

DAFTAR PUSTAKA

- Abouzaki, N., & Abbate, A. (2016). Causes and Prevention of Ventricular Remodeling After MI : Expert Analysis. *American College of Cardiology*(Latest in Cardiology).
- Aimo, A., Gaggin, H. K., Barison, A., Emdin, M., & Januzzi, J. L. (2019). Imaging, biomarker, and clinical predictors of cardiac remodeling in heart failure with reduced ejection fraction. *JACC: Heart Failure*, 7(9), 782-794.
- Alsadi, A. A. H., Albayatib, M. A., & Hamid, M. B. (2019). Association of the 3'UTR188CT Polymorphism of Lectin-Like Oxidized Low Density Lipoprotein Receptor-1 (LOX-1) Gene with Risk for Acute Coronary Syndromes in a Group of Iraqi Population. *Indian Journal of Public Health Research & Development*, 10(10).
- Au, A., Griffiths, L. R., Cheng, K.-K., Kooi, C. W., Irene, L., & Wei, L. K. (2015). The influence of OLR1 and PCSK9 gene polymorphisms on ischemic stroke: evidence from a meta-analysis. *Scientific reports*, 5(1), 1-11.
- Azevedo, P. S., Polegato, B. F., Minicucci, M. F., Paiva, S. A., & Zornoff, L. A. (2016). Cardiac remodeling: concepts, clinical impact, pathophysiological mechanisms and pharmacologic treatment. *Arquivos brasileiros de cardiologia*, 106(1), 62-69.
- Barreto, J., Karathanasis, S. K., Remaley, A., & Sposito, A. C. (2020). Role of LOX-1 (Lectin-Like Oxidized Low-Density Lipoprotein Receptor 1) as a Cardiovascular Risk Predictor: Mechanistic Insight and Potential Clinical Use. *Arteriosclerosis, Thrombosis, and Vascular Biology*, ATVBBA. 120.315421.
- Becirovic-Agic, M., Chalise, U., Daseke, M. J., Konfrst, S., Salomon, J. D., Mishra, P. K., & Lindsey, M. L. (2021). Infarct in the Heart: What's MMP-9 Got to Do with It? *Biomolecules*, 11(4), 491.
- Berezin, A. E., & Berezin, A. A. (2020). Adverse Cardiac Remodelling after Acute Myocardial Infarction: Old and New Biomarkers. *Disease Markers*, 2020.
- Bhatt, A. S., Ambrosy, A. P., & Velazquez, E. J. (2017). Adverse remodeling and reverse remodeling after myocardial infarction. *Current cardiology reports*, 19(8), 1-10.
- Biocca, S., Filesi, I., Mango, R., Maggiore, L., Baldini, F., Vecchione, L., . . . Romeo, F. (2008). The splice variant LOXIN inhibits LOX-1 receptor function through heterooligomerization. *Journal of molecular and cellular cardiology*, 44(3), 561-570.
- Bostan, M.-M., Stătescu, C., Anghel, L., Ţerban, I.-L., Cojocaru, E., & Sascău, R. (2020). Post-Myocardial Infarction Ventricular Remodeling Biomarkers—The Key Link between Pathophysiology and Clinic. *Biomolecules*, 10(11), 1587.
- Brinkley, T. E., Kume, N., Mitsuoka, H., Brown, M. D., Phares, D. A., Ferrell, R. E., . . . Hagberg, J. M. (2008). Variation in the human lectin-like oxidized low-density lipoprotein receptor 1 (LOX-1) gene is associated with plasma soluble LOX-1 levels. *Experimental physiology*, 93(9), 1085-1090.
- Brinkley, T. E., Kume, N., Mitsuoka, H., Phares, D. A., & Hagberg, J. M. (2008). Elevated soluble lectin-like oxidized LDL receptor-1 (sLOX-1) levels in obese postmenopausal women. *Obesity*, 16(6), 1454-1456.
- Chen, Q., Reis, S. E., Kammerer, C., Craig, W. Y., LaPierre, S. E., Zimmer, E. L., . . . Holubkov, R. (2003). Genetic variation in lectin-like oxidized low-density lipoprotein receptor 1 (LOX1) gene and the risk of coronary artery disease. *Circulation*, 107(25), 3146-3151.

- Ding, Z., Liu, S., Wang, X., Dai, Y., Khaidakov, M., Romeo, F., & Mehta, J. L. (2014). LOX-1, oxidant stress, mtDNA damage, autophagy, and immune response in atherosclerosis. *Canadian Journal of physiology and Pharmacology*, 92(7), 524-530.
- Feng, T.-Y., Shan, H.-W., & Lang, R. (2015). Associations between Lectin-like, oxidized low-density lipoprotein receptor-1 G501C and 3'-UTR-C188T polymorphisms with coronary artery disease: a meta-analysis. *International Journal of Clinical and Experimental Medicine*, 8(6), 9275.
- Ferrari, R., Malagù, M., Biscaglia, S., Fucili, A., & Rizzo, P. (2016). Remodelling after an infarct: crosstalk between life and death. *Cardiology*, 135(2), 68-76.
- Flachskampf, F. A., Schmid, M., Rost, C., Achenbach, S., DeMaria, A. N., & Daniel, W. G. (2011). Cardiac imaging after myocardial infarction. *European heart journal*, 32(3), 272-283.
- Galli, A., & Lombardi, F. (2016). Postinfarct left ventricular remodelling: a prevailing cause of heart failure. *Cardiology research and practice*, 2016.
- Gao, S., & Liu, J. (2017). Association between circulating oxidized low-density lipoprotein and atherosclerotic cardiovascular disease. *Chronic diseases and translational medicine*, 3(2), 89-94.
- Gioia, M., Vindigni, G., Testa, B., Raniolo, S., Fasciglione, G. F., Coletta, M., & Biocca, S. (2015). Membrane cholesterol modulates LOX-1 shedding in endothelial cells. *PloS one*, 10(10), e0141270.
- Guo, X., Xiang, Y., Yang, H., Yu, L., Peng, X., & Guo, R. (2016). Association of the LOX-1 rs1050283 polymorphism with risk for atherosclerotic cerebral infarction and its effect on sLOX-1 and LOX-1 expression in a Chinese population. *Journal of atherosclerosis and thrombosis*, 36327.
- Hafiane, A. (2019). Vulnerable plaque, characteristics, detection, and potential therapies. *Journal of cardiovascular development and disease*, 6(3), 26.
- Hamzeh, N., Ghadimi, F., Farzaneh, R., & Hosseini, S. K. (2017). Obesity, heart failure, and obesity paradox. *The Journal of Tehran University Heart Center*, 12(1), 1.
- Hartley, A., Haskard, D., & Khamis, R. (2019). Oxidized LDL and anti-oxidized LDL antibodies in atherosclerosis—Novel insights and future directions in diagnosis and therapy. *Trends in Cardiovascular Medicine*, 29(1), 22-26.
- Hayashida, K., Kume, N., Murase, T., Minami, M., Nakagawa, D., Inada, T., . . . Kambara, H. (2005). Serum soluble lectin-like oxidized low-density lipoprotein receptor-1 levels are elevated in acute coronary syndrome: a novel marker for early diagnosis. *Circulation*, 112(6), 812-818.
- Hofmann, A., Brunssen, C., Wolk, S., Reeps, C., & Morawietz, H. (2020). Soluble LOX-1: A Novel Biomarker in Patients With Coronary Artery Disease, Stroke, and Acute Aortic Dissection? *Journal of the American Heart Association*, 9(1), e013803.
- Hu, C., Chen, J., Dandapat, A., Fujita, Y., Inoue, N., Kawase, Y., . . . Hermonat, P. L. (2008). LOX-1 abrogation reduces myocardial ischemia–reperfusion injury in mice. *Journal of molecular and cellular cardiology*, 44(1), 76-83.
- Hu, C., Dandapat, A., Chen, J., Fujita, Y., Inoue, N., Kawase, Y., . . . Mehta, J. L. (2007). LOX-1 deletion alters signals of myocardial remodeling immediately after ischemia–reperfusion. *Cardiovascular research*, 76(2), 292-302.
- Huttin, O., Coiro, S., Selton-Suty, C., Juillièr, Y., Donal, E., Magne, J., . . . Girerd, N. (2016). Prediction of left ventricular remodeling after a myocardial infarction: role of

- myocardial deformation: a systematic review and meta-analysis. *PLoS One*, 11(12), e0168349.
- Indrayana, Y., Yusuf, I., Bukhari, A., Mappangara, I., & Harahap, H. S. (2023). LOX-1 rs1050283 TT genotype is associated with the severity of peripheral artery disease: a cross-sectional study in Mataram, Indonesia. *Bali Medical Journal*, 12(2), 1175-1180.
- Ishigaki, Y., Oka, Y., & Katagiri, H. (2009). Circulating oxidized LDL: a biomarker and a pathogenic factor. *Current opinion in lipidology*, 20(5), 363-369.
- Ishino, S., Mukai, T., Kume, N., Asano, D., Ogawa, M., Kuge, Y., . . . Saji, H. (2007). Lectin-like oxidized LDL receptor-1 (LOX-1) expression is associated with atherosclerotic plaque instability—analysis in hypercholesterolemic rabbits. *Atherosclerosis*, 195(1), 48-56.
- Iwai-Kanai, E., Hasegawa, K., Sawamura, T., Fujita, M., Yanazume, T., Toyokuni, S., . . . Sasayama, S. (2001). Activation of lectin-like oxidized low-density lipoprotein receptor-1 induces apoptosis in cultured neonatal rat cardiac myocytes. *Circulation*, 104(24), 2948-2954.
- Iyer, R. P., Jung, M., & Lindsey, M. L. (2016). MMP-9 signaling in the left ventricle following myocardial infarction. *American Journal of Physiology-Heart and Circulatory Physiology*, 311(1), H190-H198.
- Jenča, D., Melenovský, V., Stehlík, J., Staněk, V., Kettner, J., Kautzner, J., . . . Wohlfahrt, P. (2020). Heart failure after myocardial infarction: incidence and predictors. *ESC Heart Failure*.
- Kataoka, K., Hasegawa, K., Sawamura, T., Fujita, M., Yanazume, T., Iwai-Kanai, E., . . . Nohara, R. (2003). LOX-1 pathway affects the extent of myocardial ischemia-reperfusion injury. *Biochemical and Biophysical Research Communications*, 300(3), 656-660.
- Kattoor, A. J., Goel, A., & Mehta, J. L. (2019). LOX-1: regulation, signaling and its role in atherosclerosis. *Antioxidants*, 8(7), 218.
- Kaur, N., Singh, J., & Reddy, S. (2019). The LOX1 Gene Polymorphisms and Coronary Artery Disease in North Indian Population. *Archives of Clinical and Biomedical Research*, 3(2), 21-35.
- Khatana, C., Saini, N. K., Chakrabarti, S., Saini, V., Sharma, A., Saini, R. V., & Saini, A. K. (2020). Mechanistic Insights into the Oxidized Low-Density Lipoprotein-Induced Atherosclerosis. *Oxidative Medicine and Cellular Longevity*, 2020.
- Kobayashi, N., Hata, N., Kume, N., Seino, Y., Inami, T., Yokoyama, S., . . . Mizuno, K. (2011). Soluble lectin-like oxidized low-density lipoprotein receptor-1 as an early biomarker for ST elevation myocardial infarction. *Circulation Journal*, 75(6), 1433-1439.
- Kobayashi, N., Hata, N., Kume, N., Shinada, T., Tomita, K., Shirakabe, A., . . . Seino, Y. (2011). Soluble Lectin-Like Oxidized LDL Receptor-1 and High-Sensitivity Troponin T as Diagnostic Biomarkers for Acute Coronary Syndrome—Improved Values With Combination Usage in Emergency Rooms-. *Circulation Journal*, 75(12), 2862-2871.
- Kraler, S., Wenzl, F. A., Georgopoulos, G., Obeid, S., Liberale, L., von Eckardstein, A., . . . Losdat, S. (2022). Soluble lectin-like oxidized low-density lipoprotein receptor-1 predicts premature death in acute coronary syndromes. *European heart journal*, 43(19), 1849-1860.

- Lang, R. M., Badano, L. P., Mor-Avi, V., Afilalo, J., Armstrong, A., Ernande, L., . . . Kuznetsova, T. (2015). Recommendations for cardiac chamber quantification by echocardiography in adults: an update from the American Society of Echocardiography and the European Association of Cardiovascular Imaging. *European Heart Journal-Cardiovascular Imaging*, 16(3), 233-271.
- Leancă, S. A., Crișu, D., Petriș, A. O., Afrăsânie, I., Genes, A., Costache, A. D., . . . Costache, I. I. (2022). Left ventricular remodeling after myocardial infarction: From physiopathology to treatment. *Life*, 12(8), 1111.
- Levitin, I., Volkov, S., & Subbaiah, P. V. (2010). Oxidized LDL: diversity, patterns of recognition, and pathophysiology. *Antioxidants & redox signaling*, 13(1), 39-75.
- Li, D., Liu, L., Chen, H., Sawamura, T., Ranganathan, S., & Mehta, J. L. (2003). LOX-1 mediates oxidized low-density lipoprotein-induced expression of matrix metalloproteinases in human coronary artery endothelial cells. *Circulation*, 107(4), 612-617.
- Li, D., Williams, V., Liu, L., Chen, H., Sawamura, T., Antakli, T., & Mehta, J. L. (2002). LOX-1 inhibition in myocardial ischemia-reperfusion injury: modulation of MMP-1 and inflammation. *American Journal of Physiology-Heart and Circulatory Physiology*, 283(5), H1795-H1801.
- Li, D., Williams, V., Liu, L., Chen, H., Sawamura, T., Romeo, F., & Mehta, J. L. (2003). Expression of lectin-like oxidized low-density lipoprotein receptors during ischemia-reperfusion and its role in determination of apoptosis and left ventricular dysfunction. *Journal of the American College of Cardiology*, 41(6), 1048-1055.
- Li, D., Zhang, Y., Philips, M., Sawamura, T., & Mehta, J. (1999). Upregulation of endothelial receptor for oxidized low-density lipoprotein (LOX-1) in cultured human coronary artery endothelial cells by angiotensin II type 1 receptor activation. *Circulation research*, 84(9), 1043-1049.
- Li, L., & Renier, G. (2009). The oral anti-diabetic agent, gliclazide, inhibits oxidized LDL-mediated LOX-1 expression, metalloproteinase-9 secretion and apoptosis in human aortic endothelial cells. *Atherosclerosis*, 204(1), 40-46.
- Lindsey, M. L. (2018). Assigning matrix metalloproteinase roles in ischaemic cardiac remodelling. *Nature Reviews Cardiology*, 15(8), 471-479.
- Lu, J., Wang, X., Wang, W., Muniyappa, H., Hu, C., Mitra, S., . . . Mehta, J. (2012). LOX-1 abrogation reduces cardiac hypertrophy and collagen accumulation following chronic ischemia in the mouse. *Gene therapy*, 19(5), 522-531.
- Lubrano, V., & Balzan, S. (2020). Role of oxidative stress-related biomarkers in heart failure: galectin 3, α 1-antitrypsin and LOX-1: new therapeutic perspective? *Molecular and cellular biochemistry*, 464(1-2), 143-152.
- Lü, J., & Mehta, J. L. (2011). LOX-1: a critical player in the genesis and progression of myocardial ischemia. *Cardiovascular drugs and therapy*, 25(5), 431.
- Ma, Y., de Castro Brás, L. E., Toba, H., Iyer, R. P., Hall, M. E., Winniford, M. D., . . . Lindsey, M. L. (2014). Myofibroblasts and the extracellular matrix network in post-myocardial infarction cardiac remodeling. *Pflügers Archiv-European Journal of Physiology*, 466(6), 1113-1127.
- Mango, R., Biocca, S., Del Vecchio, F., Clementi, F., Sangiuolo, F., Amati, F., . . . Filesi, I. (2005). In vivo and in vitro studies support that a new splicing isoform of OLR1

- gene is protective against acute myocardial infarction. *Circulation research*, 97(2), 152-158.
- Mango, R., Clementi, F., Borgiani, P., Forleo, G., Federici, M., Contino, G., . . . Lauro, R. (2003). Association of single nucleotide polymorphisms in the oxidised LDL receptor 1 (OLR1) gene in patients with acute myocardial infarction. *Journal of Medical Genetics*, 40(12), 933-936.
- Markstad, H., Edsfeldt, A., Yao Mattison, I., Bengtsson, E., Singh, P., Cavalera, M., . . . Dias, N. (2019). High levels of soluble lectinlike oxidized low-density lipoprotein receptor-1 are associated with carotid plaque inflammation and increased risk of ischemic stroke. *Journal of the American Heart Association*, 8(4), e009874.
- Mayr, C. (2019). What are 3' UTRs doing? *Cold Spring Harbor perspectives in biology*, 11(10), a034728.
- Mitsuoka, H., Kume, N., Hayashida, K., Inui-Hayashiada, A., Aramaki, Y., Toyohara, M., . . . Kita, T. (2009). Interleukin 18 stimulates release of soluble lectin-like oxidized LDL receptor-1 (sLOX-1). *Atherosclerosis*, 202(1), 176-182.
- Mohammed, H. S. E.-D., Kamal, M. M., ElBadre, H. M., Hosni, A., Elfadl, A. A., Mostafa, M. A., & El-Mahdy, R. I. (2022). Lectin-Like OLR1 3' UTR Rs1050286 gene polymorphism and plasma Oxidized-LDL in coronary artery disease and their relation to cardiovascular risk and outcomes. *Reports of Biochemistry & Molecular Biology*, 10(4), 537.
- Nakamura, M., Ohta, H., Kume, N., Hayashida, K., Tanaka, M., Mitsuoka, H., . . . Shimosako, K. i. (2010). Generation of monoclonal antibodies against a soluble form of lectin-like oxidized low-density lipoprotein receptor-1 and development of a sensitive chemiluminescent enzyme immunoassay. *Journal of pharmaceutical and biomedical analysis*, 51(1), 158-163.
- Nomata, Y., Kume, N., Sasai, H., Katayama, Y., Nakata, Y., Okura, T., & Tanaka, K. (2009). Weight reduction can decrease circulating soluble lectin-like oxidized low-density lipoprotein receptor-1 levels in overweight middle-aged men. *Metabolism*, 58(9), 1209-1214.
- Nvk, P., Karathanasis, S., Ding, Z., Arulandu, A., Varughese, K., & Mehta, J. (2017). LOX-1 in Atherosclerosis and Myocardial Ischemia: Biology, Genetics, and Modulation [J]. *Journal of the American College of Cardiology*, 69(22), 2759.
- Ohmichi, N., Iwai, N., Maeda, K., Shimoike, H., Nakamura, Y., Izumi, M., . . . Kinoshita, M. (1996). Genetic basis of left ventricular remodeling after myocardial infarction. *International journal of cardiology*, 53(3), 265-272.
- Organization, W. H. (2018). Noncommunicable diseases country profiles 2018.
- Pirillo, A., & Catapano, A. L. (2013). Soluble lectin-like oxidized low density lipoprotein receptor-1 as a biochemical marker for atherosclerosis-related diseases. *Disease markers*, 35.
- Pothineni, N. V. K., Karathanasis, S. K., Ding, Z., Arulandu, A., Varughese, K. I., & Mehta, J. L. (2017). LOX-1 in atherosclerosis and myocardial ischemia: biology, genetics, and modulation. *Journal of the American College of Cardiology*, 69(22), 2759-2768.
- Pozo, E., & Sanz, J. (2014). Imaging Techniques in the Evaluation of Post-infarction Function and Scar. *Revista Española de Cardiología (English Edition)*, 67(9), 754-764.
- Predazzi, I. M., Norata, G. D., Vecchione, L., Garlaschelli, K., Amati, F., Grigore, L., . . . Romeo, F. (2012). Association between OLR1 K167N SNP and intima media

- thickness of the common carotid artery in the general population. *PLoS One*, 7(2), e31086.
- Puccetti, L., Pasqui, A. L., Pastorelli, M., Ciani, F., Palazzuoli, A., Gioffrè, W., . . . Bruni, F. (2005). 3' UTR/T polymorphism of lectin-like oxidized low-density lipoprotein receptor-1 (LOX-1) is associated with modified anti-platelet activity of atorvastatin in hypercholesterolemic subjects. *Atherosclerosis*, 183(2), 322-328.
- RI, K. (2018). Laporan Nasional Riset Kesehatan Dasar (Riskesdas) 2018. In: Jakarta.
- Rizzacasa, B., Morini, E., Pucci, S., Murdocca, M., Novelli, G., & Amati, F. (2017). LOX-1 and its splice variants: a new challenge for atherosclerosis and cancer-targeted therapies. *International journal of molecular sciences*, 18(2), 290.
- Roth, G. A., Johnson, C., Abajobir, A., Abd-Allah, F., Abera, S. F., Abyu, G., . . . Alam, K. (2017). Global, regional, and national burden of cardiovascular diseases for 10 causes, 1990 to 2015. *Journal of the American College of Cardiology*, 70(1), 1-25.
- Salehipour, P., Rezagholizadeh, F., Mahdiannasser, M., Kazerani, R., & Modarressi, M. H. (2021). Association of OLR1 gene polymorphisms with the risk of coronary artery disease: A systematic review and meta-analysis. *Heart & Lung*, 50(2), 334-343.
- Sciacqua, A., Presta, I., Perticone, M., Tassone, E. J., Andreozzi, F., Quitadamo, M. C., . . . Perticone, F. (2014). 3'-UTR OLR1/LOX-1 gene polymorphism and endothelial dysfunction: molecular and vascular data in never-treated hypertensive patients. *Internal and emergency medicine*, 9(3), 273-281.
- Singh, P., Goncalves, I., Tengryd, C., Nitulescu, M., Persson, A. F., To, F., . . . Nilsson, J. (2020). Reduced oxidized LDL in T2D plaques is associated with a greater statin usage but not with future cardiovascular events. *Cardiovascular Diabetology*, 19, 1-12.
- Stewart, J., Manmathan, G., & Wilkinson, P. (2017). Primary prevention of cardiovascular disease: A review of contemporary guidance and literature. *JRSM cardiovascular disease*, 6, 2048004016687211.
- Stinson, S. E., Jonsson, A. E., Andersen, M. K., Lund, M. A., Holm, L. A., Fonvig, C. E., . . . Ängquist, L. (2023). High Plasma Levels of Soluble Lectin-like Oxidized Low-Density Lipoprotein Receptor-1 Are Associated With Inflammation and Cardiometabolic Risk Profiles in Pediatric Overweight and Obesity. *Journal of the American Heart Association*, e8145.
- Sun, Y., & Zhang, H. (2017). The association of LOX-1 rs1050283 polymorphism with renal hypertension susceptibility in a Chinese population. *INTERNATIONAL JOURNAL OF CLINICAL AND EXPERIMENTAL PATHOLOGY*, 10(2), 1667-1674.
- Sutton, M. G. S. J., & Sharpe, N. (2000). Left ventricular remodeling after myocardial infarction: pathophysiology and therapy. *Circulation*, 101(25), 2981-2988.
- Tan, C., Liu, Y., Li, W., Deng, F., Liu, X., Wang, X., . . . Chen, L. (2014). Associations of matrix metalloproteinase-9 and monocyte chemoattractant protein-1 concentrations with carotid atherosclerosis, based on measurements of plaque and intima-media thickness. *Atherosclerosis*, 232(1), 199-203.
- Tatsuguchi, M., Furutani, M., Hinagata, J.-i., Tanaka, T., Furutani, Y., Imamura, S.-i., . . . Sawamura, T. (2003). Oxidized LDL receptor gene (OLR1) is associated with the risk of myocardial infarction. *Biochemical and biophysical research communications*, 303(1), 247-250.

- Tejedor, J. R., Tilgner, H., Iannone, C., Guigó, R., & Valcárcel, J. (2015). Role of six single nucleotide polymorphisms, risk factors in coronary disease, in OLR1 alternative splicing. *RNA*, 21(6), 1187-1202.
- Tripathi, R., Tewari, S., Ramesh, V., & Agarwal, S. (2012). Oxidized LDL receptor 1 (OLR1) SNPs and CAD: a case-control association study in a North Indian population. *Journal of Biological Research*, 18, 328.
- Trpkovic, A., Resanovic, I., Stanimirovic, J., Radak, D., Mousa, S. A., Cenic-Milosevic, D., . . . Isenovic, E. R. (2015). Oxidized low-density lipoprotein as a biomarker of cardiovascular diseases. *Critical reviews in clinical laboratory sciences*, 52(2), 70-85.
- van der Bijl, P., Abou, R., Goedemans, L., Gersh, B. J., Holmes Jr, D. R., Ajmone Marsan, N., . . . Bax, J. J. (2020). Left ventricular post-infarct remodeling: implications for systolic function improvement and outcomes in the modern era. *Heart Failure*, 8(2), 131-140.
- Wang, X., Khaidakov, M., Ding, Z., Mitra, S., Lu, J., Dai, Y., & Mehta, J. L. (2012). Lectin-like oxidized low-density lipoprotein receptor-1 (LOX-1) and cardiac fibroblast growth. *Hypertension*, 60(6), 1437-1442.
- Wang, Y., Rao, L., Zhou, B., Chen, Y., Peng, Y., Song, Y., & Zhang, L. (2010). The G501C polymorphism of the oxidized low-density lipoprotein-receptor 1 gene is associated with acute coronary syndrome in the Han Chinese population. *DNA and cell biology*, 29(4), 201-205.
- Webb, C. S., Bonnema, D. D., Ahmed, S. H., Leonardi, A. H., McClure, C. D., Clark, L. L., . . . Zile, M. R. (2006). Specific temporal profile of matrix metalloproteinase release occurs in patients after myocardial infarction. *Circulation*, 114(10), 1020-1027.
- Weber, S., & Saftig, P. (2012). Ectodomain shedding and ADAMs in development. *Development*, 139(20), 3693-3709.
- Westman, P. C., Lipinski, M. J., Luger, D., Waksman, R., Bonow, R. O., Wu, E., & Epstein, S. E. (2016). Inflammation as a driver of adverse left ventricular remodeling after acute myocardial infarction. *Journal of the American College of Cardiology*, 67(17), 2050-2060.
- Węgiel, M., & Rakowski, T. (2021). Circulating biomarkers as predictors of left ventricular remodeling after myocardial infarction. *Advances in Interventional Cardiology/Postępy w Kardiologii Interwencyjnej*, 17(1), 21-32.
- Xu, S., Ogura, S., Chen, J., Little, P. J., Moss, J., & Liu, P. (2013). LOX-1 in atherosclerosis: biological functions and pharmacological modifiers. *Cellular and Molecular Life Sciences*, 70(16), 2859-2872.
- Xu, X., Hou, X., Liang, Y., Li, F., Pang, L., Huang, G., . . . Wang, Y. (2014). The gene polymorphism of LOX1 predicts the incidence of LVH in patients with essential hypertension. *Cellular Physiology and Biochemistry*, 33(1), 88-96.
- Yabluchanskiy, A., Ma, Y., Iyer, R. P., Hall, M. E., & Lindsey, M. L. (2013). Matrix metalloproteinase-9: many shades of function in cardiovascular disease. *Physiology*, 28(6), 391-403.
- Yalta, K., Yilmaz, M. B., Yalta, T., Palabiyik, O., Taylan, G., & Zorkun, C. (2020). Late versus early myocardial remodeling after acute myocardial infarction: a comparative review on mechanistic insights and clinical implications. *Journal of cardiovascular pharmacology and therapeutics*, 25(1), 15-26.

- Zamora, E., Lupón, J., Enjuanes, C., Pascual-Figal, D., de Antonio, M., Domingo, M., . . . Farré, N. (2016). No benefit from the obesity paradox for diabetic patients with heart failure. *European Journal of Heart Failure*, 18(7), 851-858.
- Zhao, W., Zhao, J., & Rong, J. (2020). Pharmacological Modulation of Cardiac Remodeling after Myocardial Infarction. *Oxidative Medicine and Cellular Longevity*, 2020.
- Zhao, X. Q., Zhang, M. W., Wang, F., Zhao, Y. X., Li, J. J., Wang, X. P., . . . Zhang, M. X. (2011). CRP enhances soluble LOX-1 release from macrophages by activating TNF- α converting enzyme. *Journal of lipid research*, 52(5), 923-933.
- Zhao, Z.-w., Xu, Y.-w., Li, S.-m., Guo, J.-j., Sun, J.-m., Hong, J.-c., & Chen, L.-l. (2019). Baseline Serum sLOX-1 Concentrations Are Associated with 2-Year Major Adverse Cardiovascular and Cerebrovascular Events in Patients after Percutaneous Coronary Intervention. *Disease Markers*, 2019.

LAMPIRAN-LAMPIRAN

Lampiran 1. Surat Rekomendasi Persetujuan Etik dari Komisi Etik Penelitian

KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET DAN TEKNOLOGI
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, Sp.GK TELP. 081241850858, 0411 5780103, Fax : 0411-581431



REKOMENDASI PERSETUJUAN ETIK

Nomor : 550/UN4.6.4.5.31/ PP36/ 2021

Tanggal: 1 September 2021

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

No Protokol	UH21070443	No Sponsor Protokol	
Peneliti Utama	dr. Yanna Indrayana, SpJP	Sponsor	
Judul Peneliti	Pengaruh Polimorfisme Gen Oxidized LDL Receptor 1 (OLR-1) 3' UTR terhadap Terjadinya Adverse Remodelling Jantung pada Pasien Paska Infark Miokard Akut Melalui Induksi soluble LOX-1, oxLDL dan MMP-9		
No Versi Protokol	2	Tanggal Versi	30 Agustus 2021
No Versi PSP	2	Tanggal Versi	30 Agustus 2021
Tempat Penelitian	RS Dr. Wahidin Sudirohusodo Makassar, RSUD Provinsi NTB, RS Kota Mataram, dan RS Saiful Anwar Malang		
Jenis Review	<input type="checkbox"/> Exempted <input checked="" type="checkbox"/> Expedited <input type="checkbox"/> Fullboard Tanggal	Masa Berlaku 1 September 2021 sampai 1 September 2022	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 protokol yang disetujui (protocol deviation / violation)
- Mematuhi semua peraturan yang ditentukan

Lampiran 2. Data Subjek Penelitian

Data Subjek Penelitian

No. Subjek

DATA SUBJEK PENELITIAN

1. Identitas Pasien:

Nama :
Umur : tahun
Jenis Kelamin : Laki-laki / Perempuan *
Tingkat Pendidikan :
Alamat :
No. Rekam Medik :
No. Telepon :
Tanggal Pemeriksaan :
Rumah Sakit :
Onset infark :
Killip :

2. Pola Hidup (Life Style):

Merokok : ya / tidak * Stop merokok sejak: tahun
Jika Ya, lama merokok : tahun
Berapa batang : /hari

3. Riwayat Penyakit:

- Hipertensi : Ya / Tidak *
Jika Ya,
 - Terapi antihipertensi : Ya / Tidak *
▪ Nama obat dan dosis yang diminum :
- Diabetes Melitus : Ya / Tidak *
Jika Ya, nama obat dan dosis yang diminum :

4. Data Antropometri Subjek:

Tinggi Badan : cm Berat Badan : Kg
Lingkar Perut/pinggang : cm Lingkar panggul: cm

5. Hemodinamik :

Tekanan darah sistolik :
Tekanan darah diastolik :
Detak jantung :

6. Pemeriksaan Elektrokardiografi (EKG) :

7. Keterangan Obat-obatan (nama, dosis, dan frekuensi pemberian) yang dikonsumsi saat ini :

.....
.....
.....
.....
.....

8. Hasil Laboratorium :

- Kadar glukosa darah puasa : mg/dL
- Kadar glukosa darah 2 jam PP : mg/dL
- Kadar kolesterol total serum : mg/dL
- Kadar HDL serum : mg/dL
- Kadar LDL serum : mg/dL
- Kadar trigliserida serum : mg/dl
- Kadar Ureum / Creatinine : mg/dl
- Darah lengkap (Hb/lekosit/Hct/Trombosit) :
- Netrofil :
- Troponin :
- CKMB :
- Lain-lain :

9. Hasil angiografi

.....
.....
.....

10. Ekokardiografi

	Minggu pertama	Bulan ke-3
LVEF		
LVEDV		
LVESV		
LVEDVi		
LVESVi		
E wave, cm/sec		
A wave, cm/sec		
E/A ratio		
Deceleration time, msec		

11. Kadar sLOX-1 :**12. Kadar MMP-9 :****13. Genotype OLR-1 :****Catatan :**

*) Coret yang tidak perlu

Lampiran 3. Penjelasan Sebelum Penelitian

Peneliti adalah Mahasiswa Program S3 Fakultas Kedokteran Universitas Hasanuddin yang akan melakukan penelitian dengan judul **“Pengaruh Polimorfisme Gen *Oxidized LDL Receptor 1 (OLR-1) 3' UTR* terhadap Terjadinya Adverse Remodelling Jantung pada Pasien Paska Infark Miokard Akut Melalui Induksi *soluble LOX-1, oxLDL dan MMP-9*”**

Latar Belakang

Penyebab kematian utama dari penyakit jantung iskemik adalah infark miokard akut. Walaupun perkembangan terapi infark miokard akut semakin canggih namun infark miokard masih menjadi penyebab utama dari gagal jantung. Angka pasien yang mengalami remodeling jantung post infark masih cukup tinggi yaitu sekitar 12 sampai 44%. MMP-9 merupakan instigator kunci dari proses remodeling jantung paska infark miokard akut. Penelitian menunjukkan aktivasi LOX-1 berkontribusi terhadap progres fibrosis dan disfungsi jantung setelah kondisi iskemik. LOX-1 merupakan reseptor scavenger dari oxLDL. LOX-1 dikode oleh gen *Oxidized LDL Receptor 1 (OLR-1)*. Polimorfisme OLR1 berhubungan dengan peningkatan soluble LOX-1. Peningkatan LOX-1 berhubungan dengan peningkatan aktivasi dan sekresi MMP-9. Namun penelitian sejauhnya terbatas pada penelitian pada hewan coba. Belum ada penelitian pengaruh polimorfisme OLR-1 terhadap terjadinya adverse remodelling pada pasien post infark miokard.

Tujuan penelitian

Penelitian ini bertujuan untuk membuktikan bahwa terdapat hubungan antara polimorfisme gen *Oxidized LDL Receptor-1 (OLR-1) 3' UTR* dengan *adverse remodelling* pada pasien paska infark miokard akut.

Manfaat bagi partisipan

Dengan berpartisipasi dalam penelitian ini, Anda dapat mengetahui apakah Anda memiliki gen OLR-1 3'UTR normal (CC) atau memiliki polimorfisme gen, baik heterozigot (CT) maupun homozigot (TT), dan risiko anda mengalami adverse remodelling dalam 3 bulan setelah serangan infark miokard akut. Dengan demikian, Anda akan mendapatkan rekomendasi tatalaksana dan konseling lebih dini yang sesuai.

Hasil pemeriksaan tersebut memerlukan waktu untuk pengolahan dan interpretasi oleh Peneliti sebelum dapat disampaikan kepada partisipan.

Untuk itu, Anda dimohon memberikan nomor/alamat kontak yang dapat dihubungi.

Semua pemeriksaan yang dilakukan untuk kepentingan penelitian ini dilakukan secara **cuma-cuma dan tidak dipungut biaya apapun**.

Prosedur pemeriksaan

Pertama akan dilakukan pengisian kuisioner yang berisi informasi mengenai identitas diri, karakteristik klinik, dan data demografik yang Anda miliki. Kemudian akan dilakukan pemeriksaan Ekokardiografi yaitu pemeriksaan USG jantung untuk mengetahui dimensi dan fungsi jantung pada minggu pertama dan 3 bulan setelah infark miokard akut. Selanjutnya akan dilakukan pengambilan sampel darah vena pada hari kelima setelah Anda melakukan puasa selama 12 jam. Pengambilan sampel darah akan dilakukan secara aseptik oleh tenaga laboran yang terlatih.

Risiko

Pemeriksaan Ekokardiografi tidak mengandung risiko karena merupakan pemeriksaan non-invasif. Pengambilan sampel darah memiliki risiko kecil berupa terjadinya infeksi akibat masuknya agen infeksi pada tempat tusukan jarum sewaktu dilakukan pengambilan sampel darah vena. Risiko tersebut akan ditekan seminimal mungkin, dimana pengambilan sampel darah vena dikerjakan oleh tenaga laboran terlatih dan dikerjakan secara aseptik. Apabila di tengah proses pengambilan data kesehatan, Anda merasa tidak nyaman, anda dapat mengundurkan diri dari penelitian ini. Tidak ada konsekuensi apapun secara sosial, legal maupun ekonomi yang akan dikenakan apabila anda memilih untuk mundur.

Kerahasiaan

Hasil pemeriksaan hanya diketahui oleh Peneliti, Tim Peneliti dan Anda sendiri. Identitas dan data lengkap Anda akan dirahasiakan dalam laporan penelitian maupun publikasi.

Masalah dan Keluhan

Jika terjadi masalah, efek samping, atau pertanyaan yang ditimbulkan oleh prosedur penelitian, Anda dapat menghubungi Peneliti, atas nama dr. Yanna Indrayana, Sp.JP (nomer HP. 081234720714). Peneliti akan merespon keluhan dan mencoba mencari solusi atas permasalahan yang disampaikan.

PENELITI

Yanna Indrayana

Lampiran 4.

FORMULIR PERSETUJUAN SETELAH PENJELASAN

Saya yang bertandatangan di bawah ini :

Nama :
Umur :
Alamat :
.....

setelah mendengar/membaca dan mendapatkan informasi mengenai tujuan, manfaat, prosedur, dan risiko penelitian, telah memahami sepenuhnya informasi tersebut dan dengan ini menyatakan kesediaan untuk berpartisipasi dalam penelitian tersebut.

Saya sadar bahwa keikutsertaan saya ini bersifat sukarela tanpa paksaan dan saya berhak untuk menolak ikut atau mengundurkan diri dari partisipasi dalam penelitian ini. Saya berhak bertanya atau meminta penjelasan pada peneliti bila masih ada hal yang belum jelas atau masih ada hal yang ingin saya ketahui tentang penelitian ini.

Saya juga memahami bahwa semua biaya yang dikeluarkan sehubungan dengan penelitian 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.

	Nama	Tanda tangan	Tgl/Bln/Thn
Responden
Saksi 1
Saksi 2

Penanggung Jawab Penelitian:

Nama :
Alamat :
Tlp :
Tanda tangan :

Lampiran 5. Hasil Analisis Statistik

1. Data karakteristik demografi, klinis, polimorfisme OLR-1 3'UTR, kadar sLOX-1, ox-LDL dan MMP-9

	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Age	42	34	76	55.30	9.276	86.051
SBP	135.00	65.00	200.00	131.4851	30.96986	959.132
DBP	106.00	30.00	136.00	80.3168	19.31058	372.899
IMT	19.55	15.94	35.49	24.9772	3.92971	15.443
DoorToBallon	15	0	15	4.60	3.183	10.132
WSR	.46	.67	1.13	.9458	.06549	.004
Onset	24.00	.00	24.00	9.9238	5.30010	28.091
TIMI_score	11	1	12	3.79	2.203	4.854
RBS	591.00	66.00	657.00	174.6824	105.80465	11194.624
Total_chol	325.00	82.00	407.00	193.7416	51.21224	2622.694
HDL	58.00	12.00	70.00	40.1124	10.60921	112.555
LDL	301.00	43.00	344.00	133.4831	52.41164	2746.980
TG	375.00	15.00	390.00	144.9205	74.63401	5570.235
Ureum	56.70	11.90	68.60	31.1141	13.01761	169.458
Creatinine	2.34	.36	2.70	1.0591	.42879	.184
CICr	187.81	24.00	211.81	82.5101	37.46232	1403.426
Number_vessel	3	1	4	1.72	.869	.756
sLOX1_1	1018.94	.00	1018.94	219.8126	193.16921	37314.343
MMP9_1	2160.22	83.95	2244.17	822.3276	508.40183	258472.424
oxLDL_1	1.21	.06	1.26	.1946	.18494	.034
sLOX1_2	454.03	38.42	492.45	231.4690	113.22946	12820.911
MMP9_2	2638.58	126.04	2764.62	820.4470	545.01152	297037.553
oxLDL_2	.79	.14	.93	.3107	.18269	.033
Valid N (listwise)						

Frequency Table

Sex

	Frequency	Percent	Valid Percent	Cumulative
				Percent
Valid	Male	87	86.1	86.1
	Female	14	13.9	100.0
	Total	101	100.0	100.0

Smoking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	67	66.3	66.3	66.3
	No	34	33.7	33.7	100.0
	Total	101	100.0	100.0	

HTN

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	55	54.5	54.5	54.5
	No	46	45.5	45.5	100.0
	Total	101	100.0	100.0	

DM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	40	39.6	39.6	39.6
	No	61	60.4	60.4	100.0
	Total	101	100.0	100.0	

Dyslipidemia

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	77	76.2	76.2	76.2
	No	24	23.8	23.8	100.0
	Total	101	100.0	100.0	

Cat_IMT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Obese	74	73.3	73.3	73.3
	Normal	27	26.7	26.7	100.0
	Total	101	100.0	100.0	

CentralObesity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	54	53.5	53.5	53.5
	No	47	46.5	46.5	100.0
	Total	101	100.0	100.0	

Killip

		Frequency	Percent	Valid Percent	Cumulative Percent

Valid	1.00	74	73.3	73.3	73.3
	2.00	1	1.0	1.0	74.3
	3.00	2	2.0	2.0	76.2
	4.00	24	23.8	23.8	100.0
	Total	101	100.0	100.0	

TIMI_flow

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1.0	1.0	1.0
	2	6	5.9	5.9	6.9
	3	94	93.1	93.1	100.0
	Total	101	100.0	100.0	

ECG

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	anterior	47	46.5	46.5	46.5
	non-anterior	54	53.5	53.5	100.0
	Total	101	100.0	100.0	

2. Perbedaan karakteristik antara pasien yang mengalami remodeling dan tidak remodeling jantung

	Remodelling	Mean	Std. Deviation	Std. Error Mean
Age	Yes	57.34	7.930	1.402
	No	53.38	9.518	1.320
IMT	Yes	24.1298	3.71131	.65607
	No	25.6338	4.23735	.58761
WSR	Yes	.9607	.05751	.01017
	No	.9355	.06526	.00905
SBP	Yes	133.0313	36.10423	6.38239
	No	130.7692	26.89531	3.72971
DBP	Yes	82.5625	21.40687	3.78424
	No	80.3462	19.44816	2.69697
HR	Yes	83.5938	20.38795	3.60411
	No	79.9038	16.43437	2.27904
Hb	Yes	13.8000	1.75187	.30969
	No	13.9549	1.69945	.23797
Leucocyte	Yes	11869.6875	3955.14078	699.17672
	No	12801.9608	3511.87586	491.76098

Hct	Yes	41.5129	5.11558	.91879
	No	40.9686	4.16550	.58329
Plt	Yes	275343.7500	78123.80967	13810.46890
	No	269165.6471	64236.94858	8994.97197
Neutrophil	Yes	8818.6044	3525.01749	623.14094
	No	9396.5554	3694.96721	533.32258
Total_chol	Yes	183.7241	46.62456	8.65796
	No	202.8085	50.52965	7.37051
SQRT_slox1	Yes	16.1619	7.09963	1.27513
	No	11.1128	6.08052	.84322
SQRT_mmp91	Yes	30.5067	8.48506	1.52396
	No	24.5281	9.16856	1.27145
Ratio_Sox1	Yes	2688.0315	3079.51944	544.38727
	No	1302.3949	1372.61863	190.34796
LG_MMP92	Yes	2.8984	.35080	.08048
	No	2.7584	.28887	.04883
Ratio_Sox2	Yes	1159.5012	756.29063	173.50497
	No	747.9070	394.31252	66.65098

		Levene's Test for Equality of Variances		95% Confidence Interval of the Difference			
		F	Sig.	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower Upper
Age	2.206	.141	.052	3.959	2.011	-.041	7.960
			.043	3.959	1.925	.123	7.795
IMT	.848	.360	.102	-1.50405	.90917	-3.31268	.30458
			.092	-1.50405	.88075	-3.25964	.25154
WSR	.175	.677	.076	.02524	.01403	-.00267	.05315
			.068	.02524	.01361	-.00190	.05237
SBP	4.102	.046	.744	2.26202	6.89837	-11.46103	15.98507
			.761	2.26202	7.39226	-12.57100	17.09504
DBP	.143	.706	.627	2.21635	4.54099	-6.81712	11.24982
			.635	2.21635	4.64695	-7.07600	11.50869
HR	.885	.350	.365	3.68990	4.05124	-4.36930	11.74911
			.391	3.68990	4.26423	-4.85453	12.23434

Hb	.163	.688	.691	-.15490	.38782	-.92654	.61674
			.693	-.15490	.39056	-.93502	.62522
Leucocyte	.168	.683	.266	-932.27328	831.66534	-2587.02643	722.47986
			.280	-932.27328	854.79644	-2642.04274	777.49617
Hct	2.279	.135	.600	.54428	1.03511	-1.51566	2.60421
			.619	.54428	1.08830	-1.63780	2.72636
Plt	2.854	.095	.696	6178.10294	15758.76049	-25176.88728	37533.09316
			.709	6178.10294	16481.46146	-26830.91387	39187.11975
Neutrophil	.006	.937	.487	-577.95104	828.05983	-2226.49153	1070.58944
			.483	-577.95104	820.20583	-2214.33324	1058.43116
Total_chol	.037	.848	.104	-19.08437	11.59150	-42.18093	4.01219
			.098	-19.08437	11.37034	-41.80539	3.63665
SQRT_slox1	.700	.405	.001	5.04908	1.46964	2.12496	7.97319
			.002	5.04908	1.52872	1.98633	8.11182
SQRT_mmp91	.767	.384	.004	5.97869	2.02440	1.95078	10.00660
			.004	5.97869	1.98470	2.01737	9.94000
Ratio_Sox1	12.641	.001	.006	1385.63663	490.03829	410.79437	2360.47889
			.021	1385.63663	576.70603	218.84150	2552.43176
LG_MMP92	1.309	.258	.121	.14001	.08882	-.03823	.31824
			.147	.14001	.09413	-.05187	.33188
Ratio_Sox2	12.840	.001	.011	411.59418	155.98952	98.57830	724.61005
			.037	411.59418	185.86643	27.49402	795.69433

	Onset	DoorToBallon	Killip	TIMI_score	TIMI_flow	Number_vessel
Mann-Whitney U	793.000	711.000	737.500	664.000	785.000	806.500
Wilcoxon W	2171.000	1986.000	2115.500	2042.000	1313.000	2132.500
Z	-.360	-.624	-1.174	-1.573	-1.056	-.100
Asymp. Sig. (2-tailed)	.719	.533	.240	.116	.291	.920

	Eosinophil	Monocyte	RBS	HDL	LDL	TG	Ureum
Mann-Whitney U	691.000	677.000	508.000	593.000	604.500	544.500	714.000
Wilcoxon W	1772.000	1758.000	1411.000	1721.000	1039.500	950.500	1989.000
Z	-.457	-.599	-.480	-.947	-.823	-1.243	-.818
Asymp. Sig. (2-tailed)	.647	.549	.631	.343	.410	.214	.413

	Ureum	Creatinine	ClCr	oxLDL_1	oxLDL_2
Mann-Whitney U	714.000	711.000	647.500	824.500	295.000
Wilcoxon W	1989.000	1936.000	1175.500	2202.500	485.000
Z	-.818	-.706	-1.450	-.069	-.679
Asymp. Sig. (2-tailed)	.413	.480	.147	.945	.497

Remodelling * Sex

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.629 ^a	1	.428		
Continuity Correction ^b	.211	1	.646		
Likelihood Ratio	.655	1	.418		
Fisher's Exact Test				.520	.330
Linear-by-Linear Association	.621	1	.431		
N of Valid Cases	84				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.19.

b. Computed only for a 2x2 table

Remodelling * Smoking

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.449 ^a	1	.503		
Continuity Correction ^b	.190	1	.663		
Likelihood Ratio	.453	1	.501		
Fisher's Exact Test				.640	.333
Linear-by-Linear Association	.443	1	.505		
N of Valid Cases	84				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.43.

b. Computed only for a 2x2 table

Remodelling * HTN

Chi-Square Tests				
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	.606 ^a	1	.436	
Continuity Correction ^b	.304	1	.581	
Likelihood Ratio	.609	1	.435	
Fisher's Exact Test				.500
Linear-by-Linear Association	.599	1	.439	
N of Valid Cases	84			

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.71.

b. Computed only for a 2x2 table

Remodelling * DM

Chi-Square Tests				
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	1.248 ^a	1	.264	
Continuity Correction ^b	.787	1	.375	
Likelihood Ratio	1.242	1	.265	
Fisher's Exact Test				.358
Linear-by-Linear Association	1.233	1	.267	
N of Valid Cases	84			

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.57.

b. Computed only for a 2x2 table

Remodelling * Dyslipidemia

Chi-Square Tests				
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	1.077 ^a	1	.299	
Continuity Correction ^b	.606	1	.436	
Likelihood Ratio	1.060	1	.303	
Fisher's Exact Test				.313
Linear-by-Linear Association	1.064	1	.302	
N of Valid Cases	84			

- a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.00.
 b. Computed only for a 2x2 table

Remodelling * Cat_IMT

		Chi-Square Tests		
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	.389 ^a	1	.533	
Continuity Correction ^b	.138	1	.710	
Likelihood Ratio	.385	1	.535	
Fisher's Exact Test				.617 .352
Linear-by-Linear Association	.385	1	.535	
N of Valid Cases	84			

- a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.76.
 b. Computed only for a 2x2 table

Remodelling * CentralObesity

		Chi-Square Tests		
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	.899 ^a	1	.343	
Continuity Correction ^b	.521	1	.470	
Likelihood Ratio	.905	1	.341	
Fisher's Exact Test				.374 .236
Linear-by-Linear Association	.888	1	.346	
N of Valid Cases	84			

- a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.10.
 b. Computed only for a 2x2 table

Remodelling * ECG

		Chi-Square Tests		
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	.473 ^a	1	.492	
Continuity Correction ^b	.214	1	.644	

Likelihood Ratio	.473	1	.492		
Fisher's Exact Test				.508	.322
Linear-by-Linear Association	.468	1	.494		
N of Valid Cases	84				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.48.

b. Computed only for a 2x2 table

Remodelling * Genotype

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.490 ^a	2	.175
Likelihood Ratio	3.380	2	.184
Linear-by-Linear Association	1.816	1	.178
N of Valid Cases	84		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 3.43.

Remodelling * Polymorphism

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.473 ^a	1	.492		
Continuity Correction ^b	.214	1	.644		
Likelihood Ratio	.473	1	.492		
Fisher's Exact Test				.508	.322
Linear-by-Linear Association	.468	1	.494		
N of Valid Cases	84				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.48.

b. Computed only for a 2x2 table

3. Analisis regresi logistik multivariat untuk remodeling jantung

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
Step 1 ^a	Genotype						Lower	Upper
			4.790	2	.091			

Genotype(1)	2.018	.926	4.752	1	.029	7.524	1.226	46.176
Genotype(2)	.268	.578	.215	1	.643	1.307	.421	4.057
Sex(1)	.837	1.028	.662	1	.416	2.309	.308	17.331
Age_Cat(1)	.355	.600	.349	1	.555	1.426	.440	4.620
Smoking(1)	.741	.686	1.167	1	.280	2.098	.547	8.044
HTN(1)	.829	.552	2.255	1	.133	2.291	.776	6.761
DM(1)	.987	.608	2.635	1	.105	2.682	.815	8.829
Dyslipidemia(1)	-.509	.619	.678	1	.410	.601	.179	2.021
Cat_IMT(1)	-1.109	.616	3.234	1	.072	.330	.099	1.105
Onset_Cat(1)	-.014	.568	.001	1	.981	.987	.324	3.006
ECG(1)	.556	.545	1.041	1	.308	1.743	.599	5.069
sLOX1_Cat(1)	.702	.512	1.878	1	.171	2.018	.739	5.507
Constant	-2.721	1.419	3.680	1	.055	.066		

a. Variable(s) entered on step 1: Genotype, Sex, Age_Cat, Smoking, HTN, DM, Dyslipidemia, Cat_IMT, Onset_Cat, ECG, sLOX1_Cat.

4. Uji beda kadar sLOX-1, ox-LDL dan MMP-9 Antara genotip TT dan CT

Independent Samples Test

	Levene's Test for Equality of Variances			t-test for Equality of Means				95% Confidence Interval of the Difference		
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error	Difference		
								Lower	Upper	
LG_MMP92	.106	.748	1.241	20	.229	.15212	.12256	-.10354	.40778	
			1.300	16.788	.211	.15212	.11706	-.09509	.39934	
SQRT_slox1	.213	.646	2.734	46	.009	6.27856	2.29639	1.65617	10.90094	
			2.469	18.064	.024	6.27856	2.54277	.93775	11.61936	
SQRT_mmp9	1.436	.237	3.541	46	.001	10.24332	2.89301	4.41999	16.06666	
1			3.904	26.461	.001	10.24332	2.62384	4.85451	15.63214	
sLOX1_2	1.822	.191	2.918	22	.008	101.53913	34.79485	29.37902	173.69924	
			2.657	11.197	.022	101.53913	38.21369	17.61197	185.46629	

Test Statistics^a

	oxLDL_1	oxLDL_2
Mann-Whitney U	172.000	32.000
Wilcoxon W	838.000	68.000
Z	-1.404	-1.638
Asymp. Sig. (2-tailed)	.160	.101
Exact Sig. [2*(1-tailed Sig.)]		.110 ^b

a. Grouping Variable: Genotype

b. Not corrected for ties.

Antara genotip TT dan CC

Independent Samples Test

	Levene's Test for Equality of Variances			t-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	Lower	Upper	
LG_MMP92	1.306	.260	1.291	40	.204	.16667	.12907	-.09420	.42754	
			1.581	14.154	.136	.16667	.10545	-.05927	.39261	
SQRT_slox1	1.125	.293	2.350	63	.022	4.72896	2.01250	.70730	8.75062	
			1.945	15.339	.070	4.72896	2.43127	-.44321	9.90113	
SQRT_mmp9	.915	.342	3.244	63	.002	8.65054	2.66687	3.32123	13.97985	
1			3.564	21.007	.002	8.65054	2.42743	3.60252	13.69855	
sLOX1_2	.527	.472	.988	41	.329	47.01244	47.56097	-49.03889	143.06376	
			1.180	13.299	.259	47.01244	39.83566	-38.85101	132.87588	

Test Statistics^a

	oxLDL_1	oxLDL_2
Mann-Whitney U	215.500	132.500
Wilcoxon W	1593.500	168.500
Z	-2.009	-.112
Asymp. Sig. (2-tailed)	.045	.911
Exact Sig. [2*(1-tailed Sig.)]		.912 ^b

a. Grouping Variable: Genotype

b. Not corrected for ties.

Antara genotip CT dan CC

Independent Samples Test

	Levene's Test for Equality of Variances			t-test for Equality of Means				95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
LG_MMP92	.957	.333	.139	46	.890	.01455	.10457	-.19593	.22503
			.149	28.478	.882	.01455	.09753	-.18508	.21418
SQRT_slox1	.768	.383	-1.133	85	.260	-1.54960	1.36750	-4.26855	1.16936
			-1.112	68.240	.270	-1.54960	1.39357	-4.33025	1.23106
SQRT_mmp91	.195	.660	-.806	85	.422	-1.59279	1.97537	-5.52034	2.33477
			-.797	70.265	.428	-1.59279	1.99736	-5.57614	2.39056
sLOX1_2	5.247	.026	-1.607	49	.114	-54.52669	33.92152	-122.69454	13.64116
			-1.950	46.225	.057	-54.52669	27.96035	-110.80055	1.74717

Test Statistics^a

	oxLDL_1	oxLDL_2
Mann-Whitney U	793.500	178.000
Wilcoxon W	2171.500	773.000
Z	-1.209	-1.361
Asymp. Sig. (2-tailed)	.227	.174

a. Grouping Variable: Genotype

5. Uji korelasi Pearson antara kadar sLOX-1, ox-LDL dan MMP-9

		SQRT_mmp91	LG_MMP92	oxLDL_1	oxLDL_2
SQRT_slox1	Pearson Correlation	.714**	.065	.035	-.062
	Sig. (2-tailed)	.000	.638	.727	.653
	N	100	55	100	55
sLOX1_2	Pearson Correlation	-.041	.590**	.006	.194
	Sig. (2-tailed)	.757	.000	.961	.151
	N	58	56	59	56

6. Analisis regresi logistik multivariat untuk faktor-faktor yang mempengaruhi kadar sLOX-1

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Step 1 ^a	Genotype		4.790	2	.091			
	Genotype(1)	2.018	.926	4.752	1	.029	7.524	1.226
	Genotype(2)	.268	.578	.215	1	.643	1.307	.421
	Sex(1)	.837	1.028	.662	1	.416	2.309	.308
	Age_Cat(1)	.355	.600	.349	1	.555	1.426	.440
	Smoking(1)	.741	.686	1.167	1	.280	2.098	.547
	HTN(1)	.829	.552	2.255	1	.133	2.291	.776
	DM(1)	.987	.608	2.635	1	.105	2.682	.815
	Dyslipidemia(1)	-.509	.619	.678	1	.410	.601	.179
	Cat_IMT(1)	-1.109	.616	3.234	1	.072	.330	.099
	Onset_Cat(1)	-.014	.568	.001	1	.981	.987	.324
	ECG(1)	.556	.545	1.041	1	.308	1.743	.599
	sLOX1_Cat(1)	.702	.512	1.878	1	.171	2.018	.739
	Constant	-2.721	1.419	3.680	1	.055	.066	

a. Variable(s) entered on step 1: Genotype, Sex, Age_Cat, Smoking, HTN, DM, Dyslipidemia, Cat_IMT, Onset_Cat, ECG, sLOX1_Cat.

GLOSSARY

- Pasien dengan infark miokard akut adalah pasien dengan ST elevasi infark miokard yang dibuktikan dengan adanya elevasi segmen ST pada pemeriksaan EKG dan peningkatan enzim jantung
- Terapi reperfusi intervensi perkutaneus koroner primer adalah prosedur angioplasti koroner yang dilakukan untuk membuka sumbatan pada arteri koroner berupa pemasangan stent atau balon angioplasti dengan atau tanpa aspirasi trombus
- Terapi farmakologis sesuai panduan klinis yaitu penggunaan double antiplatelet, ACE-inhibitor/Angiotensin II reseptor bloker, beta bloker dan statin. Mineralokortikoid reseptor bloker diberikan pada pasien dengan fraksi ejeksi $\leq 40\%$ dan gagal jantung atau diabetes, yang sudah mendapat ACEi/ARB dan beta bloker.
- Pasien dengan riwayat infark miokard akut sebelumnya yaitu pasien dengan riwayat dirawat di RS dengan sindrom koroner akut (serangan jantung) berdasarkan rekam medis atau anamnesa pasien atau riwayat pernah menjalani terapi revaskularisasi atau intervensi koroner perkutan sebelumnya
- Onset infark miokard akut adalah waktu pasien pertama kali mengalami nyeri dada dengan karakteristik nyeri dada tidak stabil yaitu satu dari tiga gejala sebagai berikut : (1) angina saat instirahat dengan karakteristik tipikal dan durasi > 20 menit; (2) angina onset baru (dalam 2 bulan terakhir) dengan derajat angina sedang sampai berat (*Canadian Cardiovascular Society* grade II atau III); (3) angina kresendo yaitu angina yang meningkat secara progresif dari berat dan intensitasnya, pada ambang nyeri yang lebih rendah dengan periode waktu yang pendek.
- Komplikasi mekanik post infark miokard akut yaitu terjadinya komplikasi mekanikal akibat infark miokard akut berupa ruptur *free*

wall, ruptur septum ventrikel dan ruptur otot papilaris berdasarkan hasil ekokardiografi

- Resusitasi jantung paru adalah riwayat prosedur penyelamatan nyawa dengan bantuan pernafasan, kompresi jantung dan/atau defibrilasi pada kondisi henti jantung berdasarkan rekam medis
- Pasien dengan disfungsi ginjal berat yaitu pasien dengan klirens kreatinin yang dihitung menggunakan formula Cockcroft-Gault <30 mL/menit atau pasien yang rutin menjalani hemodialisis