DAFTAR PUSTAKA

Abah, I. O., Ncube, N. B. Q., Bradley, H. A., AgbaJi, O. O. and Kanki, P. (2019) „Antiretroviral Therapy-associated Adverse Drug Reactions and their Effects on Virologic Failure- A Retrospective Cohort Study in Nigeria" *Current HIV Research*, 16(6), pp. 436–446. doi:10.2174/1389450120666190214144609.

Abhimanyu, Coussens AK. The role of UV radiation and vitamin D in the seasonality and outcomes of infectious disease. Photochem Photobiol Sci. 2017;16:314–338.

Adeyemi OM, Agniel D, French AL, Tien PC, Weber K, Glesby MJ, et al. Vitamin D deficiency in HIV-infected and HIV-uninfected women in the United States. J Acquir Immune Defic Syndr. 2011; 57:197–204. [PubMed: 21471818]

Agarwal, S.G., Powar, R.M., Tankhiwale, S., Rukadikar, A. Study of opportunistic infections in HIV-AIDS patients and their co-relation with CD4+ cell count. *Int J Curr Microbiol App Sci.* 2015; 4(6): 848-61.

Aguilar-Jiménez W, Zapata W, Caruz A, Rugeles MT. High transcript levels of vitamin D receptor are correlated with higher mRNA expression of human beta defensins and IL-10 in mucosa of HIV-1-exposed seronegative individuals. PLoS One. 2013 Dec 5;8(12):e82717. doi: 10.1371/journal.pone.0082717. PMID: 24349345; PMCID: PMC3857805.

Akinyemi, J. O., Ogunbosi, B. O., Fayemiwo, A. S., Adesina, O. A., Obaro, M., Kuti, M. A., Awolude, O. A., Olaleye, D. O. and Adewole, I. F. (2017) „Demographic and epidemiological characteristics of HIV opportunistic infections among older adults in Nigeria" *African Health Sciences*, 17(2), pp. 315–321. doi: 10.4314/ahs.v17i2.4.

Alroy I, Towers TL, Freedman LP. Transcriptional repression of the inter-leukin-2 gene by vitamin D3: direct inhibition of NFATp/AP-1 complex for-mation by a nuclear hormon receptor. Mol Cell Biol (1995) 15(10):5789–99. doi:10.1128/MCB.15.10.5789

Alshahrani F, Aljohani N. Vitamin D: deficiency, sufficiency and toxicity. *Nutrients* (2013) 5(9):3605–16. doi:10.3390/nu5093605.

Andersson U, H. Wang, K. Palmblad et al., "High mobility group 1 protein (HMG-1) stimulates proinflammatory cytokine synthesis in human monocytes," *Journal of Experimental Medicine*, vol. 192, no. 4, pp. 565–570, 2000.

Anwar Y. Nugroho S. A. and Wulandari S. D. (2018) „Profile Of Antiretroviral Side Effects On Hiv In Rspi Prof. Dr. Sulianti Saroso Jakarta" *Jurnal Ilmu Kefarmasian Indonesia*, 16(1), p. 49. doi: 10.35814/jifi.v16i1.442.

Ariani W., Arya L.N., Suryana K. "Spektrum infeksi oportunistik pada klien Klinik Merpati RSUD Wangaya periode Januari-Februari 2014." *E-Jurnal Medika Udayana.* 2015; 4(2): 1-7.

Astari, Linda; Sawitri; Safitri, Yunia Eka dan Hinda, Desy. 2009. *Viral Load* pada Infeksi HIV (*Viral Load in HIV Infection*). *Departemen/Staf Medik Fungsional Kesehatan Kulit dan Kelamin Fakultas Kedokteran Universitas Airlangga/Rumah Sakit Umum Daerah Dr. Soetomo Surabaya: Berkala Ilmu Kesehatan Kulit & Kelamin* Vol. 21 No. 1 April 2009.

Aziz M, Livak B, Burke-Miller J, et al. Vitamin D insufficiency may impair CD4 *recovery* among Women's Interagency HIV Study participants with advanced disease on HAART. *AIDS*. 2013;27(4):573-578. doi:10.1097/QAD.0b013e32835b9ba1

Baeke F, Korf H, Overbergh L, Verstuyf A, Thorrez L, Van Lommel L, et al. The vitamin D analog, TX527, promotes a human CD4+CD25highCD127low regulatory T cell profile and induces a migratory signature specific for homing to sites of inflammation. J Immunol (2011) 186(1):132–42. doi:10.4049/jimmunol.1000695

Bang, S. A. Shakar, M. F. Hitz et al., "Deficiency of 25-hydroxyvitamin D in male HIV-positive patients: A Descriptive Cross-Sectional Study," *Scandinavian Journal of Infectious Diseases*, vol. 42, no. 4, pp. 306–310, 2010.

Barqasho, B dkk. Implications Of The Release Of High-Mobility Group Box 1 Protein From Dying Cells During Human Immunodeficiency Virus Type 1 Infection In Vitro. *Journal Of Virology*. 2010; 91: 1800-1809. [pdf].

Bearden A, Abad C, Gangnon R, Sosman JM, Binkley N, Safdar N. Cross-sectional study of vitamin D levels, immunologic and virologic outcomes in HIV-infected adults. J Clin Endocrinol Metab. 2013 Apr;98(4):1726-33. doi: 10.1210/jc.2012-4031. Epub 2013 Mar 1. PMID: 23457406; PMCID: PMC3615198.

Bikle DD. Vitamin D metabolism, mechanism of action, and clinical applications. Chem Biol. 2014;21:319–329.

Bouillon R. Optimal vitamin D supplementation strategies. Endocrine. 2017;56:225–226.

Boom, R., Sol, CJ., Salimans, MM., Jansen, CL., Wertheim-van Dillen, PM., van der Noorda, J. 1990. Rapid and Simple Method for purification of Nucleic Acids. J Clin Microbiol. 28 (3) : 495-503.

Boonyaratanakornkit V, Melvin V, Prendergast P, Altmann M, Ronfani L, Bianchi ME, Taraseviciene L, Nordeen SK, Allegretto EA, Edwards DP. High-mobility group chromatin proteins 1 and 2 functionally interact with steroid hormon receptors to enhance their DNA binding in vitro and transcriptional activity in mammalian cells. Mol Cell Biol 1998; 18: 4471–87. [PubMed: 9671457]

Boonstra A, Barrat FJ, Crain C, Heath VL, Savelkoul HF, O'Garra A. 1alpha,25 Dihydroxyvitamin d3 has a direct effect on naive CD4(+) T cells to enhance

the development of Th2 cells. J Immunol (2001) 167(9):4974–80. doi:10.4049/jimmunol.167.9.4974

Carlberg C, Haq A. The Concept of the Personnal Vitamin D Response Index. J Steroid Biochem Mol Biol. 2016

Carlberg C, Seuter S, Heikkinen S. The First Gemone-wide View of Vitamin D Receptor Locations and Their Mechanistic Implications. *Anticancer Res*. 2012; 32:271-282.

Cassetta L, O. Fortunato, L. Adduce et al., "Extracellular high mobility group box-1 inhibits R5 and X4 HIV-1 strains replication in mononuclear phagocytes without induction of chemokines and cytokines," *AIDS*, vol. 23, no. 5, pp. 567–577, 2009.

Chen S, Sims GP, Chen XX, Gu YY, Chen S, Lipsky PE. Modulatory effects of 1,25-dihydroxyvitamin D3 on human B cell differentiation. J Immunol (2007) 179(3):1634–47. doi:10.4049/jimmunol.179.3.1634

Chen WC, Vayuvegula B, Gupta S. 1,25-Dihydroxyvitamin D3-mediated inhibition of human B cell differentiation. Clin Exp Immunol (1987) 69(3):639–46.

Costa EM, Hirst MA, Feldman D (1985) Regulation of 1,25-dihydroxyvitamin D3 receptors by vitamin D analogs in cultured mammalian cells. Endocrinology
117: 2203–2210.

Czura CJ, Wang H, Tracey KJ. Dual roles for HMGB1: DNA bindingand cytokine. J Endotoxin Res 2001; 7: 315–21. [PubMed: 11717586]

Dahlan, M.S. 2016. *Besar Sampel dalam Penelitian Kedokteran dan Kesehatan*. Jakarta: hal.69-74.

de la Torre MS, Torres C, Nieto G, Vergara S, Carrero AJ et al. (2008) Vitamin D receptor gene haplotypes and susceptibility to HIV-1 infection in injection drug users. J Infect Dis 197: 405-410. doi:10.1086/525043. PubMed: 18205531.

Deng, M dkk. Location Is The Key To unction: HMGB1 In Sepsis And Trauma-Induced Inflamation. *Journal Of Leukocyte Biology*. 2019; 1-9. [pdf].

Dinas Kesehatan Provinsi NTB. 2019. *Pusat Data dan Informasi Kementrian Kesehatan RI – Situasi dan Analisis HIV AIDS*. Jakarta: Pusdatin.

Direktorat Jenderal Pengendalian Penyakit dan Penyehatan Lingkungan Departemen Kesehatan Republik Indonesia. Laporan triwulan situasi perkembangan HIV&AIDS di Indonesia sampai dengan 31 Desember 2009. *Departemen Kesehatan Republik Indonesia*; 2010. p. 1-28.

Di Rosa M, Malaguarnera M, Nicoletti F, Malaguarnera L. Vitamin D3: a helpful immunomodulator. Immunology. 2011; 134:123–139. [PubMed: 21896008]

Dusso AS, Brown AJ, Slatopolsky E. Vitamin D. *Am J Physiol Renal Physiol* (2005) 289(1):F8–28. doi:10.1152/ajprenal.00336.2004

Edfeldt K, Liu PT, Chun R, Fabri M, Schenk M, Wheelwright M, et al. T-cell cytokines differentially control human monocyte antimicrobial responses by regulating vitamin D metabolism. Proc Natl Acad Sci U S A (2010) 107(52):22593–8. doi:10.1073/pnas.1011624108

Ezeamama AE, Guwatudde D, Wang M, Bagenda D, Kyeyune R, Sudfeld C, Manabe YC, Fawzi WW. Vitamin-D deficiency impairs CD4+T-cell count *recovery* rate in HIV-positive adults on highly active antiretroviral therapy: A longitudinal study. Clin Nutr. 2016 Oct;35(5):1110-7. doi: 10.1016/j.clnu.2015.08.007. Epub 2015 Sep 5. PMID: 26371397; PMCID: PMC5289410.

Fakruddin JM, Laurence J. HIV envelopegp120-mediated regulation of osteoclasto-genesis via receptor activator of nuclear fac-tor kappa B ligand (RANKL) secretion andits modulation by certain HIV protease in-hibitors through interferon-gamma/RANKLcross-talk. J Biol Chem2003; 278:48251–8

Ferreira GB, Gysemans CA, Demengeot J, da Cunha JP, Vanherwegen AS, Overbergh L, et al. 1,25-dihydroxyvitamin D3 promotes tolerogenic den-dritic cells with functional migratory properties in NOD mice. J Immunol (2014) 192(9):4210–20. doi:10.4049/jimmunol.1302350

Ferreira GB, van Etten E, Verstuyf A, Waer M, Overbergh L, Gysemans C, et al. 1,25-dihydroxyvitamin D3 alters murine dendritic cell behaviour in vitro and in vivo. Diabetes Metab Res Rev (2011) 27(8):933–41. doi:10.1002/dmrr.1275

Fiuza C, M. Bustin, S. Talwar et al., "Inflammation-promoting activity of HMGB1 on human microvascular endothelial cells," *Blood*, vol. 101, no. 7, pp. 2652–2660, 2003.

French AL, Adeyemi OM, Agniel DM, Evans CT, Yin MT, Anastos K, Cohen MH. The association of HIV status with bacterial vaginosis and vitamin D in the United States. J Womens Health (Larchmt). 2011; 20:1497–1503. [PubMed: 21875343]

Gaskell, H, Ge, X, dan Nieto, N. High Mobility Group Box 1 And Liver Disease. *Hepatology Communications.* 2018; 2 (9): 1005-1020. [pdf].

Gauzzi MC, Purificato C, Donato K, Jin Y, Wang L, Daniel KC, et al. Suppressive effect of 1alpha,25-dihydroxyvitamin D3 on type I IFN-mediated monocyte differentiation into dendritic cells: impairment of functional activities and chemotaxis. J Immunol (2005) 174(1):270–6. doi:10.4049/ jimmunol.174.1.270

Gois PHF, Ferreira D, Olenski S, Seguro AC. Vitamin D and infectious dis-eases: simple bystander or contributing factor? *Nutrients* (2017) 9(7):E651. doi:10.3390/nu9070651

Gonelevue, S dkk. Sterile Inflammatory Role Of High Mobility Group Box 1 Protein: Biological Functions And Involvement In Disease. *Journal Of Vascular Research*. 2018; 55: 244-254. [pdf].

Gombart AF, Borregaard N, Koeffler HP. Human cathelicidin antimicrobial peptide (CAMP) gene is a direct target of the vitamin D receptor and is strongly up-regulated in myeloid cells by 1,25-dihydroxyvitamin D3. *FASEB J* (2005) 19(9):1067–77. doi:10.1096/fj.04-3284com

Hii CS, Ferrante A. The non-genomic actions of vitamin D. *Nutrients* (2016) 8(3):135. doi:10.3390/nu8030135

Hansdottir S, Monick MM, Hinde SL, Lovan N, Look DC, Hunninghake GW. Respiratory epithelial cells convert inactive vitamin D to its active form: potential effects on host defense. J Immunol (2008) 181(10):7090–9. doi:10.4049/jimmunol.181.10.7090

Hatta, M., Smits, HL. 2007. Detection of Salmonella Typhi by Nested Polymerase Chain reaction in blood, urine and stool samples. American J. Tropical Medicine Hygiene. 76: 139- 43.

Haug CJ, Aukrust P, Lien E, Muller F, Espevik T, Froland SS. Disseminated mycobacterium avium complex infection in AIDS: immunopathogenic significance of an activated tumor necrosis factor system and depressed serum levels of 1,25 dihydroxy vitamin D. J Infect Dis. 1996; 173:259–262. [PubMed: 8537672]

Haug C, Muller F, Aukrust P, Froland SS. Subnormal serum concentration of 1,25-Vitamin D in human immunodeficiency virus infection: correlation with degree of immune deficiency and survival. J Infect Dis. 1994; 169:889–893. [PubMed: 7907645]

Havers F, Smeaton L, Gupte N, Detrick B, Bollinger RC, Hakim J, Kumarasamy N, Andrade A, Christian P, Lama JR, Campbell TB, Gupta A; ACTG PEARLS; NWCS 319 Study Teams. 25-Hydroxyvitamin D insufficiency and deficiency is associated with HIV disease progression and virological failure post-antiretroviral therapy initiation in diverse multinational settings. J Infect Dis. 2014 Jul 15;210(2):244-53. doi: 10.1093/infdis/jiu259. Epub 2014 May 5. PMID: 24799602; PMCID: PMC4141201.

Hazenberg MD, Stuart JW, Otto SA, et al. T-cell division in human immunodeficiency virus (HIV)-1 infection is mainly due to immune activation: a longitudinal analysis in patients before and during highly active antiretroviral therapy (HAART). Blood 2000 95: 249–255.

He, S dkk. The Dual Role And Therapeutic potential Of High-Mobility Group Box 1 In Cancer. *Oncotarget*. 2017; 8 (38): 64534-64550. [pdf].

He CS, Aw Yong XH, Walsh NP, Gleeson M. Is there an optimal vitamin D status for immunity in athletes and military personnel? Exerc Immunol Rev. 2016;22:42–64.

Healy KD, Frahm MA, DeLuca HF (2005) 1,25-Dihydroxyvitamin D3 upregulates the renal vitamin D receptor through indirect gene activation and receptor stabilization. Arch Biochem Biophys 433: 466–473.

Heine G, Niesner U, Chang HD, Steinmeyer A, Zugel U, Zuberbier T, et al. 1,25-dihydroxyvitamin D(3) promotes IL-10 production in human B cells. Eur J Immunol (2008) 38(8):2210–8. doi:10.1002/eji.200838216

Hellerstein M, Hanley MB, Cesar D, et al. Directly measured kinetics of circulating T lymphocytes in normal and HIV-1-infected humans. Nat Med 1999; 5: 83–89.

Herrmann M, Farrell CL, Pusceddu I, Fabregat-Cabello N, Cavalier E. Assessment of vitamin D status – a changing landscape. *Clin Chem Lab Med* (2017) 55(1):3–26. doi:10.1515/cclm-2016-0264

Hossein-nezhad A, Holick MF. Vitamin D for health: a global perspective. *Mayo Clin Proc* (2013) 88(7):720–55. doi:10.1016/j.mayocp.2013.05.011.

Hii CS, Ferrante A. The non-genomic actions of vitamin D. *Nutrients* (2016) 8(3):135. doi:10.3390/nu8030135.

Huang SJ, Wang XH, Liu ZD, et al. Vitamin D deficiency and the risk of tuberculosis: a meta-analysis. Drug Des Devel Ther. 2016;11:91–102.

Ibrahim, S. A., Sabitu, K., Abubakar, A., Poggensee, G., Ibrahim, S., Riyad, M., Bashorun, A., Sudawa, A. U., Ibrahim, B. S., Mohammed, H., Ezeudu, C. A u akar A. A. Nsu uga P. and Nguku P. (2019) „Demographic factors associated with HIV infection between low and high prevalence areas in Nigeria 2015“ *The Pan African medical journal*, 32(Supp 1), p.11. doi: 10.11604/pamj.supp.2019.32.1.13330.

Iho S, Takahashi T, Kura F, Sugiyama H, Hoshino T. The effect of 1,25-dihydroxyvitamin D3 on in vitro immunoglobulin production in human B cells. J Immunol (1986) 136(12):4427–31.

Ingrid, E dkk. Release of High Mobility Group Box 1 by Dendritic Cells Controls T Cell Activation via the Receptor for Advanced Glycation End Products. *Journal of Immunology*. 2005. Available at: https://www.jimmunol.org/content/174/12/7506.

International AIDS Society USA. Pathogenesis of HIV infection: total CD4+ T-cell pool, immune activation, and inflammation. *Topics HIV Med.* 2010; 18(1): 2-6.

Jiménez-Sousa MÁ, Martínez I, Medrano LM, Fernández-Rodríguez A, Resino S. Vitamin D in Human Immunodeficiency Virus Infection: Influence on Immunity and Disease. *Front Immunol*. 2018;9:458. Published 2018 Mar 12. doi:10.3389/fimmu.2018.00458

Jeffery LE, Burke F, Mura M, Zheng Y, Qureshi OS, Hewison M, et al. 1,25-dihydroxyvitamin D3 and IL-2 combine to inhibit T cell production of inflammatory cytokines and promote development of regulatory T cells

expressing CTLA-4 and FoxP3. J Immunol (2009) 183(9):5458–67. doi:10.4049/jimmunol.0803217

Jeffery LE, Wood AM, Qureshi OS, Hou TZ, Gardner D, Briggs ZIkeda U, Wakita D, Ohkuri T, Chamoto K, Kitamura H, Iwakura Y, et al. 1alpha,25-Dihydroxyvitamin D3 and all-trans retinoic acid synergistically inhibit the differentiation and expansion of Th17 cells. Immunol Lett (2010) 134(1):7–16. doi:10.1016/j.imlet.2010.07.002

Kamen DL, Tangpricha V. Vitamin D and molecular actions on the immune system: modulation of innate and autoimmunity. J Mol Med (Berl). 2010; 88:441–450. [PubMed: 20119827]

Kang, dkk. HMGB1 In Health And Disease. *National Institutes Of Health.* 2014; pp1-116.

Kaplan, J.E., Masur H. Preventing opportunistic infections among HIVinfected persons. In: Holmes, K.K., Sparling, P.F., Stamm, W.E., Piot, P., Wasserheit, J.N., Corey, L., Cohen, M.S., Watts, D.H., eds. *Sexually Transmitted Diseases*. 4th ed. New York: McGraw-Hill; 2008. p. 1423-41.

Kemenkes. 2019. Keputusan Menteri Kesehatan Republik Indonesia Nomor Hk.01.07/Menkes/90/2019 Tentang Pedoman Nasional Pelayanan Kedokteran Tata Laksana HIV. Available from https://siha.kemkes.go.id › portal › files_upload

Kementrian Kesehatan RI. 2018. Laporan Perkembangan HIV AIDS dan Infeksi Menular Seksual (PIMS) *Triwulan IV Tahun 2016.* Jakarta: Kementrian Kesehatan.

Kent, Stephen. 2017. HIV Vaccine Approaches. doi: 10.1002/9780470015902.a0021550.pub3.

Kim SY, Koh WJ, Park HY, Jeon K, Lee SY, Yim JJ, Shin SJ. Down-Regulation of Serum High-Mobility Group Box 1 Protein in Patients with Pulmonary Tuberculosis and Nontuberculous Mycobacterial Lung Disease. Tuberc Respir Dis (Seoul). 2017 Apr;80(2):153-158. doi: 10.4046/trd.2017.80.2.153. Epub 2017 Mar 31. PMID: 28416955; PMCID: PMC5392486.

Kongsbak M, Levring TB, Geisler C, von Essen MR (2013) The vitamin D receptor and T cell function. Front Immunol 4 (148): 1–10.

Kongsbak M, von Essen MR, Boding L, et al. Vitamin D up-regulates the vitamin D receptor by protecting it from proteasomal degradation in human CD4+ T cells. *PLoS One*. 2014;9(5):e96695. Published 2014 May 2. doi:10.1371/journal.pone.0096695

Korf H, Wenes M, Stijlemans B, Takiishi T, Robert S et al. (2012) 1,25-Dihydroxyvitamin D3 curtails the inflammatory and T cell stimulatory capacity of macrophages through an IL-10-dependent mechanism. Immunobiology 217: 1292-1300. doi:10.1016/j.imbio.2012.07.018. PubMed: 22944250.

Kroner Jde C, Sommer A, Fabri M. Vitamin D every day to keep the infection away? Nutrients. 2015;7:4170–4188.

Lake JE, Adams JS. Vitamin D in HIV-infected patients. Curr HIV/AIDS Rep. (2011) 8:133–41. doi: 10.1007/s11904-011-0082-8

Lane HC, Masur H, Edgar LC, et al. Abnormalities of B-cell activation and immunoregulation in patients with the acquired immunodeficiency syndrome. N Engl J Med 1983; 309: 453–458.

Lang PO, Aspinall R. Can we translate vitamin D immunomodulating effect on innate and adaptive immunity to vaccine response. Nutrients. 2015:2044–2066.

Lang PO, Aspinall R. Vitamin D Status and the Host Resistance to Infections: What It Is Currently (Not) Understood. Clin Ther. 2017 May;39(5):930-945. doi: 10.1016/j.clinthera.2017.04.004. Epub 2017 Apr 28. PMID: 28457494.

Lang PO, Samaras D, Samaras N. Does vitamin D deficiency contribute to further impige the state of vulnerability to infections of aging and aged adults? Eur Geriatr Med. 2013;4:59–65.

Lang PO, Samaras D, Samaras N, Aspinall R. How important is vitamin D in preventing infections? Osteoporos Int. 2013;24:1537–1553.

Larriba MJ, Gonzalez-Sancho JM, Bonilla F, Munoz A. Interaction of vitamin D with membrane-based signaling pathways. *Front Physiol* (2014) 5:60. doi:10.3389/fphys.2014.00060

Lerma-Chippirraz E, Güerri-Fernández R, Villar García J, et al. Validation Protocol of Vitamin D Supplementation in Patients with HIV-Infection. *AIDS Res Treat*. 2016;2016:5120831. doi:10.1155/2016/5120831

Liu PT, Schenk M, Walker VP, Dempsey PW, Kanchanapoomi M, Wheelwright M, et al. Convergence of IL-1beta and VDR activation path-ways in human TLR2/1-induced antimicrobial responses. *PLoS One* (2009) 4(6):e5810. doi:10.1371/journal.pone.0005810

Liu PT, Stenger S, Li H, Wenzel L, Tan BH, Krutzik SR, et al. Toll-like receptor triggering of a vitamin D-mediated human antimicrobial response. *Science* (2006) 311(5768):1770–3. doi:10.1126/science.1123933.

Longo et al. 2015. *Harrison's Principles of Internal Medicine*, 18thed. New York: The McGraw-Hill.

Luckheeram, R.V., Zhou, R., Verma, A.D., Xia, B. CD4+ T cells: differentiation and functions. *Clin Dev Immunol.* 2012; ID 925135: 1-12.

Lyakh LA, Sanford M, Chekol S, Young HA, Roberts AB. TGF-beta and vitamin D3 utilize distinct pathways to suppress IL-12 production andmodulate rapid differentiation of human monocytes into CD83+ dendritic cells. J Immunol (2005) 174(4):2061–70. doi:10.4049/jimmunol.174.4.2061

Mangelsdorf DJ, Pike JW, Haussler MR (1987) Avian and mammalian receptors for 1,25-dihydroxyvitamin D3: in vitro translation to characterize size and hormon-dependent regulation. Proc Natl Acad Sci U S A 84: 354–358.

Mansueto P, Seidita A, Vitale G, Gangemi S, Iaria C, Cascio A. Vitamin D deficiency in HIV infection: not only a bone disorder. *Biomed Res Int* (2015) 2015:735615. doi:10.1155/2015/735615

Magna, M dan Pisetsky D.S. The Role of HMGB1 In The Pathogenesis Of Inflammatory And Autoimmune Diseases. *Moleculer Medical*. 2014; 20 (1): 138-146. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3966993/.

Maartens, G., Celum, C., Lewin, S.R. HIV infection: epidemiology, pathogenesis, treatment, and prevention. *Lancet* 2014; 384: 258–71.

Masur, H., Read, S.W. Opportunistic infections and mortality: still room for improvement. *J Infect Dis.* 2015; *212*(9): 1348-50.

Mayasari, D dan Wijaya, C. Potensi Biomarka *High Mobility Group Box* 1 (HMGB 1) Sebagai Kriteria Diagnosis Asbestosis. *Journal Agromedicine*. 2018; 5 (1) 453-457.

Mehta S, Giovannucci E, Mugusi FM, Spiegelman D, Aboud S, Hertzmark E, et al. Vitamin D status of HIV-infected women and its association with HIV disease progression, anemia, and mortality. PLoS One. 2011; 5:e8770. [PubMed: 20098738]

McMahon L, Schwartz K, Yilmaz O, Brown E, Ryan LK et al. (2011) Vitamin D-mediated induction of innate immunity in gingival epithelial cells. Infect Immun 79: 2250-2256. doi:10.1128/IAI.00099-11. PubMed: 21422187

Menteri Kesehatan Republik Indonesia (2014) *Peraturan Menteri Kesehatan Republik Indonesia Nomor 87 Tahun 2014 Tentang Pedoman Pengobatan Antiretroviral*. Kementrian Kesehatan Republik Indonesia.

Mochammad Hatta, Eko E. Surachmanto, Andi Asadul Islam, Syarifuddin Wahid. 2017. Expression of mRNA IL-17F and sIL-17F in atopic asthma patients. BMC ResearchNotes.10:202. DOI: 10.1186/s13104-017-2517-9. Published: 12 June (2017)

Mueller NJ, Fux CA, Ledergerber B, Elzi L, Schmid P, Dang T, et al. High prevalence of severe vitamin D deficiency in combined antiretroviral therapy-naive and successfully treated Swiss HIV patients. AIDS. 2011; 24:1127–1134. [PubMed: 20168200]

Nevado J, Tenbaum SP, Castillo AI, Sánchez-Pacheco A, Aranda A (2007) Activation of the human immunodeficiency virus type I long terminal repeat by 1 alpha,25-dihydroxyvitamin D3. J Mol Endocrinol 38: 587-601. doi:10.1677/JME-06-0065. PubMed: 17556530.

Nguyen AH, Lim VM, Fleegel JP, Hunter WJ, Agrawal DK. Cutaneous expression of TREM, vitamin D receptor and HMGB1 in vitamin D deficiency. *Int J Clin Exp Pathol*. 2016;9(8):8506-8512.

Nowak P, Abdurahman S, Lindkvist A, Troseid M, Sonnerborg A. *Impact of HMGB1/TLR Ligand Complexes on HIV-1 Replication: Possible Role for Flagellin during HIV-1 Infection*. International Journal of Microbiology: Volume 2012. doi:10.1155/2012/263836

Nowak P, B. Barqasho, and A. Sonnerborg, "Elevated plasma ¨levels of high mobility group box protein 1 in patients with HIV-1 infection," *AIDS*, vol. 21, no. 7, pp. 869–871, 2007.

Nowak P, B. Barqasho, C. J. Treutiger et al., "HMGB1 activates replication of latent HIV-1 in a monocytic cell-line, but inhibits HIV-1 replication in primary macrophages," *Cytokine*, vol. 34, no. 1-2, pp. 17–23, 2006.

Nowak P, B. Barqasho CJ, Treutiger et al. *HMGB1 Activates Replication Of Latent HIV-1 In A Monocytic Cell-Line, But Inhibits HIV-1 Replication In Primary Macrophages*. Cytokine, vol. 34, no. 1-2, pp. 17–23, 2006.

Orkin, Chloe & Wohl, David & Williams, Andy & Deckx, Henri. (2014). Vitamin D Deficiency in HIV: A Shadow on Long-Term Management?. AIDS reviews. 16.

Overton, E. T., & Yin, M. T. (2011). The rapidly evolving research on Vitamin D among HIV-infected populations. *Current Infectious Diseases Report, 13*(1), 83–93. doi:10.1007/s11908-010-0144-x

Pan LC, Price PA (1987) Ligand-dependent regulation of the 1,25-dihydroxyvitamin D3 receptor in rat osteosarcoma cells. J Biol Chem 262: 4670–4675.

Palacios C, Gonzalez L. Is vitamin D deficiency a major global public health problem? *J Steroid Biochem Mol Biol* (2014) 144(Pt A):138–45. doi:10.1016/j.
jsbmb.2013.11.003

Palmer MT, Lee YK, Maynard CL, Oliver JR, Bikle DD, Jetten AM, et al. Lineage-specific effects of 1,25-dihydroxyvitamin D(3) on the development of effector CD4 T cells. J Biol Chem (2011) 286(2):997–1004. doi:10.1074/ jbc.M110.163790

Pedersen AW, Holmstrom K, Jensen SS, Fuchs D, Rasmussen S, Kvistborg P, et al. Phenotypic and functional markers for 1alpha,25-dihy-droxyvitamin D(3)-modified regulatory dendritic cells. Clin Exp Immunol (2009) 157(1):48–59. doi:10.1111/j.1365-2249.2009.03961.

Penna G, Adorini L. 1 alpha,25-dihydroxyvitamin D3 inhibits differentiation, maturation, activation, and survival of dendritic cells leading to impaired alloreactive T cell activation. J Immunol (2000) 164(5):2405–11. doi:10.4049/ jimmunol.164.5.2405

Pike JW, Meyer MB. The vitamin D receptor: new paradigms for the regulation of gene expression by 1,25-dihydroxyvitamin D3. *Rheum Dis Clin North Am* (2012) 38(1):13–27. doi:10.1016/j.rdc.2012.03.004

Pinzone MR, Di Rosa M, Malaguarnera M, Madeddu G, Focà E, Ceccarelli G, d'Ettorre G, Vullo V, Fisichella R, Cacopardo B, Nunnari G. Vitamin D deficiency in HIV infection: an underestimated and undertreated epidemic. Eur Rev Med Pharmacol Sci. 2013 May;17(9):1218-32. PMID: 23690192.

Poowuttikul, P., Thomas, R., Hart, B., & Secord, E. (2013). Vitamin D insufficiency/deficiency in HIV-infected inner city youth. *Journal of the International Association of Providers of AIDS Care*, 1–5. July 23. doi:10.1177/2325957413495566

Provvedini DM, Tsoukas CD, Deftos LJ, Manolagas SC. 1 alpha,25-Dihydroxyvitamin D3-binding macromolecules in human B lymphocytes: effects on immunoglobulin production. J Immunol (1986) 136(8):2734–40.

Puspasari, D., Wisaksana, R. and Ruslami, R. (2018) *Gambaran Efek Samping dan Kepatuhan Terapi Antiretroviral pada Pasien HIV di Rumah Sakit Dr. Hasan Sadikin Bandung Tahun 2015*, *JSK*.

Rao Z, Zhang N, Xu N, Pan Y, Xiao M, Wu J, Zhou H, Yang S, Chen Y. 1,25-Dihydroxyvitamin D Inhibits LPS-Induced High-Mobility Group Box 1 (HMGB1) Secretion *via* Targeting the NF-E2-Related Factor 2-Hemeoxygenase-1-HMGB1 Pathway in Macrophages. Front Immunol. 2017 Oct 16;8:1308. doi: 10.3389/fimmu.2017.01308. Erratum in: Front Immunol. 2018 Mar 07;9:357. PMID: 29085368; PMCID: PMC5650703.

Rigby WF, Stacy T, Fanger MW. Inhibition of T lymphocyte mitogenesis by 1,25-dihydroxyvitamin D3 (calcitriol). J Clin Invest (1984) 74(4):1451–5. doi:10.1172/JCI111557

Ross AC, Judd S, Kumari M, Hileman C, Storer N, Labbato D, et al. Vitamin D is linked to carotid intima-media thickness and immune reconstitution in HIV-positive individuals. Antivir Ther. 2011; 16:555–563. [PubMed: 21685543]

Sandhu, A., Samra, A.K. Opportunistic infections and disease implications in HIV/AIDS. *IJPSI*. 2013; 2(5): 47-54.

Schneider E, et al. 2008. Revised surveillance case definitions for HIV infection among adults, adolescents, and children aged < 18 months and for HIV infection and AIDS among children aged 18 months to < 13 years—United States, 2008. *MMWR*, 57(RR-10): 1–12. Also available online: http://www.cdc.gov/mmwr/PDF/rr/rr5710.pdf

Shrestha, Sulav. 2010. Pathogenesis of AIDS and Replication of HIV. Available from https://tube.medchrome.com/2010/11/pathogenesis-of-aids-and-replication-of.html

Tafazoli, A., & Khalili, H. (2013). Vitamin D and HIV infection: A review of the clinical evidence. *Future Virology, 8*(6), 589–606. doi:10.2217/fvl.13.40

Tasca, K,I dkk. Asymptomatic HIV People Present Different Profiles of sCD14, sRAGE, DNA Damage, and Vitamins, according to the Use of cART and CD4+ T Cell Restoration. *Journal Of Immunology Research*. 2018; pp.1-11. [pdf].

Theodorou, M., Serste, T., Van Gossum, M., & Dewit, S. (2014). Factors associated with Vitamin D deficiency in a population of 2044 HIV-infected patients. *Clinical Nutrition, 33*(2), 274–279. doi:10.1016/j.clnu.2013.04.01

Thierry S, J. Gozlan, A. Jaulmes et al., "High-mobility group box 1 protein induces HIV-1 expression from persistently infected cells," *AIDS*, vol. 21, no. 3, pp. 283–292, 2007.

Tiosano D, Wildbaum G, Gepstein V, Verbitsky O, Weisman Y, et al. (2013) The role of vitamin D receptor in innate and adaptive immunity: a study in hereditary vitamin D-resistant rickets patients. J Clin Endocrinol Metab 98: 1685–1693.

Torres C, Sánchez de la Torre M, García-Moruja C, Carrero AJ, Trujillo Mdel M et al. (2010) Immunophenotype of vitamin D receptor polymorphism associated to risk of HIV-1 infection and rate of disease progression. Curr HIV Res 8: 487-492. doi:10.2174/157016210793499330. PubMed:20642435.

Troseid M, A. Sonnerborg, and P. Nowak, "High mobility ¨group box protein-1 in HIV-1 infection: connecting microbial translocation, cell death and immune activation," *Current HIV Research*, vol. 9, no. 1, pp. 6–10, 2011.

Trøseid M, Lind A, Nowak P, et al. Circulating levels of HMGB1 are correlated strongly with MD2 in HIV-infection: possible implication for TLR4-signalling and chronic immune activation. Innate Immunity. 2013 Jun;19(3):290-297. DOI: 10.1177/1753425912461042.

Trøseid M, P. Nowak, J. Nystrom, A. Lindkvist, S. ¨Abdurahman, and A. Sonnerborg, "Elevated plasma levels of ¨lipopolysaccharide and high mobility group box-1 protein areassociated with high viral load in HIV-1 infection: reduction by 2-year antiretroviral therapy," *AIDS*, vol. 24, no. 11, pp.1733–1737, 2010.

Toniato E, Spinas E, Saggini A, Kritas SK, Caraffa A, Antinolfi P, Saggini R, Pandolfi F, Conti P. Immunomodulatory Effects Of Vita-min D On Skin Inflammation. J Biol Regul Homeost Agents 2015; 29: 563–7

Tsoukas CD, Provvedini DM, Manolagas SC. 1,25-dihydroxyvitamin D3: a novel immunoregulatory hormon. *Science* (1984) 224(4656):1438–40. doi:10.1126/science.6427926

Taylor AE, Finney-Hayward TK, Quint JK, Thomas CM, Tudhope SJ, Wedzicha JA, et al. Defective macrophage phagocytosis of bacteria in COPD. *Eur Respir J* (2010) 35(5):1039–47. doi:10.1183/09031936.00036709

Van Den Bout-Van Den Beukle, C. J., Fievez, L., Michels, M., Sweep, F. C., Hermus, A.R., Bosch, M. E., … Van Der Ven, A. J. (2008). Vitamin D

deficiency among HIV type 1-infected individuals in the Netherlands: Effects of antiretroviral therapy [Abstract]. *AIDS Research and Human Retroviruses, 24*(11), 1375–1382.

Van Halteren AG, van Etten E, de Jong EC, Bouillon R, Roep BO, Mathieu C. Redirection of human autoreactive T-cells Upon interaction with dendritic cells modulated by TX527, an analog of 1,25 dihydroxyvitamin D(3). Diabetes (2002) 51(7):2119–25. doi:10.2337/diabetes.51.7.2119

Veldman CM, Cantorna MT, DeLuca HF. Expression of 1,25-dihydroxyvitamin D(3) receptor in the immune system. Arch Biochem Biophys (2000) 374(2):334–8. doi:10.1006/abbi.1999.1605 45. Dimitrov V, White JH. Species-specific regulation

Vescini, F., Cozzi-Lepri, A., Borderi, M., Re, M. C., Maggiolo, F., De Luca, A., Icona Foundation Study Group. (2011). Prevalence of hypovitaminosis D and factors associated with Vitamin D deficiency and morbidity among HIV-infected patients enrolled in a large Italian cohort. *Journal of Acquired Immune Deficiency Syndrome*, 58(2), 163–172. doi:10.1097/QAI.0b013e31822e57e9

Viard, J.-C. Souberbielle, O. Kirk et al., "Vitamin D and clinical disease progression in HIV infection: Results from the EuroSIDA Study," *AIDS*, vol. 25, no. 10, pp. 1305–1315, 2011.

Villamor E. A potential role for vitamin D on HIV infection? Nutr Rev. (2006) 64:226–33. doi: 10.1301/nr.2006.may.226-233

Von Essen MR, Kongsbak M, Schjerling P, Olgaard K, Odum N, Geisler C. Vitamin D controls T cell antigen receptor signaling and activation ofhuman T cells. Nat Immunol. 2010; 11:344–349.[PubMed: 20208539]

Walker, V. P., & Modlin, R. L. (2009). The Vitamin D connection to pediatric infections and immune function. *Pediatric Research, 65*(5), 106R–113R.

Wang, H dkk. Potential Role Of High Mobility Group Box 1 in Viral Infectious Diseases. *Viral Immunology*. 2007; 19 (1): 3-9. [pdf].

Wang Y, Zhu J, DeLuca HF. Where is the vitamin D receptor? Arch Biochem Biophys (2012) 523(1):123–33. doi:10.1016/j.abb.2012.04.001

Watkins RR, Lemonovich TL, Salata RA. An update on the association of vitamin D deficiency with common infectious diseases. *Can J Physiol Pharmacol* (2015) 93(5):363–8. doi:10.1139/cjpp-2014-0352

Welz, T., Childs, K., Ibrahim, F., Poulton, M., Taylor, C. B., Moniz, C. F., & Post, F. A. (2010). Efavirenz is associated with severe Vitamin D deficiency and increased alkaline phosphatase. *AIDS, 24*(12), 1923–1928. doi:10.1097/QAD.0b013e32833c3281

WHO. 2007. Who Case Definitions Of Hiv For Surveillance And Revised Clinical Staging And Immunological Classification Of Hiv-Related Disease

In Adults And Children. Available from https://www.who.int › pub › HIVstaging150307

WHO. 2011. *HIV/AIDS*. Available from https://www.who.int/news-room/fact-sheets/detail/hiv-aids

Yamada, S dkk. Recent Advances In Inflamatory Markers: HMGB1 and TREM1. *Inflammation And Regenration*. 2007; 27 (2): 88-95. [pdf].

Yamada S, Maruyama I, Takemoto T, Akahoshi T. Recent advances in inflammatory markers.HMGB1 and TREM-1. Inflamm Regen 2007; 23: 88–95

Yang, H dkk. The Many Faces Of HMGB1: Molecular Structure-Functional Activity In Inflammation, Apoptosis, And Chemotaxis. *Journal Of Leukocyte Biology*. 2013; 93 (6): 865-873. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4051189/.

Yin M, Stein E. The effect of antiretrovirals on vitamin D. Clin Infect Dis. 2011 Feb 1;52(3):406-8. doi: 10.1093/cid/ciq169. PMID: 21217187.

Zella LA, Meyer MB, Nerenz RD, Lee SM, Martowicz ML, et al. (2010) Multifunctional enhancers regulate mouse and human vitamin D receptor gene
transcription. Mol Endocrinol 24: 128–147.

Zhu Y, Mahon BD, Froicu M, Cantorna MT. Calcium and 1 alpha,25-dihydroxyvitamin D3 target the TNF-alpha pathway to suppress experimental inflammatory bowel disease. Eur J Immunol 2005; 35:217–24

Lampiran 1. Ethical Clearance

KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
UNIVERSITAS HASANUDDIN FAKULTAS KEDOKTERAN
KOMITE ETIK PENELITIAN KESEHATAN
RSPTN UNIVERSITAS HASANUDDIN
RSUP Dr. WAHIDIN SUDIROHUSODO MAKASSAR
Sekretariat : Lantai 2 Gedung Laboratorium Terpadu
JL.PERINTIS KEMERDEKAAN KAMPUS TAMALANREA KM.10 MAKASSAR 90245.
Contact Person: dr. Agussalim Bukhari.,MMed.PhD. SpGK TELP. 081241850858, 0411 5780103, Fax : 0411-581431

REKOMENDASI PERSETUJUAN ETIK

Nomor : 1209/UN4.6.4.5.31/ PP36/ 2019

Tanggal: 19 Desember 2019

Dengan ini Menyatakan bahwa Protokol dan Dokumen yang Berhubungan Dengan Protokol berikut ini telah mendapatkan Persetujuan Etik :

No Protokol	UH19110965	No Sponsor Protokol	
Peneliti Utama	**dr. Indah Sapta Wardhani, SpPD**	Sponsor	
Judul Peneliti	Ekspresi mRNA Vitamin D Reseptor, Kadar HMGB-1, Kadar Vitamin D Pada Penderita HIV dan Hubungannya Dengan Hitung CD4		
No Versi Protokol	**2**	Tanggal Versi	**4 Desember 2019**
No Versi PSP	**2**	Tanggal Versi	**4 Desember 2019**
Tempat Penelitian	**Laboratorium Mikrobiologi FKUH Makassar dan RSUD Kota Mataram**		
Jenis Review	☐ Exempted ☒ Expedited ☐ Fullboard Tanggal	Masa Berlaku **19 Desember 2019** sampai **19 Desember 2020**	Frekuensi review lanjutan
Ketua Komisi Etik Penelitian Kesehatan FKUH	Nama **Prof.Dr.dr. Suryani As'ad, M.Sc.,Sp.GK (K)**	Tanda tangan	
Sekretaris Komisi Etik Penelitian Kesehatan FKUH	Nama **dr. Agussalim Bukhari, M.Med.,Ph.D.,Sp.GK (K)**	Tanda tangan	

Kewajiban Peneliti Utama:

- Menyerahkan Amandemen Protokol untuk persetujuan sebelum di implementasikan
- Menyerahkan Laporan SAE ke Komisi Etik dalam 24 Jam dan dilengkapi dalam 7 hari dan Lapor SUSAR dalam 72 Jam setelah Peneliti Utama menerima laporan
- Menyerahkan Laporan Kemajuan (progress report) setiap 6 bulan untuk penelitian resiko tinggi dan setiap setahun untuk penelitian resiko rendah
- Menyerahkan laporan akhir setelah Penelitian berakhir
- Melaporkan penyimpangan dari prokol yang disetujui (protocol deviation / violation)
- Mematuhi semua peraturan yang ditentukan

Lampiran 2. Informed Consent

FORMULIR PERSETUJUAN SETELAH PENJELASAN (INFORMED CONSENT)

Saya adalah mahasiswa program studi doctoral bidang Ilmu Kedokteran pada Universitas Hasanuddin Makassar. Kami sedang melakukan penelitian tentang kadar vitamin D dan kaitannya dengan peradangan dan pertahanan tubuh pada pasien penderita HIV. Keterlibatan dan informasi yang Saudara berikan sangat berguna untuk perkembangan ilmu pengetahuan dan untuk mengetahui keterkaitan vitamin D dengan aktivitas peradangan dan pertahanan tubuh pada pasien penderita HIV yang berguna dalam perkembangan pengobatan di masa depan. Semua hasil pengukuran bersifat rahasia.

Partisipasi Saudara sangat kami butuhkan, kami akan melakukan pengambilan darah sebanyak 3 cc (kurang lebih satu sendok teh) yang akan diambil oleh petugas laboratorium. Untuk lokasi pengambilan darah vena, dilakukan di daerah lengan. Apabila terjadi risiko efek samping akibat prosedur penelitian (misalnya berupa hematom/bengkak), maka Saudara akan mendapatkan tanggungan semua biaya pengobatan dan perawatan yang dibutuhkan sampai Saudara pulih. Sebagai kompensasi Saudara akan menerima souvenir berupa uang yang bermanfaat bagi Saudara.

Sekali lagi, perlu kami sampaikan, apapun hasil dari pengukuran ini tidak akan kami bocorkan ke orang lain atau pihak manapun tanpa persetujuan Saudara. Hasil penelitian ini akan kami seminarkan dengan tetap menjaga kerahasiaan Saudara, dan hak subjek tetap kami jaga serta rahasiakan.

Sebelum menandatangani formulir izin ini, perlu diketahui bahwa :

- Saudara mempunyai hak berpartisipasi dalam penelitian ini dengan dasar kerahasiaan dijamin.

FORMULIR PERSETUJUAN SETELAH

Saya yang bertandatangan di bawah

Nama : .....

Umur : ....

Pekerjaan : .....

.....

.....

Setelah mendengar/membacadan mengerti penjelasan yang diberikan mengenai tujuan, manfaat, dan apa yang akan dilakukan pada penelitian ini, menyatakan setuju untuk ikut dalam penelitian ini secara sukarela tanpa paksaan.

Saya tahu bahwa keikutsertaan saya ini bersifat sukarela tanpa paksaan. Saya berhak bertanya atau meminta penjelasan pada peneliti bila masih ada hal yang belum

Sayajugamengertibahwasemuabi yan dikeluarkansehubungandenganpenelitian ini, akan ditanggung oleh peneliti. Saya percaya bahwa keamanan dan kerahasiaan data penelitian akan terjamin dan saya dengan ini menyetujui semua data saya yang dihasilkan pada penelitian ini untuk disajikan dalam bentuk lisan maupun tulisan.

Dengan membubuhkan tandatangan saya di bawah ini, saya menegaskan keikutsertaan saya secara sukarela dalam studi penelitian ini.

	Nam	**Tanda**	**Tgl/Bln/Th**
Responden	……..		
Saksi	…… ……	…… …….	…… …….

Penanggung Jawab Penelitian/Medis :

PROSEDUR PENELITIAN

1. Sebelum ditetapkan sebagai subjek penelitian, maka calon subjek diberikan penjelasan mengenai prosedur penelitian dan diminta untuk menandatangani lembar *informed consent*

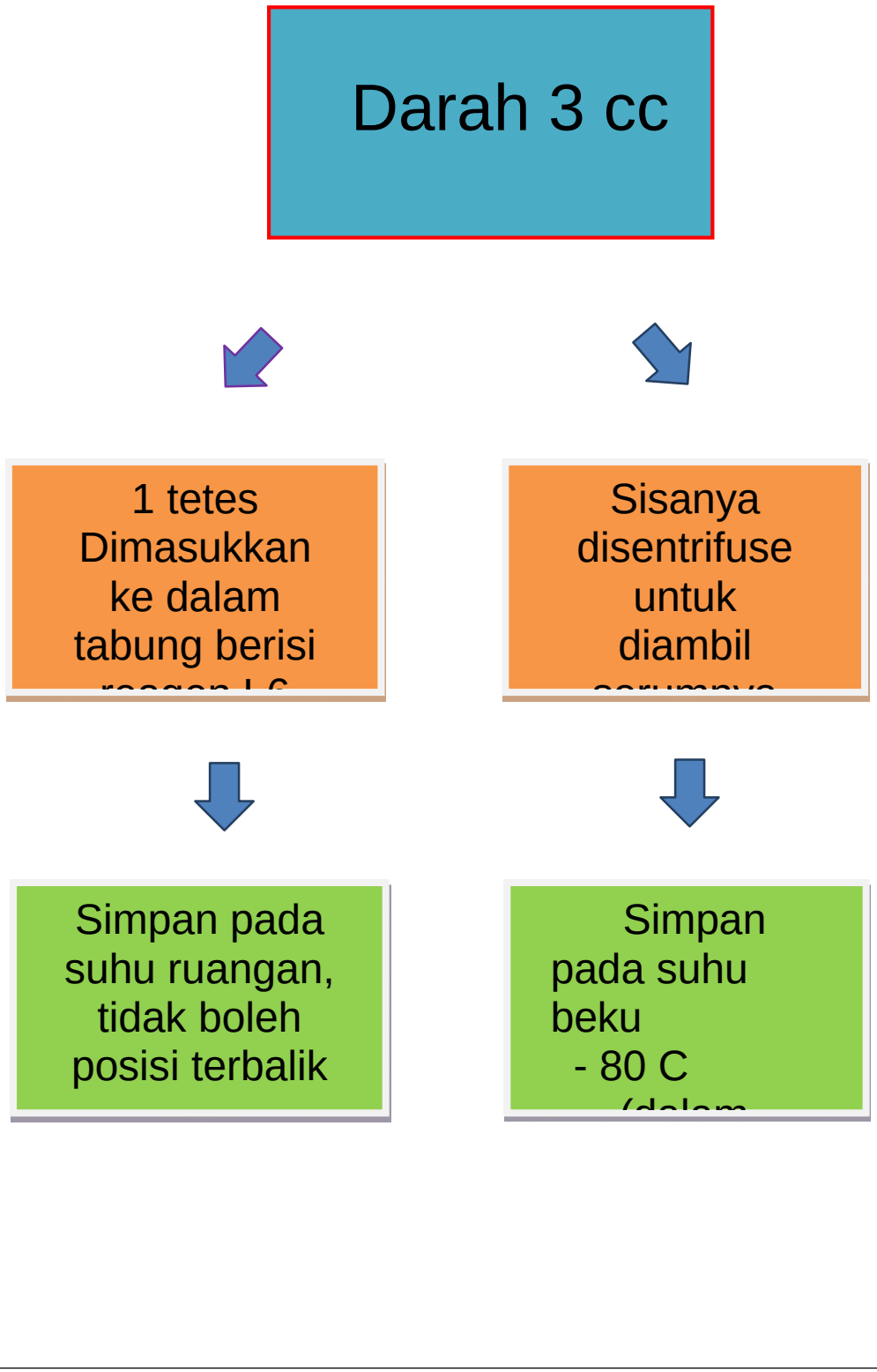
2. Pada subjek yang memenuhi kriteria penelitian akan diminta untuk menunggu pengambilan sampel darah.
   - Kriteria Inklusi

     Penderita yang terdiagnosis secara serologi HIV positif, yang berobat dan terdata di klinik VCT di Mataram (Nusa Tenggara Barat) periode November 2019 – selesai.
     - Penderita HIV terdiagnosis secara serologi HIV positif
     - Berusia di atas 18 tahun
     - Data rekam medis lengkap
     - Kontrol rutin di klinikVCT di Mataram (NTB)
     - Pasien HIV yang mendapat pengobatan salah satu atau kombinasi ARV berikut di bawah ini:
       a. Lamivudin + Zidovudin + Nevirapin (3TC + AZT + NVP/LZN)
       b. Lamivudin + Zidovudin + Efavirenz (3TC + AZT + EFV/LZE)
       c. Tenofovir + Emtricitabin + Efavirenz
     - Menandatangani surat persetujuan penelitian.

   - Kriteria Eksklusi
     - Pasien dengan rekam medik tidak lengkap
     - Pasien yang menolak berpartisipasi dalam penelitian
3. Dilakukan pengambilan sampel darah serum. Pengambilan sampel dilakukan oleh petugas laboran dengan menggunakan teknik aseptik.
   a. Sebanyak 3 cc darah vena diambil, ditempatkan dalam tabung untuk pemeriksaan kadar vitamin D, mRNA VDR dan HMGB-1.
   b. Sebanyak 1 tetes Sampel darah utuh dimasukkan dalam tabung yang berisi reagen L6, dan sisanya disentrifuse untuk diambil serumnya.
   c. Sampel darah yang berisi L6 disimpan pada suhu ruangan dan tabung tidak boleh terbalik, sedangkan serum disimpan dalam freezer beku.
   d. Sampel disimpan sampai terkumpul sejumlah 40 subjek penelitian.

4. Sampel darah dan serum yang telah terkumpul sebanyak 40 sampel. Untuk serum disimpan pada suhu -80°C, ditempatkan di dalam box stereoform tebal yang telah diisi dengan 1 kg *dry ice*. Untuk darah dengan reagen L6 disimpan pada suhu ruangan dan tidak boleh posisi terbalik.
5. Box stereoform tebal tersebut dibawa ke Makassar melalui transportasi udara. Setelah sampai Makassar, sampel dibawa ke Laboratorium Mikrobiologi RS-FK Universitas Hasanuddin dan disimpan kembali pada suhu -80°C, hingga digunakan untuk ELISA.

PROSEDUR PENGAMBILAN DARAH



FORMULIR PERMINTAAN PEMERIKSAAN

DATA SUBJEK

I. Identitas Subjek

Nama : :
Umur : laki-laki/perempuan* :
Jenis kelamin :
Alamat :
Tanggal :

II. Data Antropometrik Subjek

Berat badan : :

III. Riwayat penyakit

Terdiagnosis HIV sejak : Mulaiterapi :
ARV :
CD4 awal sebelum :

Hipertensi : Ya / Tidak*
Diabetes melitus : Ya / Tidak*
Penyakit jantung : Ya / Tidak*
Penyakit paru : Ya / Tidak*
Penyakit keganasan : Ya / Tidak*

IV. Pemeriksaan Laboratorium Awal

DL :
CD4 :
SGOT :
SGPT :
Creatinin :

V. Pemeriksaan Laboratorium Lainnya

- Kadar vitamin D serum : …….
- Kadar HMGB-1 serum :

Lampiran 3. Kuesioner Paparan Sinar Matahari, Gaya Hidup dan Diet

Diet and Lifestyle Questionnaire

Foods Section

For each food listed, check the box indicating how often on average you have used the amount specified during the Last three months (since you last completed this questionnaire).

Foods Consumed	Never or < 1 per mo.	1-3 per month	1 per week	2-4 per week	5-6 per week	1 per day	2-3 per day	4-5 per day	6+ per day
1. Milk, Vitamin D fortified, 1 cup									
2. Soy Milk or Rice Milk, Vitamin D fortified, 1 cup									
3. Cereal, Vitamin D fortified (Total Corn Flakes, Kelloggs Raisin Bran, Oat Bran, Cheerios), 3/4 cup									
4. Subway Sandwich, 6 inch									
5. Margarine, Vitamin D fortified (Promise, etc.), 1 teaspoon									
6. Orange Juice, Vitamin D fortified (Tropicana Florida's Natural), 1 cup									
7. Liver, cooked, 3 ½ oz									
8. Egg, 1 whole									
9. Cod liver oil, 1 teaspoon									
10. Salmon, cooked, 3 ½ oz									
11. Mackerel, cooked, 3 ½ oz									
12. Sardines, canned in oil, 3 ½ oz									
13. Eel, cooked, 3 ½ oz									
14. Other Fatty Fish, 3 1/2 oz.									
15. Other Vitamin D fortified food, if applicable									

Supplements Section

For each supplement, check the box indicating how often on average you have used the amount specified during the last three months (since you last completed this questionnaire).

Supplements Consumed	Never or < 1 per mo.	1-3 per month	1 per week	2-4 per week	5-6 per week	1 per day	2-3 per day	4-5 per day	6+ per day
1. Multiple Vitamin, 1 Tablet									
2. Calcium Vitamin, 1 Tablet									
3. Vitamin D, 1 Tablet (list amount _____)									
4. Calcium + Vitamin D (Viactiv), 1 Tablet									
If you take any of the above three, please list which you use, brand name, etc.									

Sunlight Section

For each, check the amount used in each situation during the last three months (since you last completed this questionnaire)

	Never or < 1 hour per mo.	1-3 hr. per mo.	1 hr. per wk.	2-4 hr. per wk.	5-6 hr. per wk.	1/2 -1 hr. per day	> 2 hrs per day
1. How much leisure time is spent outside in the sun between 10 AM and 3 PM?							

2. How often do you use tanning beds?	Never or <10 min per wk	10-20 min per wk	20-30 min per wk	30-40 min per wk	40-50 min per wk	50-60 min per wk	>60 min per wk

For each, circle the amount used in each situation during the last three months (since you last completed this questionnaire).

1. How often do you use sunscreen? What SPF of sunscreen do you use? _____	Never	Sometimes	Usually	Always
4. How many minutes are spent each day walking to and from class?	15 min	30 mins	45 min	1 hour	> 1 hour
5. Where were you living in the last three months?	City:		State:	
6. If applicable, where did you spend Winter Break?	City:		State:	
7. If applicable, where did you spend Spring Break?	City:		State:	

8. What is your Race/Ethnicity? _____

9. When you are outside (in the last few months) do you typically wear: (Circle all that apply)

Long sleeves	Short sleeves	Shorts	No shirt	Sports bra
Baseball Hat	Hat (other)	Pants	Gloves	

10. Have your sun exposure habits changed in the last two weeks. YES NO

Figure A1. Vitamin D Food Frequency and Lifestyle Questionnaire.

KUESIONER PAPARAN SINAR MATAHARI, GAYA HIDUP DAN DIET

SINAR MATAHARI

Untuk tiap makanan di bawah ini, berilah tanda centang (√) pada kotak sesuai dengan seberapa sering **rata-rata** anda terpapar sinar matahari **dalam 3 bulan terakhir**?

Pertanyaan terkait paparan sinar matahari	Tidak pernah atau < 1 jam per bulan	1 – 3 jam per bulan	1 jam per minggu	2 – 4 jam per minggu	5 – 6 jam per minggu	½ - 1 jam per hari	>2 jam per hari
1. Berapa lama waktu yang anda habiskan di luar rumah antara pukul 10.00 wita dan 15.00 wita?							
	Tidak pernah atau <10 menit per minggu	10 – 20 menit per minggu	20 – 30 menit per minggu	30 – 40 menit per minggu	40 – 50 menit per minggu	50 – 60 meni: per minggu	>60 menit per minggu
2. Seberapa sering anda menggunakan *tanning bed?*							

Untuk tiap pertanyaan, lingkari jawaban sesuai dengan kondisi anda **dalam 3 bulan terakhir**?

3. Seberapa sering anda menggunakan tabir surya (*sun screen*)? Tidak pernah / Kadang-kadang / Biasanya / Selalu

Merek apa dan SPF berapa yang anda gunakan?

4. Berapa merit waktu yang anda habiskan setiap hari untuk keluar masuk ruangan? 15 menit / 30 menit / 45 menit / 1 jam / > 1 jam

5. Di mana anda tinggal dalam 3 bulan terakhir? Kabupaten/kota: _____ Provinsi: _____

6. Apakah suku anda?
7. Jika anda berada di luar ruangan, jenis pakaian apa yang biasanya anda gunakan? (lingkari salah satu pilihan jawaban di bawah)

Lengan panjang	Celana pendek	Tidak menggunakan atasan	Topi baseball	Sarung tangan
Lengan pendek	Celana panjang	Sports bra	Topi lainnya	

8. Apakah kebiasaan anda terhadap paparan sinar matahari berubah dalam 2 minggu terakhir? Ya Tidak

MAKANAN

Untuk tiap makanan di bawah ini, berilah tanda centang (√) pada kotak sesuai dengan seberapa sering **rata-rata** anda mengkonsumsi jumlah bahan makanan tersebut **dalam 3 bulan terakhir**?

Makanan yang dikonsumsi	Tidak pernah atau < 1x per bulan	1 – 3 per bulan	1 per minggu	2 – 41 per minggu	5 – 6 per minggu	1 per hari	2 – 3 per hari	4 – 5 per hari	6+ per hari
Susu 1 gelas									
Susu kedelai 1 gelas									
Sereal ¾ gelas									
Burger/sandwich 1 bh									
Margarine 1 sdt									
Jus jeruk kemasan 1 gelas									
Hati (matang) 85 gr									
Telur 1 buah									
Minyak hati ikan cod 1 sdt									
Salmon (matang) 85 gr									
Makarel (matang) 85 gr									
Sarden (matang) 85 gr									
Belut (matang) 85 gr									
Ikan berlemak lainnya 85 gr									
Sumber vitamin D lainnya jika ada									

SUPLEMENTASI

Untuk tiap suplemen di bawah ini, berilah tanda centang (√) pada kotak sesuai dengan seberapa sering **rata-rata** anda mengkonsumsi jumlah suplemen tersebut **dalam 3 bulan terakhir**?

Suplemen yang dikonsumsi	Tidak pernah atau < 1x per bulan	1 – 3 per bulan	1 per minggu	2 – 4 per minggu	5 – 6 per minggu	1 per hari	2 – 3 per hari	4 – 5 per hari	6+ per hari
Multivitamin 1 tablet									
Kalsium 1 tablet									
Vitamin D 1 tablet									
Kombinasi Kalsium + Vitamin D 1 tablet									
Jika anda mengkonsumsi suplemen di atas, sebutkan mereknya:									

Lampiran 4. Analisa Data

Usia pasien * Kelompok uji berdasarkan CD4 Crosstabulation

Count

		Kelompok uji berdasarkan CD4			
		Kelompok kontrol sehat	Kelompok defisiensi imun ringan	Kelompok defisiensi imun berat	Total
Usia pasien	18	0	1	0	1
	20	0	0	1	1
	22	1	0	1	2
	24	1	0	0	1
	27	0	1	3	4
	28	1	1	0	2
	30	1	0	0	1
	31	1	0	1	2
	32	1	1	0	2
	33	0	1	0	1
	34	0	0	1	1
	35	1	1	1	3
	36	1	4	0	5
	37	1	0	0	1
	38	1	0	1	2
	39	1	0	1	2
	40	1	0	0	1
	46	0	1	0	1
	48	1	1	0	2
	51	0	0	2	2
	53	0	1	0	1
	54	0	0	1	1
Total		13	13	13	39

Jenis kelamin * Kelompok uji berdasarkan CD4 Crosstabulation

Count

		Kelompok uji berdasarkan CD4			
		Kelompok kontrol sehat	Kelompok defisiensi imun ringan	Kelompok defisiensi imun berat	Total
Jenis kelamin	Laki-laki	4	8	9	21
	Perempuan	9	5	4	18
Total		13	13	13	39

Tingkat pendidikan * Kelompok uji berdasarkan CD4 Crosstabulation

Count

		Kelompok uji berdasarkan CD4			Total
		Kelompok kontrol sehat	Kelompok defisiensi imun ringan	Kelompok defisiensi imun berat	
Tingkat pendidikan	Tidak sekolah/SD	0	1	1	2
	SMP	0	5	0	5
	SMA	5	4	7	16
	D1/D3/D4/S1	8	3	5	16
Total		13	13	13	39

Pekerjaan pasien * Kelompok uji berdasarkan CD4 Crosstabulation

Count

		Kelompok uji berdasarkan CD4			Total
		Kelompok kontrol sehat	Kelompok defisiensi imun ringan	Kelompok defisiensi imun berat	
Pekerjaan pasien	Tidak bekerja (IRT/mahasiswa/pensiunan)	4	6	5	15
	Karyawan swasta/wiraswasta	4	6	7	17
	PNS/Polri/Guru/dosen	5	1	1	7
Total		13	13	13	39

Indeks Massa Tubuh * Kelompok uji berdasarkan CD4 Crosstabulation

Count

		Kelompok uji berdasarkan CD4			
		Kelompok kontrol sehat	Kelompok defisiensi imun ringan	Kelompok defisiensi imun berat	Total
Indeks Massa Tubuh	17.2	0	0	1	1
	17.3	0	0	1	1
	17.4	0	0	1	1
	17.5	0	0	1	1
	17.6	0	0	1	1
	18.3	0	0	1	1
	19.1	0	0	1	1
	19.4	0	0	1	1
	19.6	0	1	0	1
	19.7	2	1	1	4
	20.0	1	2	0	3
	20.3	0	1	1	2
	20.4	2	0	0	2
	20.6	1	1	0	2
	20.7	1	0	0	1
	20.9	0	2	0	2
	21.2	0	1	1	2
	21.4	1	0	0	1
	21.6	1	0	0	1
	21.7	1	0	2	3
	22.1	1	1	0	2
	22.2	1	0	0	1
	22.3	0	1	0	1
	22.6	1	0	0	1
	23.0	0	1	0	1
	23.6	0	1	0	1
Total		13	13	13	39

Kadar vit D * Kelompok uji berdasarkan CD4 Crosstabulation

Count

		Kelompok uji berdasarkan CD4			
		Kelompok kontrol sehat	Kelompok defisiensi imun ringan	Kelompok defisiensi imun berat	Total
Kadar vit D	19.116	0	0	1	1
	20.046	0	0	1	1
	20.976	0	0	1	1
	23.208	0	0	1	1
	24.324	0	0	1	1
	25.999	0	0	1	1
	27.487	0	0	1	1
	28.045	0	0	1	1
	28.603	0	0	1	1
	29.161	0	0	1	1
	29.533	0	0	1	1
	29.905	0	0	1	1
	30.277	0	0	1	1
	31.021	0	1	0	1
	31.579	0	1	0	1
	31.951	0	1	0	1
	32.323	0	1	0	1
	32.881	0	1	0	1
	33.439	0	1	0	1
	33.812	0	1	0	1
	34.184	0	1	0	1
	34.556	0	1	0	1
	35.114	0	1	0	1
	35.486	0	1	0	1
	35.858	0	1	0	1
	36.230	0	1	0	1
	44.787	1	0	0	1
	45.159	1	0	0	1
	46.089	1	0	0	1
	47.019	1	0	0	1
	48.135	1	0	0	1
	49.251	1	0	0	1
	50.367	1	0	0	1
	51.111	1	0	0	1
	51.855	1	0	0	1
	52.786	1	0	0	1
	53.716	1	0	0	1
	54.832	1	0	0	1
	55.576	1	0	0	1
Total		13	13	13	39

Kadar mRNA reseptor vitD * Kelompok uji berdasarkan CD4 Crosstabulation

Count

		Kelompok uji berdasarkan CD4			Total
		Kelompok kontrol sehat	Kelompok defisiensi imun ringan	Kelompok defisiensi imun berat	
Kadar mRNA reseptor vitD	7.454	0	0	1	1
	7.545	0	0	1	1
	7.732	0	0	1	1
	8.286	0	0	1	1
	8.456	0	0	1	1
	8.479	0	0	1	1
	8.809	0	0	1	1
	9.131	0	0	1	1
	9.207	0	0	1	1
	9.305	0	1	0	1
	9.387	0	1	0	1
	9.405	0	0	1	1
	9.436	0	1	0	1
	9.515	0	1	0	1
	9.553	0	1	0	1
	9.606	0	1	0	1
	9.640	0	1	0	1
	9.799	0	1	0	1
	9.824	0	0	1	1
	9.920	0	1	0	1
	10.072	0	0	1	1
	10.124	0	1	0	1
	10.302	0	1	0	1
	10.315	0	0	1	1
	10.367	0	1	0	1
	10.488	0	1	0	1
	11.223	1	0	0	1
	11.360	1	0	0	1
	11.540	1	0	0	1
	11.629	1	0	0	1
	11.793	1	0	0	1
	12.256	1	0	0	1
	12.446	1	0	0	1
	12.605	1	0	0	1
	12.710	1	0	0	1
	12.827	1	0	0	1
	12.967	1	0	0	1
	13.239	1	0	0	1
	13.618	1	0	0	1
Total		13	13	13	39

Kadar HMGB1 * Kelompok uji berdasarkan CD4 Crosstabulation

Count

		Kelompok uji berdasarkan CD4			Total
		Kelompok kontrol sehat	Kelompok defisiensi imun ringan	Kelompok defisiensi imun berat	
Kadar HMGB1	79.097	1	0	0	1
	194.133	1	0	0	1
	294.790	1	0	0	1
	424.206	1	0	0	1
	524.862	1	0	0	1
	596.760	1	0	0	1
	668.657	1	0	0	1
	798.073	1	0	0	1
	913.109	1	0	0	1
	985.007	1	0	0	1
	1056.904	1	0	0	1
	1128.802	1	0	0	1
	1186.320	1	0	0	1
	1243.838	0	1	0	1
	1286.976	0	1	0	1
	1301.356	0	1	0	1
	1358.874	0	1	0	1
	1416.392	0	1	0	1
	1473.910	0	1	0	1
	1531.428	0	1	0	1
	1588.946	0	1	0	1
	1675.223	0	1	0	1
	1732.741	0	1	0	1
	1790.259	0	1	0	1
	1847.777	0	1	0	1
	1948.434	0	1	0	1
	2653.030	0	0	1	1
	2724.928	0	0	1	1
	2811.201	0	0	1	1
	2897.482	0	0	1	1
	2969.380	0	0	1	1
	3098.795	0	0	1	1
	3156.313	0	0	1	1
	3213.831	0	0	1	1
	3256.970	0	0	1	1
	3314.488	0	0	1	1
	3415.145	0	0	1	1
	3472.663	0	0	1	1
	3573.319	0	0	1	1
Total		13	13	13	39

Descriptives

	Kelompok uji berdasarkan CD4			Statistic	Std. Error
Usia pasien	Kelompok kontrol sehat	Mean		33.85	1.954
		95% Confidence Interval for Mean	Lower Bound	29.59	
			Upper Bound	38.10	
		5% Trimmed Mean		33.72	
		Median		35.00	
		Variance		49.641	
		Std. Deviation		7.046	
		Minimum		22	
		Maximum		48	
		Range		26	
		Interquartile Range		10	
		Skewness		.117	.616
		Kurtosis		.171	1.191
	Kelompok defisiensi imun ringan	Mean		35.69	2.566
		95% Confidence Interval for Mean	Lower Bound	30.10	
			Upper Bound	41.28	
		5% Trimmed Mean		35.71	
		Median		36.00	
		Variance		85.564	
		Std. Deviation		9.250	
		Minimum		18	
		Maximum		53	
		Range		35	
		Interquartile Range		11	
		Skewness		.177	.616
		Kurtosis		.431	1.191
	Kelompok defisiensi imun berat	Mean		35.08	3.102
		95% Confidence Interval for Mean	Lower Bound	28.32	
			Upper Bound	41.84	
		5% Trimmed Mean		34.86	
		Median		34.00	
		Variance		125.077	
		Std. Deviation		11.184	
		Minimum		20	
		Maximum		54	
		Range		34	
		Interquartile Range		18	
		Skewness		.537	.616
		Kurtosis		-.833	1.191
Jenis kelamin	Kelompok kontrol sehat	Mean		1.69	.133
		95% Confidence Interval for Mean	Lower Bound	1.40	
			Upper Bound	1.98	
		5% Trimmed Mean		1.71	
		Median		2.00	
		Variance		.231	
		Std. Deviation		.480	
		Minimum		1	
		Maximum		2	
		Range		1	

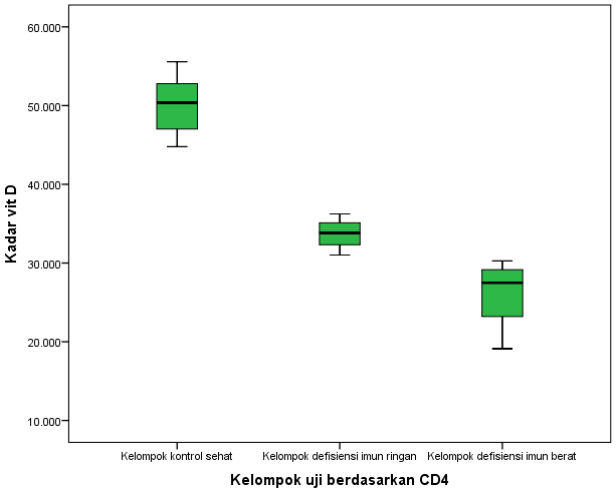
		Interquartile Range		1	
		Skewness		-.946	.616
		Kurtosis		-1.339	1.191
	Kelompok defisiensi imun ringan	Mean		1.38	.140
		95% Confidence Interval for Mean	Lower Bound	1.08	
			Upper Bound	1.69	
		5% Trimmed Mean		1.37	
		Median		1.00	
		Variance		.256	
		Std. Deviation		.506	
		Minimum		1	
		Maximum		2	
		Range		1	
		Interquartile Range		1	
		Skewness		.539	.616
		Kurtosis		-2.056	1.191
	Kelompok defisiensi imun berat	Mean		1.31	.133
		95% Confidence Interval for Mean	Lower Bound	1.02	
			Upper Bound	1.60	
		5% Trimmed Mean		1.29	
		Median		1.00	
		Variance		.231	
		Std. Deviation		.480	
		Minimum		1	
		Maximum		2	
		Range		1	
		Interquartile Range		1	
		Skewness		.946	.616
		Kurtosis		-1.339	1.191
Pekerjaan pasien	Kelompok kontrol sehat	Mean		2.08	.239
		95% Confidence Interval for Mean	Lower Bound	1.56	
			Upper Bound	2.60	
		5% Trimmed Mean		2.09	
		Median		2.00	
		Variance		.744	
		Std. Deviation		.862	
		Minimum		1	
		Maximum		3	
		Range		2	
		Interquartile Range		2	
		Skewness		-.164	.616
		Kurtosis		-1.680	1.191
	Kelompok defisiensi imun ringan	Mean		1.62	.180
		95% Confidence Interval for Mean	Lower Bound	1.22	
			Upper Bound	2.01	
		5% Trimmed Mean		1.57	
		Median		2.00	
		Variance		.423	
		Std. Deviation		.650	
		Minimum		1	
		Maximum		3	
		Range		2	
		Interquartile Range		1	
		Skewness		.572	.616
		Kurtosis		-.332	1.191

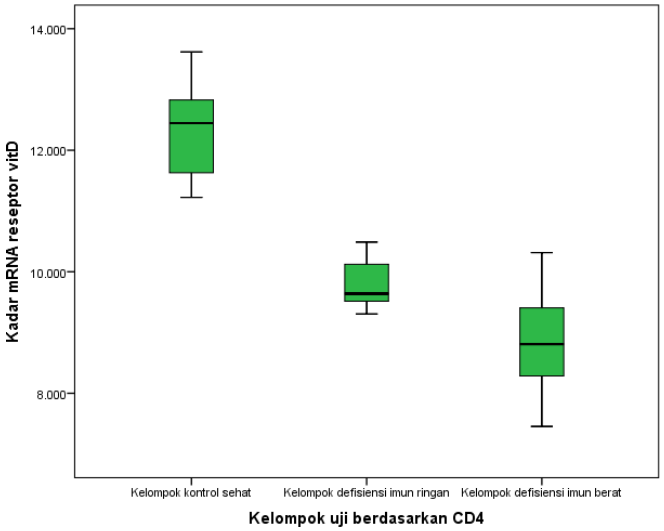
	Kelompok defisiensi imun berat	Mean		1.69	.175
		95% Confidence Interval for Mean	Lower Bound	1.31	
			Upper Bound	2.07	
		5% Trimmed Mean		1.66	
		Median		2.00	
		Variance		.397	
		Std. Deviation		.630	
		Minimum		1	
		Maximum		3	
		Range		2	
		Interquartile Range		1	
		Skewness		.307	.616
		Kurtosis		-.317	1.191
Tingkat pendidikan	Kelompok kontrol sehat	Mean		3.62	.140
		95% Confidence Interval for Mean	Lower Bound	3.31	
			Upper Bound	3.92	
		5% Trimmed Mean		3.63	
		Median		4.00	
		Variance		.256	
		Std. Deviation		.506	
		Minimum		3	
		Maximum		4	
		Range		1	
		Interquartile Range		1	
		Skewness		-.539	.616
		Kurtosis		-2.056	1.191
	Kelompok defisiensi imun ringan	Mean		2.69	.263
		95% Confidence Interval for Mean	Lower Bound	2.12	
			Upper Bound	3.26	
		5% Trimmed Mean		2.71	
		Median		3.00	
		Variance		.897	
		Std. Deviation		.947	
		Minimum		1	
		Maximum		4	
		Range		3	
		Interquartile Range		2	
		Skewness		.037	.616
		Kurtosis		-.818	1.191
	Kelompok defisiensi imun berat	Mean		3.23	.231
		95% Confidence Interval for Mean	Lower Bound	2.73	
			Upper Bound	3.73	
		5% Trimmed Mean		3.31	
		Median		3.00	
		Variance		.692	
		Std. Deviation		.832	
		Minimum		1	
		Maximum		4	
		Range		3	
		Interquartile Range		1	
		Skewness		-1.524	.616
		Kurtosis		3.706	1.191
Indeks Massa Tubuh	Kelompok kontrol sehat	Mean		21.008	.2723
		95% Confidence Interval for Mean	Lower Bound	20.414	

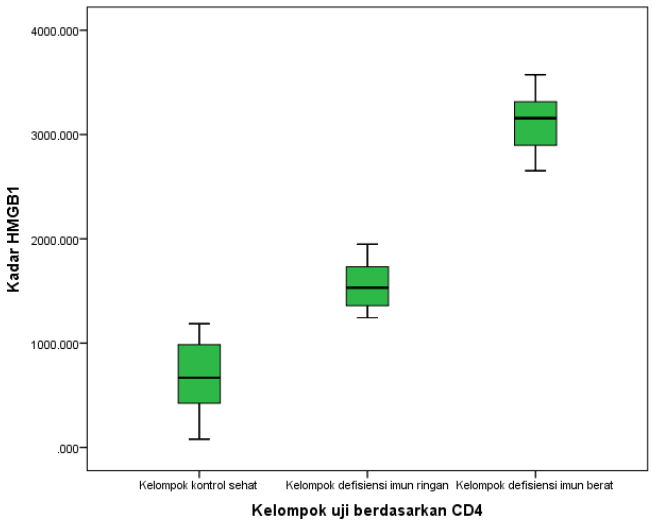
				Upper Bound	21.601	
		5% Trimmed Mean			20.992	
		Median			20.700	
		Variance			.964	
		Std. Deviation			.9819	
		Minimum			19.7	
		Maximum			22.6	
		Range			2.9	
		Interquartile Range			1.7	
		Skewness			.166	.616
		Kurtosis			-1.340	1.191
	Kelompok defisiensi imun ringan	Mean			21.092	.3572
		95% Confidence Interval for Mean		Lower Bound	20.314	
				Upper Bound	21.871	
		5% Trimmed Mean			21.036	
		Median			20.900	
		Variance			1.659	
		Std. Deviation			1.2881	
		Minimum			19.6	
		Maximum			23.6	
		Range			4.0	
		Interquartile Range			2.2	
		Skewness			.748	.616
		Kurtosis			-.523	1.191
	Kelompok defisiensi imun berat	Mean			19.108	.4737
		95% Confidence Interval for Mean		Lower Bound	18.076	
				Upper Bound	20.140	
		5% Trimmed Mean			19.070	
		Median			19.100	
		Variance			2.917	
		Std. Deviation			1.7081	
		Minimum			17.2	
		Maximum			21.7	
		Range			4.5	
		Interquartile Range			3.3	
		Skewness			.395	.616
		Kurtosis			-1.395	1.191
Kadar vit D	Kelompok kontrol sehat	Mean			50.05254	1.011526
		95% Confidence Interval for Mean		Lower Bound	47.84861	
				Upper Bound	52.25646	
		5% Trimmed Mean			50.03821	
		Median			50.36700	
		Variance			13.301	
		Std. Deviation			3.647108	
		Minimum			44.787	
		Maximum			55.576	
		Range			10.789	
		Interquartile Range			6.697	
		Skewness			-.013	.616
		Kurtosis			-1.287	1.191
	Kelompok defisiensi imun ringan	Mean			33.72569	.470867
		95% Confidence Interval for Mean		Lower Bound	32.69976	
				Upper Bound	34.75162	
		5% Trimmed Mean			33.73682	

		Median		33.81200	
		Variance		2.882	
		Std. Deviation		1.697736	
		Minimum		31.021	
		Maximum		36.230	
		Range		5.209	
		Interquartile Range		3.163	
		Skewness		-.090	.616
		Kurtosis		-1.224	1.191
	Kelompok defisiensi imun berat	Mean		25.89846	1.097009
		95% Confidence Interval for Mean	Lower Bound	23.50828	
			Upper Bound	28.28864	
		5% Trimmed Mean		26.03201	
		Median		27.48700	
		Variance		15.645	
		Std. Deviation		3.955323	
		Minimum		19.116	
		Maximum		30.277	
		Range		11.161	
		Interquartile Range		7.255	
		Skewness		-.621	.616
		Kurtosis		-1.151	1.191
Kadar mRNA reseptor vitD	Kelompok kontrol sehat	Mean		12.32408	.211022
		95% Confidence Interval for Mean	Lower Bound	11.86430	
			Upper Bound	12.78385	
		5% Trimmed Mean		12.31336	
		Median		12.44600	
		Variance		.579	
		Std. Deviation		.760851	
		Minimum		11.223	
		Maximum		13.618	
		Range		2.395	
		Interquartile Range		1.313	
		Skewness		.046	.616
		Kurtosis		-1.133	1.191
	Kelompok defisiensi imun ringan	Mean		9.80323	.110930
		95% Confidence Interval for Mean	Lower Bound	9.56154	
			Upper Bound	10.04493	
		5% Trimmed Mean		9.79287	
		Median		9.64000	
		Variance		.160	
		Std. Deviation		.399962	
		Minimum		9.305	
		Maximum		10.488	
		Range		1.183	
		Interquartile Range		.738	
		Skewness		.557	.616
		Kurtosis		-1.145	1.191
	Kelompok defisiensi imun berat	Mean		8.82423	.260773
		95% Confidence Interval for Mean	Lower Bound	8.25606	
			Upper Bound	9.39241	
		5% Trimmed Mean		8.81753	
		Median		8.80900	
		Variance		.884	
		Std. Deviation		.940231	

		Minimum		7.454	
		Maximum		10.315	
		Range		2.861	
		Interquartile Range		1.605	
		Skewness		.038	.616
		Kurtosis		-1.061	1.191
Kadar HMGB1	Kelompok kontrol sehat	Mean		680.82462	101.376270
		95% Confidence Interval for Mean	Lower Bound	459.94470	
			Upper Bound	901.70453	
		5% Trimmed Mean		686.17085	
		Median		668.65700	
		Variance		133602.925	
		Std. Deviation		365.517339	
		Minimum		79.097	
		Maximum		1186.320	
		Range		1107.223	
		Interquartile Range		661.458	
		Skewness		-.196	.616
		Kurtosis		-1.211	1.191
	Kelompok defisiensi imun ringan	Mean		1553.55031	64.092715
		95% Confidence Interval for Mean	Lower Bound	1413.90428	
			Upper Bound	1693.19634	
		5% Trimmed Mean		1548.81856	
		Median		1531.42800	
		Variance		53402.389	
		Std. Deviation		231.089570	
		Minimum		1243.838	
		Maximum		1948.434	
		Range		704.596	
		Interquartile Range		431.385	
		Skewness		.261	.616
		Kurtosis		-1.204	1.191
	Kelompok defisiensi imun berat	Mean		3119.81115	81.091854
		95% Confidence Interval for Mean	Lower Bound	2943.12718	
			Upper Bound	3296.49513	
		5% Trimmed Mean		3120.54856	
		Median		3156.31300	
		Variance		85486.554	
		Std. Deviation		292.380838	
		Minimum		2653.030	
		Maximum		3573.319	
		Range		920.289	
		Interquartile Range		510.475	
		Skewness		-.131	.616
		Kurtosis		-1.077	1.191


60.000
50.000
40.000
30.000
20.000
10.000
Kadar vit D
Kelompok kontrol sehat
Kelompok defisiensi imun ringan
Kelompok defisiensi imun berat
Kelompok uji berdasarkan CD4


14.000
12.000
10.000
8.000
Kadar mRNA reseptor vitD
Kelompok kontrol sehat
Kelompok defisiensi imun ringan
Kelompok defisiensi imun berat
Kelompok uji berdasarkan CD4


4000.000
3000.000
2000.000
1000.000
.000
Kadar HMGB1
Kelompok kontrol sehat
Kelompok defisiensi imun ringan
Kelompok defisiensi imun berat
Kelompok uji berdasarkan CD4

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Usia pasien	1.190	2	36	.316
Indeks Massa Tubuh	2.600	2	36	.088
Pekerjaan pasien	.953	2	36	.395
Jenis kelamin	.356	2	36	.703
Tingkat pendidikan	1.874	2	36	.168
Kadar vit D	5.849	2	36	.006
Kadar HMGB1	1.779	2	36	.183
Kadar mRNA reseptor vitD	4.633	2	36	.016

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Usia pasien	Between Groups	22.974	2	11.487	.132	.876
	Within Groups	3123.385	36	86.761		
	Total	3146.359	38			
Indeks Massa Tubuh	Between Groups	32.742	2	16.371	8.864	.001
	Within Groups	66.488	36	1.847		
	Total	99.230	38			
Pekerjaan pasien	Between Groups	1.590	2	.795	1.525	.231
	Within Groups	18.769	36	.521		
	Total	20.359	38			
Jenis kelamin	Between Groups	1.077	2	.538	2.250	.120
	Within Groups	8.615	36	.239		
	Total	9.692	38			
Tingkat pendidikan	Between Groups	5.590	2	2.795	4.542	.017
	Within Groups	22.154	36	.615		
	Total	27.744	38			
Kadar vit D	Between Groups	3948.754	2	1974.377	186.096	.000
	Within Groups	381.939	36	10.609		
	Total	4330.693	38			
Kadar HMGB1	Between Groups	39708406.864	2	19854203.432	218.585	.000
	Within Groups	3269902.428	36	90830.623		
	Total	42978309.292	38			
Kadar mRNA reseptor vitD	Between Groups	84.769	2	42.384	78.349	.000
	Within Groups	19.475	36	.541		
	Total	104.244	38			

Tests of Normality

	Kelompok uji berdasarkan CD4	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Usia pasien	Kelompok kontrol sehat	.114	13	.200*	.979	13	.973
	Kelompok defisiensi imun ringan	.256	13	.020	.945	13	.518
	Kelompok defisiensi imun berat	.154	13	.200*	.918	13	.237
Jenis kelamin	Kelompok kontrol sehat	.431	13	.000	.592	13	.000
	Kelompok defisiensi imun ringan	.392	13	.000	.628	13	.000
	Kelompok defisiensi imun berat	.431	13	.000	.592	13	.000
Pekerjaan pasien	Kelompok kontrol sehat	.242	13	.035	.799	13	.007
	Kelompok defisiensi imun ringan	.289	13	.004	.772	13	.003
	Kelompok defisiensi imun berat	.303	13	.002	.778	13	.004
Tingkat pendidikan	Kelompok kontrol sehat	.392	13	.000	.628	13	.000
	Kelompok defisiensi imun ringan	.229	13	.061	.886	13	.087
	Kelompok defisiensi imun berat	.314	13	.001	.730	13	.001
Indeks Massa Tubuh	Kelompok kontrol sehat	.161	13	.200*	.935	13	.394
	Kelompok defisiensi imun ringan	.175	13	.200*	.915	13	.217
	Kelompok defisiensi imun berat	.196	13	.184	.883	13	.078
Kadar vit D	Kelompok kontrol sehat	.105	13	.200*	.953	13	.639
	Kelompok defisiensi imun ringan	.103	13	.200*	.962	13	.780
	Kelompok defisiensi imun berat	.194	13	.192	.889	13	.095
Kadar mRNA reseptor vitD	Kelompok kontrol sehat	.142	13	.200*	.956	13	.686
	Kelompok defisiensi imun ringan	.197	13	.179	.912	13	.197
	Kelompok defisiensi imun berat	.108	13	.200*	.957	13	.710
Kadar HMGB1	Kelompok kontrol sehat	.122	13	.200*	.955	13	.671
	Kelompok defisiensi imun ringan	.108	13	.200*	.950	13	.605
	Kelompok defisiensi imun berat	.088	13	.200*	.968	13	.868

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Kadar vit D	39	36.55890	10.675468	19.116	55.576
Kadar mRNA reseptor vitD	39	10.31718	1.656276	7.454	13.618
Kadar HMGB1	39	1784.72869	1063.488664	79.097	3573.319
Kelompok uji berdasarkan CD4	39	2.00	.827	1	3

Kruskal-Wallis Test

Ranks

	Kelompok uji berdasarkan CD4	N	Mean Rank
Kadar vit D	Kelompok kontrol sehat	13	33.00
	Kelompok defisiensi imun ringan	13	20.00
	Kelompok defisiensi imun berat	13	7.00
	Total	39	
Kadar mRNA reseptor vitD	Kelompok kontrol sehat	13	33.00
	Kelompok defisiensi imun ringan	13	17.69
	Kelompok defisiensi imun berat	13	9.31
	Total	39	
Kadar HMGB1	Kelompok kontrol sehat	13	7.00
	Kelompok defisiensi imun ringan	13	20.00
	Kelompok defisiensi imun berat	13	33.00
	Total	39	

Test Statistics[a,b]

	Kadar vit D	Kadar mRNA reseptor vitD	Kadar HMGB1
Chi-Square	33.800	28.865	33.800
df	2	2	2
Asymp. Sig.	.000	.000	.000

a. Kruskal Wallis Test

b. Grouping Variable: Kelompok uji berdasarkan CD4

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Kadar vit D	39	36.55890	10.675468	19.116	55.576
Kadar mRNA reseptor vitD	39	10.31718	1.656276	7.454	13.618
Kadar HMGB1	39	1784.72869	1063.488664	79.097	3573.319
Kelompok uji berdasarkan CD4	39	2.00	.827	1	3

Mann-Whitney Test

Ranks

	Kelompok uji berdasarkan CD4	N	Mean Rank	Sum of Ranks
Kadar vit D	Kelompok kontrol sehat	13	20.00	260.00
	Kelompok defisiensi imun berat	13	7.00	91.00
	Total	26		
Kadar mRNA reseptor vitD	Kelompok kontrol sehat	13	20.00	260.00
	Kelompok defisiensi imun berat	13	7.00	91.00
	Total	26		
Kadar HMGB1	Kelompok kontrol sehat	13	7.00	91.00
	Kelompok defisiensi imun berat	13	20.00	260.00
	Total	26		

Test Statistics[a]

	Kadar vit D	Kadar mRNA reseptor vitD	Kadar HMGB1
Mann-Whitney U	.000	.000	.000
Wilcoxon W	91.000	91.000	91.000
Z	-4.333	-4.333	-4.333
Asymp. Sig. (2-tailed)	.000	.000	.000
Exact Sig. [2*(1-tailed Sig.)]	.000[b]	.000[b]	.000[b]

a. Grouping Variable: Kelompok uji berdasarkan CD4

b. Not corrected for ties.

Correlations

		Kelompok uji berdasarkan CD4	Kadar vit D
Kelompok uji berdasarkan CD4	Pearson Correlation	1	-.936**
	Sig. (2-tailed)		.000
	N	39	39
Kadar vit D	Pearson Correlation	-.936**	1
	Sig. (2-tailed)	.000	
	N	39	39

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Kelompok uji berdasarkan CD4	Kadar mRNA reseptor vitD
Kelompok uji berdasarkan CD4	Pearson Correlation	1	-.874**
	Sig. (2-tailed)		.000
	N	39	39
Kadar mRNA reseptor vitD	Pearson Correlation	-.874**	1
	Sig. (2-tailed)	.000	
	N	39	39

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Kelompok uji berdasarkan CD4	Kadar HMGB1
Kelompok uji berdasarkan CD4	Pearson Correlation	1	.949**
	Sig. (2-tailed)		.000
	N	39	39
Kadar HMGB1	Pearson Correlation	.949**	1
	Sig. (2-tailed)	.000	
	N	39	39

**. Correlation is significant at the 0.01 level (2-tailed).

Kadar Vitamin D * Kelompok uji berdasarkan CD4
Symmetric Measures

	Value	Approximate Significance
Nominal by Nominal Contingency Coefficient	.686	.000
N of Valid Cases	39	

Kadar mRNA * Kelompok uji berdasarkan CD4
Symmetric Measures

	Value	Approximate Significance
Nominal by Nominal Contingency Coefficient	.670	.000
N of Valid Cases	38	

Kadar HMGB1 * Kelompok uji berdasarkan CD4

Symmetric Measures

		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Nominal by Nominal	Contingency Coefficient	-.816			.415
Interval by Interval	Pearson's R	.949	.011	18.215	.000[c]
Ordinal by Ordinal	Spearman Correlation	.943	.000	17.256	.000[c]
N of Valid Cases		39			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.