

## DAFTAR PUSTAKA

- Almatsier S, 2005. Penuntun Diet Edisi Baru. PT Gramedia Pustaka Utama, Jakarta.
- Almatsier, S., 2001. Prinsip Dasar Ilmu Gizi. Gramedia Pustaka Utama, Jakarta.
- Aman, A.M., Soewondo, P., Soelistijo, S., Arsana, P.M., Wismandari, Zufry, H., Rosandi, R., 2019. Pedoman Pengelolaan Dislipidemia di Indonesia 2019. PB PERKENI, Jakarta.
- Asano, L., Watanabe, M., Ryoden, Y., Usuda, K., Yamaguchi, T., Khambu, B., Takashima, M., Sato, S. ichi, Sakai, J., Nagasawa, K., Uesugi, M., 2017. Vitamin D Metabolite, 25-Hydroxyvitamin D, Regulates Lipid Metabolism by Inducing Degradation of SREBP/SCAP. *Cell Chem Biol* 24, 207–217. <https://doi.org/10.1016/j.chembiol.2016.12.017>
- Aung, T., Halsey, J., Kromhout, D., Gerstein, H.C., Marchioli, R., Tavazzi, L., 2018. Associations of Omega-3 Fatty Acid Supplement Use With Cardiovascular Disease Risks. *JAMA Cardiol* 3, 225. <https://doi.org/10.1001/jamacardio.2017.5205>
- Bachorik, P.S., 2000. Measurement of Low Density Lipoprotein Cholesterol, 2nd ed. AACC Press, Washington DC.
- Basciano, H., Federico, L., Adeli, K., 2005. Fructose, insulin resistance, and metabolic dyslipidemia. *Nutr Metab (Lond)* 2. <https://doi.org/10.1186/1743-7075-2-5>
- Beveridge, L.A., Witham, M.D., 2013. Vitamin D and the Cardiovascular System. *Osteoporosis International* 24, 2167–2180. <https://doi.org/10.1007/s00198-013-2281-1>
- Calder, P.C., 2017. New Evidence that Omega-3 Fatty Acids Have a Role in Primary Prevention of Coronary Heart Disease. *J Public Health Emerg* 1, 35–35. <https://doi.org/10.21037/jphe.2017.03.03>
- Calder, P.C., 2004. R E V I E W n-3 Fatty Acids and Cardiovascular Disease: Evidence Explained and Mechanisms Explored A B S T R A C T. *Clin Sci* 107, 1–11.
- Chang, S.W., Lee, H.C., 2019. Vitamin D and Health - The Missing Vitamin in Humans. *Pediatr Neonatol* 60, 237–244. <https://doi.org/10.1016/j.pedneo.2019.04.007>
- Covington, M., 2004. Omega-3 Fatty Acids. *Am Fam Physician* 70, 133–140.
- Davidson, M.H., 2002. Combination Therapy for Dyslipidemia: Safety and Regulatory Considerations. *Am J Cardiol* 90, 50–60.
- Degirolo, C., Rudel, L.L., 2010. Dietary monounsaturated fatty acids appear not to provide cardioprotection. *Curr Atheroscler Rep* 12, 391–396. <https://doi.org/10.1007/s11883-010-0133-4>
- Dobiášová, M., Frohlich, J., 2001. The plasma parameter log (TG/HDL-C) as an atherogenic index: correlation with lipoprotein particle size and esterification rate in apoB-lipoprotein-depleted plasma (FER HDL ). *Clin Biochem* 34, 583–588.
- Elliott, S.S., Keim, N.L., Stern, J.S., Teff, K., Havel, P.J., 2002. Fructose, weight gain, and the insulin resistance syndrome 1-3, *Am J Clin Nutr*.

- Elmi, C., Fan, M.M., Le, M., Cheng, G., Khalighi, K., 2021. Association of serum 25-Hydroxy Vitamin D level with lipid, lipoprotein, and apolipoprotein level. *J Community Hosp Intern Med Perspect* 11, 812–816. <https://doi.org/10.1080/20009666.2021.1968571>
- Erwinanto, Santoso A, Putranto JN, Tedjasukmana P, Suryawan R, Rifqi S, et al, 2013. PEDOMAN TATALAKSANA DISLIPIDEMIA, 1st ed. Centra Communication, Jakarta.
- Fantuzzi, G., Mazzone, T., 2007. Adipose Tissue and Atherosclerosis: Exploring the Connection. *Arterioscler Thromb Vasc Biol* 27, 996–1003. <https://doi.org/10.1161/ATVBAHA.106.131755>
- Gropper S, Smith J, Carr T, 2021. *Advanced Nutrition and Human Metabolism* Eight Edition, 8th ed. Cengage Learning, Boston.
- Handayani, M., Simatupang, A., 2019. The Use of Station in Hypercholesterolemia. *Majalah Kedokteran UKI* 35, 96–103.
- Harris, W.S., Dayspring, T.D., Moran, T.J., 2013. Omega-3 fatty acids and cardiovascular disease: new developments and applications. *Postgrad Med.* <https://doi.org/10.3810/pgm.2013.11.2717>
- He, S., Yu, S., Zhou, Z., Wang, C., Wu, Y., Li, W., 2018. Effect of vitamin D supplementation on fasting plasma glucose, insulin resistance and prevention of type 2 diabetes mellitus in non-diabetics: A systematic review and meta-analysis. *Biomed Rep* 8, 475–484. <https://doi.org/10.3892/br.2018.1074>
- Hedayatnia, M., Asadi, Z., Zare-Feyzabadi, R., Yaghooti-Khorasani, M., Ghazizadeh, H., Ghaffarian-Zirak, R., et al, 2020. Dyslipidemia and cardiovascular disease risk among the MASHAD study population. *Lipids Health Dis* 19, 1–11. <https://doi.org/10.1186/s12944-020-01204-y>
- Heriansyah, T., 2013. PENGARUH BERBAGAI DURASI PEMBERIAN DIET TINGGI LEMAK TERHADAP PROFIL LIPID TIKUS PUTIH (*Rattus Novergicus Strain Wistar*) JANTAN. Banda Aceh.
- Hieronimus, B., Stanhope, K.L., 2020. Dietary fructose and dyslipidemia: New mechanisms involving apolipoprotein CIII. *Curr Opin Lipidol.* <https://doi.org/10.1097/MOL.0000000000000653>
- Holick, M.F., Binkley, N.C., Bischoff-Ferrari, H.A., Gordon, C.M., Hanley, D.A., Heaney, R.P., Murad, M.H., Weaver, C.M., 2011. Evaluation, Treatment, and Prevention of Vitamin D Deficiency: An Endocrine Society Clinical Practice Guideline. *Journal of Clinical Endocrinology and Metabolism* 96, 1911–1930. <https://doi.org/10.1210/jc.2011-0385>
- Huang, Y., Li, X., Wang, M., Ning, H., Li, Y., Sun, C., 2013. Lipoprotein lipase links vitamin D, insulin resistance, and type 2 diabetes: a cross-sectional epidemiological study. *Cardiovasc Diabetol* 12, 1–8.
- Ibrahim Fouad, G., 2020. Synergistic anti-atherosclerotic role of combined treatment of omega-3 and co-enzyme Q10 in hypercholesterolemia-induced obese rats. *Heliyon* 6, 1–12. <https://doi.org/10.1016/j.heliyon.2020.e03659>
- Ihedioha, J.I., Noel-Uneke, O.A., Ihedioha, T.E., 2013. Reference values for the serum lipid profile of albino rats (*Rattus norvegicus*) of varied ages and sexes. *Comp Clin Path* 22, 93–99. <https://doi.org/10.1007/s00580-011-1372-7>

- Ilhamifithri, I., Yaswir, R., Alia, E., Efrida, E., 2019. CORRELATION OF ATHEROGENIC INDEX OF PLASMA WITH STENOSIS LEVEL OF CORONARY ARTERY IN ACUTE CORONARY SYNDROME. *INDONESIAN JOURNAL OF CLINICAL PATHOLOGY AND MEDICAL LABORATORY* 25, 53. <https://doi.org/10.24293/ijcpml.v25i1.1491>
- Ilić, I., Oršolić, N., Rođak, E., Odeh, D., Lovrić, M., Mujkić, R., Aždajić, M.D., Grgić, A., Levak, M.T., Vargek, M., Dmitrović, B., Belovari, T., 2020. The effect of high-fat diet and 13-cis retinoic acid application on lipid profile, glycemic response and oxidative stress in female Lewis rats. *PLoS One* 15. <https://doi.org/10.1371/journal.pone.0238600>
- Jones, P., Kafonek, S., Laurora, I., Hunninghake, D., 1998. Comparative Dose Efficacy Study of Atorvastatin Versus Simvastatin, Pravastatin, Lovastatin, and Fluvastatin in Patients With Hypercholesterolemia (The CURVES Study). *Am J Cardiol* 81, 582–587.
- Judd, S.E., Tangpricha, V., 2009. Vitamin D deficiency and risk for cardiovascular disease, in: *American Journal of the Medical Sciences*. Lippincott Williams and Wilkins, pp. 40–44. <https://doi.org/10.1097/MAJ.0b013e3181aeee91>
- Katzung, B., Masters, S., Trevor, A., 2013. *Farmakologi Dasar dan Klinik*, 12th ed. Penerbit Buku Kedokteran EGC, Jakarta.
- Kendrick, J., Targher, G., Smits, G., Chonchol, M., 2009. 25-Hydroxyvitamin D Deficiency Is Independently Associated with Cardiovascular Disease in The Third National Health and Nutrition Examination Survey. *Atherosclerosis* 205, 255–260. <https://doi.org/10.1016/j.atherosclerosis.2008.10.033>
- Kong, W.J., Wei, J., Zuo, Z.Y., Wang, Y.M., Song, D.Q., You, X.F., et al, 2008. Combination of Simvastatin with Berberine Improves the Lipid-lowering Efficacy. *Metabolism* 57, 1029–1037. <https://doi.org/10.1016/j.metabol.2008.01.037>
- Lanham S, Hill T, Gallagher A, Vorster H, 2020. *Introduction to Human Nutrition Third Edition*, 3rd ed. Wiley, NJ.
- Lewis, G.F., Rader, D.J., 2005. New insights into the regulation of HDL metabolism and reverse cholesterol transport. *Circ Res*. <https://doi.org/10.1161/01.RES.0000170946.56981.5c>
- Li, Y.C., Kong, J., Wei, M., Chen, Z.-F., Liu, S.Q., Cao, L.-P., 2002. 1,25-Dihydroxyvitamin D3 Is a Negative Endocrine Regulator of the Renin-Angiotensin System. *Journal of Clinical Investigation* 110, 229–238. <https://doi.org/10.1172/jci200215219>
- Lilly, L.S., 2011. *Pathophysiology of Heart Disease*, 5th ed. Lippincott Williams & Wilkins, Philadelphia.
- Mach, F., Baigent, C., Catapano, A.L., Koskinas, K.C., Casula, M., Badimon, L., et al, 2020. 2019 ESC/EAS Guidelines for the management of dyslipidaemias: Lipid modification to reduce cardiovascular risk. *Eur Heart J* 41, 111–188. <https://doi.org/10.1093/eurheartj/ehz455>
- Malole, M., Pramono, C.S.U., 1989. *Bahan Pengajaran Penggunaan Hewan-hewan Percobaan di Laboratorium*. Departemen Pendidikan dan Kebudayaan Institut Pertanian Bogor, Bogor.

- Manson, J.E., Bassuk, S.S., Cook, N.R., Lee, I.M., Mora, S., Albert, C.M., et al, 2020. Vitamin D, Marine n-3 Fatty Acids, and Primary Prevention of Cardiovascular Disease Current Evidence. *Circ Res* 126, 112–128. <https://doi.org/10.1161/CIRCRESAHA.119.314541>
- Marcinowska-Suchowierska, E., Kupisz-Urbanska, M., Lukasziewicz, J., Pludowski, P., Jones, G., 2018. Vitamin D Toxicity a Clinical Perspective. *Front Endocrinol (Lausanne)* 9, 1–7. <https://doi.org/10.3389/fendo.2018.00550>
- Margier, M., Collet, X., le May, C., Desmarchelier, C., André, F., Lebrun, C., Defoort, C., Bluteau, A., Borel, P., Lespine, A., Reboul, E., 2019. ABCB1 (P-glycoprotein) regulates Vitamin D absorption and contributes to its transintestinal efflux. *FASEB Journal* 33, 2084–2094. <https://doi.org/10.1096/fj.201800956R>
- Menteri Kesehatan Republik Indonesia, 2020. KEPUTUSAN MENTERI KESEHATAN REPUBLIK INDONESIA. Jakarta.
- Muñoz-Aguirre, P., Flores, M., Macias, N., Quezada, A.D., Denova-Gutiérrez, E., Salmerón, J., 2015. The effect of vitamin D supplementation on serum lipids in postmenopausal women with diabetes: A randomized controlled trial. *Clinical Nutrition* 34, 799–804. <https://doi.org/10.1016/j.clnu.2014.10.002>
- Nambi, V., Ballantyne, C.M., 2006. Combination Therapy with Statins and Omega-3 Fatty Acids. *American Journal of Cardiology* 98, 34–38. <https://doi.org/10.1016/j.amjcard.2005.12.025>
- Nicholls, S.J., Lincoff, A.M., Garcia, M., Bash, D., Ballantyne, C.M., Barter, P.J., et al, 2020. Effect of High-Dose Omega-3 Fatty Acids vs Corn Oil on Major Adverse Cardiovascular Events in Patients at High Cardiovascular Risk: The STRENGTH Randomized Clinical Trial. *JAMA - Journal of the American Medical Association* 324, 2268–2280. <https://doi.org/10.1001/jama.2020.22258>
- Nimitphong, H., Park, E., Lee, M.J., 2020. Vitamin D Regulation of Adipogenesis and Adipose Tissue Functions. *Nutr Res Pract* 14, 553–567. <https://doi.org/10.4162/nrp.2020.14.6.553>
- Ofem, O.E., Okon, U.E., Ujong, G.O., Ekam, O.S., 2019. Calcium-rich diet and vitamin D supplementation improves lipid profiles and reduces atherogenic index in high salt fed male Wistar rat. *Niger J Physiol Sci* 34, 27–31.
- Pappan, N., Rehman, A., 2021. Dyslipidemia [WWW Document]. StatPearls Publishing.
- Pekkanen, M.P., Ukkola, O., Hedberg, P., Piira, O.P., Lepojärvi, S., Lumme, J., Tulppo, M.P., Huikuri, H. v., 2015. Serum 25-hydroxyvitamin D is associated with major cardiovascular risk factors and cardiac structure and function in patients with coronary artery disease. *Nutrition, Metabolism and Cardiovascular Diseases* 25, 471–478. <https://doi.org/10.1016/j.numecd.2015.02.005>
- Pfotenhauer, K.M., Shubrook, J.H., 2017. Vitamin D Deficiency, Its Role in Health and Disease, and Current Supplementation Recommendations. *Journal of the American Osteopathic Association* 117, 301–305. <https://doi.org/10.7556/jaoa.2017.055>

- Pirahanchi, Y., Anoruo, M., Sharma, S., 2021. Biochemistry, Lipoprotein Lipase. StatPearls Publishing.
- Qin, X., Wang, X., 2019. Role of vitamin D receptor in the regulation of CYP3A gene expression. *Acta Pharm Sin B*. <https://doi.org/10.1016/j.apsb.2019.03.005>
- Qin, X.F., Zhao, L.S., Chen, W.R., Yin, D.W., Wang, H., 2015. Effects of Vitamin D on Plasma Lipid Profiles in Statin-treated Patients with Hypercholesterolemia: A Randomized Placebo-controlled Trial. *Clinical Nutrition* 34, 201–206. <https://doi.org/10.1016/j.clnu.2014.04.017>
- Qurfeld, U., Hoffman, M.M., Klaus, G., Eifinger, F., Ackershott, M., Michalk, D., et al, 1999. Antagonistic Effects of Vitamin D and Parathyroid Hormone on Lipoprotein Lipase in Cultured Adipocytes. *Journal of the American Society of Nephrology* 10, 2158–2164. <https://doi.org/10.1681/ASN.V10102158>
- Rahmawati, Y., 2015. Pengaruh Pemberian Ekstrak Metanol Daun Kayu Kuning (*Arcangelisia flava* L. Merr) terhadap Histopatologi Aorta Tikus Wistar Hiperlipidemia. Jember.
- Ramiro-Lozano, J.M., Calvo-Romero, J.M., 2015. Effects on lipid profile of supplementation with vitamin D in type 2 diabetic patients with vitamin D deficiency. *Ther Adv Endocrinol Metab* 6, 245–248. <https://doi.org/10.1177/2042018815599874>
- Rosendorff, C., 2015. *Essential Cardiology Principles and Practice*, 2nd ed. Humana Press Inc, Totowa, New Jersey.
- Sahay, M., Sahay, R., 2012. Rickets-Vitamin D Deficiency and Dependency. *Indian J Endocrinol Metab* 16, 164–176. <https://doi.org/10.4103/2230-8210.93732>
- Sánchez-Lozada, L.G., Mu, W., Roncal, C., Sautin, Y.Y., Abdelmalek, M., Reungjui, S., Le, M., Nakagawa, T., Lan, H.Y., Yu, X., Johnson, R.J., 2010. Comparison of free fructose and glucose to sucrose in the ability to cause fatty liver. *Eur J Nutr* 49, 1–9. <https://doi.org/10.1007/s00394-009-0042-x>
- Sievenpiper, J.L., Carleton, A.J., Chatha, S., Jiang, H.Y., de Souza, R.J., Beyene, J., Kendall, C.W.C., Jenkins, D.J.A., 2009. Heterogeneous effects of fructose on blood lipids in individuals with type 2 diabetes: Systematic review and meta-analysis of experimental trials in humans. *Diabetes Care* 32, 1930–1937. <https://doi.org/10.2337/dc09-0619>
- Skaaby, T., Husemoen, L.L.N., Martinussen, T., Thyssen, J.P., Melgaard, M., Thuesen, B.H., et al, 2013. Vitamin D Status, Filaggrin Genotype, and Cardiovascular Risk Factors: A Mendelian Randomization Approach. *PLoS One* 8, 1–8. <https://doi.org/10.1371/journal.pone.0057647>
- Speakman, J.R., 2019. Use of High-Fat Diets to Study Rodent Obesity as A Model of Human Obesity. *Int J Obes* 43, 1491–1492. <https://doi.org/10.1038/s41366-019-0363-7>
- Sudoyo A, Setiyohadi B, Alwi I, Simadibrata M, Setiati S, 2009. *Buku Ajar Ilmu Penyakit Dalam Edisi Kelima Jilid III*, 5th ed. Interna Publishing, Jakarta.
- Susanti, N., Rahmawati, E., Aprinda, R., Kedokteran, F., Kesehatan, I., Malik, M., Malang, I., 2019. Efek Diet Tinggi Fruktosa terhadap Profil Lipid Tikus *Rattus Rattus norvegicus* Strain Wistar. *Journal of Islamic Medicine* 3, 26–35.
- Suyatna FD, 2007. *Farmakologi dan Terapi*, 5th ed. Balai Penerbit FKUI, Jakarta.

- Syamfitri, 2018. Pengaruh Pemberian Ekstrak Etanol Biji Mahoni (*Swietenia mahagoni* L.) terhadap Kadar Kolesterol Total Tikus Putih (*Rattus novergicus*). Makassar.
- Tan, K.W., Sampson, A., Osa-Andrews, B., Iram, S.H., 2018. Calcitriol and calcipotriol modulate transport activity of ABC transporters and exhibit selective cytotoxicity in MRP1-overexpressing cells. *Drug Metabolism and Disposition* 46, 1856–1866. <https://doi.org/10.1124/dmd.118.081612>
- Toth, P.P., Farnier, M., Tomassini, J.E., Foody, J.M., Tershakovec, A.M., 2016. Statin combination therapy and cardiovascular risk reduction. *Future Cardiol* 12, 289–315. <https://doi.org/10.2217/fca-2015-0011>
- Vaidya, A., Forman, J.P., Williams, J.S., 2011. Vitamin D and The Vascular Sensitivity to Angiotensin II in Obese Caucasians with Hypertension. *J Hum Hypertens* 25, 672–678. <https://doi.org/10.1038/jhh.2010.110>
- Virani, S., 2010. Non-HDL Cholesterol as a Metric of Good Quality of Care. *Tex Heart Inst J* 38, 160–162.
- Wahyuddin, N., 2019. Peran Suplemen Omega-3 sebagai Terapi Adjuvan terhadap Efektivitas Atorvastatin pada Tikus (*Rattus norvegicus*) Putih Jantan Dislipidemia. Universitas Hasanuddin, Makassar.
- Wali, J.A., Jarzebska, N., Raubenheimer, D., Simpson, S.J., Rodionov, R.N., O'sullivan, J.F., 2020a. Cardio-metabolic Effects of High-Fat Diets and Their Underlying Mechanisms—A Narrative Review. *Nutrients* 12, 1–18. <https://doi.org/10.3390/nu12051505>
- Wang, H., Xia, N., Yang, Y., Peng, D.-Q., 2012. Influence of vitamin D supplementation on plasma lipid profiles: A meta-analysis of randomized controlled trials. *Lipids Health Dis* 11, 42. <https://doi.org/10.1186/1476-511X-11-42>
- Wang, L., Xu, F., Zhang, X.J., Jin, R.M., Li, X., 2015. Effect of high-fat diet on cholesterol metabolism in rats and its association with Na<sup>+</sup>/K<sup>+</sup>-ATPase/Src/pERK signaling pathway. *Journal of Huazhong University of Science and Technology - Medical Science* 35, 490–494. <https://doi.org/10.1007/s11596-015-1458-6>
- Wang, Y., Si, S., Liu, J., Wang, Z., Jia, H., Feng, K., 2016. The Associations of Serum Lipids with Vitamin D Status. *PLoS One* 11, 1–13. <https://doi.org/10.1371/journal.pone.0165157>
- Yanai, H., Masui, Y., Katsuyama, H., Adachi, H., Kawaguchi, A., Hakoshima, M., Waragai, Y., Harigae, T., Sako, A., 2018. An Improvement of Cardiovascular Risk Factors by Omega-3 Polyunsaturated Fatty Acids. *J Clin Med Res* 10, 281–289. <https://doi.org/10.14740/jocmr3362w>
- Yin, C., Wilfred, G.P., Nai Kiong, 2005. High-density Lipoprotein Cholesterol: Ready for Prime Time? *Singapore Med J* 46, 507–513.
- Zeind, C., Carvalho, M., 2018. *Koda-Kimble & Young's Applied Therapeutics The Clinical Use of Drugs*, 11th ed. Lippincott William & Wilkins.

## LAMPIRAN

Lampiran 1. Tabel uji normalitas kadar TC, TG, HDL, dan non-HDL setelah induksi

Variabel		<i>Mean±SE</i>	<i>Shapiro Wilk</i> Sig.
TC	Normal (K1)	102,18±6,63	0,145
	Dislipidemia (K2)	103,58±14,67	0,126
	Simvastatin (P1)	115,60±6,14	0,076
	Simvastatin+Omega-3 (P2)	113,83±13,10	0,907
	Simvastatin+ MVD (P3)	119,58±11,32	0,185
	Simvastatin+ HVD (P4)	100,58±14,95	0,160
	TG	Normal (K1)	101,16±7,91
Dislipidemia (K2)		199,04±39,57	0,788
Simvastatin (P1)		192,64±15,96	0,955
Simvastatin+Omega-3 (P2)		224,22±19,50	0,651
Simvastatin+ MVD (P3)		197,40±34,87	0,611
Simvastatin+ HVD (P4)		170,00±36,66	0,074
HDL		Normal (K1)	33,73±3,18
	Dislipidemia (K2)	47,07±3,05	0,203

	Simvastatin (P1)	52,59±10,07	0,166
	Simvastatin+Omega-3 (P2)	30,48±3,42	0,061
	Simvastatin+ MVD (P3)	47,39±6,78	0,032
	Simvastatin+ HVD (P4)	43,86±9,21	0,122
Non-HDL	Normal (K1)	74,53±7,59	0,997
	Dislipidemia (K2)	62,77±21,23	0,344
	Simvastatin (P1)	70,01±11,13	0,074
	Simvastatin+Omega-3 (P2)	92,76±10,23	0,371
	Simvastatin+ MVD (P3)	77,1±9,66	0,298
	Simvastatin+ HVD (P4)	73,77±18,84	0,256

Lampiran 2. Tabel hasil uji LSD kadar TG setelah induksi

Variabel	Kelompok	Mean	Kelompok	Mean	Mean Difference	LSD
		(I)	(J)		(I-J)	Sig.
TG	K1	101,16	K2	199,04	-197,88	0,022*
			P1	192,64	-91,48	0,032*
			P2	224,22	-123,06	0,005*
			P3	197,40	-96,24	0,024*
			P4	170,00	-68,84	0,099
	K2	199,04	K1	101,16	97,88	0,022*
			P1	192,64	6,40	0,875
			P2	224,22	-25,18	0,536
			P3	197,40	1,64	0,968
			P4	170,00	29,04	0,476
P1	192,64	K1	101,16	91,48	0,032*	



		K2	199,04	-6,4	0,875
		P2	224,22	-31,58	0,439
		P3	197,40	-4,76	0,906
		P4	170,00	22,64	0,578
P2	224,22	K1	101,16	123,06	0,005*
		K2	199,04	25,18	0,536
		P1	192,64	31,58	0,439
		P3	197,40	26,82	0,510
		P4	170,00	54,22	0,189
P3	197,40	K1	101,16	96,24	0,024*
		K2	199,04	-1,64	0,968
		P1	192,64	4,76	0,906
		P2	224,22	-26,82	0,510
		P4	170,00	27,40	0,501
P4	170,00	K1	101,16	68,84	0,099
		K2	199,04	-29,04	0,476
		P1	192,64	-22,64	0,578
		P2	224,22	-54,22	0,189
		P3	197,40	-27,40	0,501

Lampiran 3. Tabel uji normalitas kadar TC, TG, HDL, dan non-HDL setelah pemberian terapi

Variabel		Mean±SE	Shapiro Wilk Sig.
TC	Normal (K1)	89,24±10,19	0,344
	Dislipidemia (K2)	106,94±12,84	0,942
	Simvastatin (P1)	92,44±2,17	0,224
	Simvastatin+Omega-3 (P2)	111,74±9,09	0,551
	Simvastatin+ MVD (P3)	105,96±8,65	0,111

	Simvastatin+ HVD (P4)	102,64±7,96	0,570
TG	Normal (K1)	62,56±12,17	0,268
	Dislipidemia (K2)	177,20±17,93	0,279
	Simvastatin (P1)	155,20±18,05	0,767
	Simvastatin+Omega-3 (P2)	127,38±13,36	0,514
	Simvastatin+ MVD (P3)	129,38±24,70	0,228
	Simvastatin+ HVD (P4)	112,66±19,36	0,805
	HDL	Normal (K1)	43,46±7,01
Dislipidemia (K2)		46,71±5,20	0,266
Simvastatin (P1)		39,13±6,89	0,720
Simvastatin+Omega-3 (P2)		25,06±2,10	0,745
Simvastatin+ MVD (P3)		45,34±7,69	0,867
Simvastatin+ HVD (P4)		64,94±10,59	0,341
Non-HDL		Normal (K1)	48,86±9,85
	Dislipidemia (K2)	50,16±12,35	0,029
	Simvastatin (P1)	56,37±10,42	0,631
	Simvastatin+Omega-3 (P2)	92,03±11,85	0,715
	Simvastatin+ MVD (P3)	49,00±13,51	0,184
	Simvastatin+ HVD (P4)	47,40±10,59	0,780

Lampiran 4. Tabel hasil uji LSD kadar TG setelah pemberian terapi

Variabel	Kelompok	Mean	Kelompok	Mean	Mean Difference (I-J)	LSD Sig.
	(I)		(J)			
TG	K1	62,56	K2	177,20	-114,64	0,000*
			P1	155,20	-92,64	0,001*
			P2	127,38	-64,82	0,018*
			P3	129,38	-66,82	0,015*
			P4	112,66	-50,10	0,062
	K2	177,20	K1	62,56	114,64	0,000*
			P1	155,20	22,00	0,398
			P2	127,38	49,82	0,063
			P3	129,38	47,82	0,073
			P4	112,66	64,54	0,019*
	P1	155,20	K1	62,56	92,64	0,001*
			K2	177,20	-22,00	0,398
			P2	127,38	27,82	0,287
			P3	129,38	25,82	0,322
			P4	112,66	42,54	0,109
	P2	127,38	K1	62,56	64,82	0,018*
			K2	177,20	-49,82	0,063
			P1	155,20	-27,82	0,287
			P3	129,38	-2,00	0,938
			P4	112,66	14,72	0,570
P3	129,38	K1	62,56	66,82	0,015*	
		K2	177,20	-47,82	0,073	
		P1	155,20	-25,82	0,322	
		P2	127,38	2,00	0,938	
		P4	112,66	16,72	0,519	
P4	112,66	K1	62,56	50,10	0,062	
		K2	177,20	-64,54	0,019*	
		P1	155,20	-42,54	0,109	
		P2	127,38	-14,72	0,570	
		P3	129,38	-16,72	0,519	

Lampiran 5. Tabel hasil uji LSD kadar HDL setelah pemberian terapi

Variabel	Kelompok	Mean	Kelompok	Mean	Mean	LSD
		(I)	(J)		Difference	Sig.
					(I-J)	
HDL	K1	43,46	K2	46,71	-3,25	0,748
			P1	39,13	4,33	0,669
			P2	25,06	18,40	0,078
			P3	45,34	-1,88	0,852
			P4	64,94	21,48	0,042*
	K2	46,71	K1	43,46	3,25	0,748
			P1	39,13	7,58	0,455
			P2	25,06	21,65	0,040*
			P3	45,34	1,37	0,892
			P4	64,94	-18,23	0,080
	P1	39,13	K1	43,46	-4,33	0,669
			K2	46,71	-7,58	0,455
			P2	25,06	14,07	0,172
			P3	45,34	-6,21	0,540
			P4	64,94	-25,81	0,016*
	P2	25,06	K1	43,46	-18,40	0,078
			K2	46,71	-21,65	0,040*
			P1	39,13	-14,07	0,172
			P3	45,34	-20,28	0,054
			P4	64,94	-39,88	0,001*
P3	45,34	K1	43,46	1,88	0,852	
		K2	46,71	-1,37	0,892	
		P1	39,13	6,21	0,540	
		P2	25,06	20,28	0,054	
		P4	64,94	-19,60	0,061	
P4	64,94	K1	43,46	21,48	0,042*	
		K2	46,71	18,23	0,080	
		P1	39,13	25,81	0,016*	
		P2	25,06	39,88	0,001*	
		P3	45,34	19,60	0,061	

Lampiran 6. Tabel uji normalitas kadar IAP

Variabel	Kelompok	Mean±SD	Shapiro Wilk Sig.
IAP	K1	0,155096±0,081595	0,022
	K2	0,511279±0,194989	0,984
	P1	0,613296±0,146474	0,138
	P2	0,702360±0,076587	0,854
	P3	0,452820±0,113971	0,290
	P4	0,235523±0,089726	0,360

Lampiran 7. Tabel hasil uji LSD Kadar IAP

Variabel	Kelompok	Mean (I)	Kelompok (J)	Mean	Mean Difference (I-J)	LSD Sig.
IAP	K1	0,155096	K2	0,511279	-0,356185	0,008* 9
			P1	0,613296	-0,458201	0,001* 6
			P2	0,702360	-0,547264	0,000*
			P3	0,452820	-0,297724	0,024*
			P4	0,235523	-0,080428	0,520 3
	K2	0,511279	K1	0,155096	0,356185	0,008* 6
			P1	0,613296	-0,102017	0,415 6
			P2	0,702360	-0,191080	0,134
			P3	0,452820	0,058460	0,639
			P4	0,235523	0,275756	0,035* 3
	P1	0,613296	K1	0,155096	0,458201	0,001* 6
			K2	0,511279	0,102017	0,415 9

		P2	0,70236	-0,089064	0,476
		P3	0,45282	0,160476	0,205
		P4	0,23552	0,377773	0,005*
		3			
P2	0,70236	K1	0,15509	0,547264	0,000*
		6			
		K2	0,51127	0,191080	0,134
		9			
		P1	0,61329	0,089064	0,476
		6			
		P3	0,45282	0,249540	0,054
		P4	0,23552	0,466837	0,001*
		3			
P3	0,45282	K1	0,15509	0,297724	0,024*
		6			
		K2	0,51127	-0,058460	0,639
		9			
		P1	0,61329	-0,160476	0,205
		6			
		P2	0,70236	-0,249540	0,054
		P4	0,23552	0,217297	0,090
		3			
P4	0,235523	K1	0,15509	0,080428	0,520
		6			
		K2	0,51127	-0,275756	0,035*
		9			
		P1	0,61329	-0,377772	0,005*
		6			
		P2	0,70236	-0,466837	0,001*
		P3	0,45282	-0,217297	0,090

Lampiran 8. Rerata konsumsi pakan diet tinggi lemak hewan coba

Hari/ Kelompok	I (K1)	II (K2)	III (P1)	IV (P2)	V (P3)	VI (P4)
1	38,25	37,25	36,75	34,5	31,46	40
2	42,375	29,75	35,875	36,5	30,835	38,665
3	40	28,25	33	29,625	32,5	35,665
4	40	37,75	37,5	31	32,625	35,335
5	40	32,25	37,875	32,375	26,54	39,165
6	40	24,625	31,875	20,75	24,79	29,335
7	40	30,29	30,75	25,875	31,04	30,835
8	40	27,165	33	26,71	26,29	30,835
9	40	28,125	33,5	24,335	29,25	31

10	40	29,875	28	25,335	28,21	31,665
11	40	28,665	37,25	28,46	36,5	29,665
12	40	30	31,375	28,79	27,96	30,835
13	40	35,04	36,25	28,54	33,46	31,835
14	40	26,46	28,5	21,04	31,125	31,835
15	36,5	28,5	32,125	20,625	32,04	29,415
16	41,375	34,085	30,5	26,04	35,75	38,21
17	42,5	33,335	33,75	28,125	37,335	36
18	42,5	26,25	23,75	19,79	20,04	32,96
19	42,5	30,46	33,25	31,665	26,875	34,335
20	42,5	31,25	39,875	31,665	30,665	32
21	42,5	32,335	36,25	28,46	35,79	33,335
22	42,5	29,96	36,25	26,165	37,085	31,46
23	42,5	28,625	34,625	26,835	39	39,165
24	42,5	36,165	37,5	29,25	36,04	33,335
25	42,5	29,5	31,125	29,125	30,54	33,46
26	42,5	32,835	34,625	33,125	37,54	36,335
27	42,5	27	34,625	36	36,335	38,665
28	40,625	28	30,125	27,5	31,71	34,585
29	42,5	28,5	33,375	33,25	24,21	33,915
30	42,5	27	32	28,875	28,415	24,085
31	42,5	26	31	21,25	27,54	31,04
32	42,5	26,165	25,125	25,625	22,335	35,415
33	42,5	27	27,5	23	23,5	26,085
34	42,5	30,835	37,25	31	36	36,665
35	42,5	27,665	39,375	24,875	26,585	28,335
36	42,5	25,83	29,875	23,625	22,665	29,96
37	42,5	25,665	25,5	21,75	24,21	26,25
38	42,5	27,665	26,875	27,375	29,375	35,21
39	42,5	31,33	32,125	30,25	21,585	36,5
40	42,5	30,835	36	30,375	27,25	32,54
41	41,375	27	28,5	28,75	27,085	32,125
42	42,5	29,665	30,125	25,75	23,54	35,125

Keterangan: Jumlah rerata konsumsi pakan tinggi lemak dalam gram/ekor hewan coba/hari

Lampiran 9. Rerata konsumsi air dan air fruktosa 16,5% hewan coba

Hari/ Kelompok	I (K1)	II (K2)	III (P1)	IV (P2)	V (P3)	VI (P4)
1	17	21,375	17,5	16,375	16,335	18
2	15	16,125	11,5	10,875	13,835	13,415
3	24,79	11,625	10	12	14,165	15,165
4	12,29	15,5	13,875	9,375	13	13,335
5	20,71	15,75	15,125	12,5	17,415	15,085
6	22,335	18,125	19	12,25	14,835	17,085
7	15,835	20,21	16,875	12,5	16	13,75
8	17,29	20,25	11,25	9	14,085	10,835
9	21,165	18,21	16,875	12,5	18,25	15,54
10	16,665	19,585	16,875	12,915	15,835	15
11	18,46	17,335	20,69	14,04	15,79	18,15
12	17,915	21,25	20	15	15	13,54
13	19,165	24,165	15	20	16,665	15,415
14	17,46	22,65	19,25	16,875	14,5	18,625
15	17	20,415	22	14,375	17,585	17,25
16	29,165	20,835	24	13	20,25	22,5
17	25,625	19,335	23,875	19,25	18,75	24,46
18	17,75	19,96	13,75	14,125	17,29	15,21
19	15,625	22,085	17,5	13,75	17,5	12,5
20	19,335	16,25	17,5	14,125	16,29	19,915
21	21,665	22,585	21,25	19,875	12,085	13,335
22	20,085	19,75	21,25	13,125	9,165	19,165
23	23,335	26,665	20	27,5	21,25	19,165
24	21,25	25	23,625	10,815	17,585	17,835
25	21,25	22,335	22,5	15	16,875	15,835
26	17	19,83	20	27,5	18,54	21,875
27	20,75	28,165	23,625	20	21,665	24,415
28	20	20,335	24,125	12,75	17,5	17,5
29	20	16,665	24,375	16,25	18,335	14
30	17,875	21,335	17,875	11,75	22,25	15,165
31	15	15,835	16,25	10,25	15,335	15,915
32	19,75	22,5	17,375	13,75	16,415	20,415
33	23,25	20	14,375	7,5	17,5	15
34	13,75	21,665	16,25	12,5	20,5	26,085
35	21	23,33	20,125	14,875	15,25	18,585



36	12	23,33	21,875	9	16,415	21,5
37	10	23,335	16,75	17,5	21,915	16,54
38	18,875	24,165	14,875	11	18,585	16,71
39	10,75	18,835	17,5	6,5	12,585	12,75
40	19,5	21,665	20,625	7,5	20	19,165
41	22	25	22,125	9	15,835	19,75
42	20	23,335	20,25	13,75	16,46	22,75

Keterangan: Jumlah rerata konsumsi pakan tinggi lemak dalam ml/ekor hewan coba/hari

Lampiran 10. Data rerata bobot badan hewan coba tiap kelompok per minggu

Minggu/ Kandang	I	II	III	IV	V	VI	VII
K1	217,67	239,67	259,17	273,00	288,67	294,83	296,83
K2	243,17	257,50	277,83	288,67	294,00	301,00	308,50
P1	228,38	250,88	269,13	275,63	280,50	283,88	294,25
P2	208,00	230,83	254,17	265,17	274,83	277,50	280,17
P3	224,33	238,33	257,17	266,17	276,00	278,00	289,50
P4	223,86	240,43	261,57	277,00	289,29	290,00	290,57

Keterangan: Bobot badan hewan coba dalam satuan gram

Lampiran 11. Tabel uji normalitas bobot hewan coba

Variabel	Kelompok	Mean±SD	Shapiro Wilk Sig.
Bobot Hewan Coba	K1	267,12±11,35	0,401
	K2	281,52±8,96	0,592
	P1	268,95±8,47	0,468
	P2	255,81±10,27	0,183

P3	261,36±8,76	0,708
P4	267,53±10,09	0,139

Lampiran 12. Hasil uji *One-Way Anova* bobot hewan coba

### ANOVA

Berat Badan Rata-rata Mingguan

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2997.391	5	599.478	1.841	.135
Within Groups	9766.690	30	325.556		
Total	12764.081	35			

Lampiran 13. Contoh perhitungan indeks aterogenik plasma (IAP)

$$IAP = \log \frac{TG}{HDL}$$

Contoh:

TG= 103 mg/dl dan HDL= 54,55 mg/dl

$$IAP = \log \frac{103 \text{ mg/dl}}{54,55 \text{ mg/dl}} = \log 1,888 = 0,27604247 = 0,276$$

TG= 213 mg/dl dan HDL= 52,75 mg/dl

$$IAP = \log \frac{213 \text{ mg/dl}}{52,75 \text{ mg/dl}} = \log 4,038 = 0,606157139 = 0,606$$

#### Lampiran 14. Foto-foto penelitian



Foto pemberian pakan normal/pakan tinggi lemak dan pemberian minum air/air fruktosa 2 kali setiap hari pada jam 08:00 dan 17:00



Contoh pakan yang diberikan. Baik pakan normal maupun pakan tinggi lemak dibentuk menjadi gumpalan sebelum diberikan pada hewan coba



Proses pembuatan pakan diet tinggi lemak. Salah satu tahapan yakni mencairkan lemak sapi sebagai salah satu campuran dalam pakan tinggi lemak.



Pemberian air minum biasa/air fruktosa dilakukan setiap pagi hari sebanyak 100 ml/kandang. Sisa air minum dihitung keesokan harinya.



Pembuatan suspensi simvastatin, omega-3, dan vitamin D dilakukan setiap hari. Pemberian disesuaikan dengan bobot badan hewan coba.



Proses pembuatan suspensi terapi dengan menggunakan timbangan analitik.



Pemberian terapi dengan metode sonde oral. Terapi omega dan vitamin D diberikan pada pagi hari jam 10:00 sedangkan terapi simvastatin diberikan pada sore hari jam 16:00



Pengambilan darah melalui vena lateral ekor hewan coba sebanyak 3 ml dilakukan sebanyak 2 kali yakni setelah induksi selama 28 hari dan setelah pemberian terapi selama 2 minggu. Sebelum pengambilan darah, hewan coba dipuasakan 12 jam sebelumnya.

