. *Forum Penelitian Agro Ekonomi*, 23(1): 61–71.
- Wiyono, A., Ronohardjo, P., Graydon, R., dan Daniels, P. 1989. Diare ganas sapi: Kejadian penyakit pada sapi bali bibit asal sulawesi. *Penyakit Hewan*, XXI (38): 77–83.
- Workman, A. M., Heaton, M. P., Harhay, G. P., Smith, T. P. L., Grotelueschen, D. M., Sjeklocha, D., Brodersen, B., Petersen, J. L., and Chitko-McKown, C. G. 2016. Resolving Bovine viral diarrhea virus subtypes from persistently infected U.S. beef calves with complete genome sequence. *Journal of Veterinary Diagnostic Investigation*, 28(5): 519–528.
- Wuryastuti, H., and Wasito, R. 1998. Detection of biotype and genomic type of bovine viral diarrhea virus (BVDV) from acute/peracute field cases. *Indonesian Journal of Biotechnology*, June (1998):199-204.
- Wuryastuti, H., Putro, P.P., Wasito, R., and Maes, R.K. 2015. Genetic Variability of Bovine Viral Diarrhea Virus in Persistently Infected Cattle in Central Java, Indonesia. *Merit Research Journal of Microbiology and Biological Sciences*, 3(3): 031-036.
- Wuryastuti, H., Putro, P.P., and Wasito, R. 2016. Prevalence of Antibody to Bovine Viral Diarrhea Field Virus in Dairy Cattle in Central Java, Indonesia. *Proceeding of 19th Federation of Asian Veterinary Association Congress*, Ho Chi Minh City, Vietnam, pp.: 194-195.
- Wuryastuti, H., Wasito, R., and Sugiyono. 2018. Genotypes and biotypes variation of bovine viral diarrhea virus from persistently infected dairy cattle in Java, Indonesia. *Integraive Journal of Veterinary Bioscience*, 2(3): 1-7.
- Xue, F., Zhu, Y. M., Li, J., Zhu, L. C., Ren, X. G., Feng, J. K., Shi, H.F., and Gao, Y.R. 2010. Genotyping of bovine viral diarrhea viruses from cattle in China between 2005 and 2008. *Veterinary Microbiology*, 143(2–4): 379–383.

- Yan, L., Zhang, S., Pace, L., Wilson, F., Wan, H., and Zhang, M. 2011. Combination of reverse transcription real-time polymerase chain reaction and antigen capture enzyme-linked immunosorbent assay for the detection of animals persistently infected with Bovine viral diarrhea virus. *Journal Veterinary Diagnostic Investigation*, 23(1): 16–25.
- Yesilbag, K., Förster, C., Ozyiğit, M. O., Alpay, G., Tuncer, P., Thiel, H. J., and König, M. 2014. Characterisation of bovine viral diarrhoea virus (BVDV) isolates from an outbreak with haemorrhagic enteritis and severe pneumonia. *Veterinary Microbiology*, 169(1–2): 42–49.
- Yesilbag, K., Alpay, G., and Becher, P. 2017. Variability and Global Distribution of Subgenotypes of Bovine Viral Diarrhea Virus. *Viruses*, 9(128): v9060128.
- Zhang, S., Tan, B., Ding, Y., Wang, F., Guo, L., Wen, Y., Cheng, S., and Wu, H. 2014a. Complete genome sequence and pathogenesis of bovine viral diarrhea virus JL-1 isolate from cattle in China. *Virology Journal*, 11(1): 67.
- Zhang, S., Tan, B., Guo, L., Wang, F., Zhu, H., Wen, Y., and Cheng, S. 2014b. Genetic Diversity of Bovine Viral Diarrhea Viruses in Commercial Bovine Serum Batches of Chinese Origin. *Infection, Genetics and Evolution* 27(Aug 2014): 230–233.
- Zhu L, Lu H, Cao Y, Gai X, Guo C, Liu Y, Liu, J., and Wang, X. 2016. Molecular Characterization of a Novel Bovine Viral Diarrhea Virus Isolate SD-15. *PLoS ONE*, 11(10): e0165044.