

DAFTAR PUSTAKA

- Alhamdani, M.S. (2005). Impairment of glutathione biosynthetic pathway in uraemia and dialysis. *Nephrol Dial Transplant*, 20(1):124-8. doi: 10.1093/ndt/gfh569. PMID: 15632350.
- Ali, H., Abu-farha, M., Hammad, M. M., & Devarajan, S. (2022). *Potential Role of N-Cadherin in Diagnosis and Prognosis of Diabetic Nephropathy*. 13(May), 1–8. <https://doi.org/10.3389/fendo.2022.882700>.
- Allam R, Scherbaum R, Darisipudi M. (2012). Histones from dying renal cells aggravate kidney injury via TLR2 and TLR4. *J Am Soc Nephrol*, 23,1375–1388.
- Altamura, S., Pietropaoli, D., Lombardi, F., Pinto, R. Del, dan Ferri, C. (2023). *An Overview of Chronic Kidney Disease Pathophysiology : The Impact of Gut Dysbiosis and Oral Disease*. 1–29.
- American Veterinary Medical Association. (2020). *AVMA Guidelines for the Euthanasia of Animals : 2020 Edition*. Schaumburg : American Veterinary Medical Association, 3-121.
- Anders H., Schaefer L. (2014) Beyond tissue injury-damage-associated molecular patterns, toll-like receptors, and inflammasomes also drive regeneration and fibrosis. *J Am Soc Nephrol*, 25,1387–1400.
- Anders, H., & Muruve, D. A. (2011). The Inflammasomes in Kidney Disease. *J Am Soc Nephrol*, 22,1007–1018. <https://doi.org/10.1681/ASN.2010080798>.
- Aoki, T., Shimada, K., Sakamoto, A., Sugimoto, K., Morishita, T., Kojima, Y., Shimada, S., Kato, S., Iriyama, C., Kuno, S., Harada, Y., Tomita, A., Hayakawa, F., Kiyoi, H. (2017). Emetine elicits apoptosis of intractable B-cell lymphoma cells with MYC rearrangement through inhibition of glycolytic metabolism. *Oncotarget*, 21,13085-13098.
- Aranda-rivera, A. K., Cruz-gregorio, A., dan Pedraza-chaverri, J. (2022). *Nrf2 Activation in Chronic Kidney Disease : Promises and Pitfalls*. 1–30.
- Arfian, N., Ats-tsani, H. K., Sayekti, P. I., Lakabela, D. A., Febriyanto, T., Rutyana, H., Antonio, P., dan Wibisono, D. P. (2018). Prolonged Kidney Ischemia-Reperfusion Injury Associates with Inflammation , Vascular Remodelling , and Myofibroblast Formation. *J Med Sci* ,50(1), 1–14.
- Ascon, M., Ascon, D., Liu, M., Cheadle, C., Sarkar, C., Racusen, L. C., Hassoun, H. T., & Rabb, H. (2009). Renal ischemia-reperfusion leads to long term infiltration of activated and effector-memory T lymphocytes. *Kidney International*, 75(5), 526–535. <https://doi.org/10.1038/KI.2008.602>
- Ashworth, S. L., & Molitoris, B. A. (1999). Pathophysiology and functional significance of apical membrane disruption during ischemia. *Current Opinion in Nephrology and Hypertension*, 8(4), 449–458. doi.org/10.1097/00041552-

199907000-00009.

- Ávila, C., Libano, L., Rojas, I., dan Rodrigo, R. (2019). Role of ischemia-reperfusion in oxidative stress-mediated injury during kidney transplantation. *Open Access Text*, 5, 1–4. doi.org/10.15761/CRT.1000260
- Badan Penyelenggara Jaminan Kesehatan (BPJS) Kesehatan. (2021). *Laporan tahunan JKN 2020: Beban pembiayaan penyakit katastropik*. BPJS Kesehatan.
- Basile, D. P., & Yoder, M. C. (2014). Renal endothelial dysfunction in acute kidney ischemia reperfusion injury. *Cardiovascular and Hematological Disorders - Drug Targets*, 14(1), 3–14. doi.org/10.2174/1871529X1401140724093505
- Basile, D. P., Bonventre, J. V., Mehta, R., Nangaku, M., Unwin, R., Rosner, M. H., Kellum, J. A., Ronco, C., Work, X. (2015). Progression after AKI: Understanding Maladaptive Repair Processes to Predict and Identify Therapeutic Treatments. *J Am Soc Nephrol*, 27, 1–11.
- Belavgeni A, Meyer C, Stumpf J, Hugo C, Linkermann A (2020) Ferroptosis and necroptosis in the kidney. *Cell Chem Biol*, 27, 448–462.
- Bhargava, P.; Schnellmann, R.G. (2017). Mitochondrial energetics in the kidney. *Nat. Rev. Nephrol.* 13, 629–646.
- Bonventre, J. V. (2014). Primary proximal tubule injury leads to epithelial cell cycle arrest, fibrosis, vascular rarefaction, and glomerulosclerosis. *Kidney International*, 4(1), 39–44. <https://doi.org/10.1038/KISUP.2014.8>
- Brand M. D. (2016). Mitochondrial generation of superoxide and hydrogen peroxide as the source of mitochondrial redox signaling. *Free Radical Biology and Medicine*, 100, 14–31. doi: 10.1016/j.freeradbiomed.2016.04.001.
- Bruno, S., Grange, C., Deregibus, M. C., Calogero, R. A., Saviozzi, S., Collino, F., Morando, L., Busca, A., Falda, M., Bussolati, B., & Tetta, C. (2009). Mesenchymal Stem Cell-Derived Microvesicles Protect Against Acute Tubular Injury. *Journal of The American Society of Nephrology*, 20(5), 1053–1067. <https://doi.org/10.1681/ASN.2008070798>.
- Cao, J.Y., Wang, B., Tang, T.T., Wen, Y., Li, Z.-L., Feng, S.-T., Wu, M., Liu, D., Yin, D., Ma, K.-L., & Tang, R.-N. (2021). Exosomal miR-125b-5p deriving from mesenchymal stem cells promotes tubular repair by suppression of p53 in ischemic acute kidney injury. *Theranostics*, 11(11), 5248–5266. <https://doi.org/10.7150/THNO.54550>
- Cao, Q., Huang, C., Chen, X., & Pollock, C. A. (2022). *Mesenchymal Stem Cell-Derived Exosomes: Toward Cell-Free Therapeutic Strategies in Chronic Kidney Disease*. 9(March). <https://doi.org/10.3389/fmed.2022.816656>.
- Caponnetto, F., Caponnetto, F., Manini, I., Skrap, M., Palmari-Pallag, T., Loreto, C. D., Beltrami, A. P., Cesselli, D., & Ferrari, E. (2017). Size-dependent cellular uptake of exosomes. *Nanomedicine: Nanotechnology, Biology and Medicine*, 13(3), 1011–1020. <https://doi.org/10.1016/J.NANO.2016.12.009>
- Chandra, J., Samali, A., & Orrenius, S. (2000). Triggering and modulation of

- apoptosis by oxidative stress. *Free Radical Biology and Medicine*, 29(3), 323–333. [https://doi.org/10.1016/S0891-5849\(00\)00302-6](https://doi.org/10.1016/S0891-5849(00)00302-6).
- Chang, M.W., Chen, C.H., Chen, Y., C., Wu, Y., C., Zhen, Y., Leu, S. (2015). Sitagliptin protects rat kidneys from acute ischemia-reperfusion injury via upregulation of GLP-1 and GLP-1 receptors. *Acta Pharmacol Sin*, 36(1):119–130. doi: 10.1038/aps.2014.98.
- Chen, L., Chen, L., Wang, Y., Li, S., Zuo, B., Zhang, X., Wang, F., & Sun, D. (2020). Exosomes derived from GDNF-modified human adipose mesenchymal stem cells ameliorate peritubular capillary loss in tubulointerstitial fibrosis by activating the SIRT1/eNOS signaling pathway. *Theranostics*, 10(20), 9425–9442. <https://doi.org/10.7150/THNO.43315>
- Chen, X., Zhang, X., Xue, L., Hao, C., Liao, W., Wan, Q. (2017) Treatment with Enriched Environment Reduces Neuronal Apoptosis in the Periinfarct Cortex after Cerebral Ischemia/Reperfusion Injury. *Cell Physiol Biochem*, 41:1445-1456.
- Chen, Y. F., Luh, F., Ho, Y. S., dan Yen, Y. (2024). Exosomes : a review of biologic function , diagnostic and targeted therapy applications , and clinical trials. *Journal of Biomedical Science*, 1–16. <https://doi.org/10.1186/s12929-024-01055-0>.
- Chen, Y. F., Luh, F., Ho, Y. S., dan Yen, Y. (2024). Exosomes : a review of biologic function , diagnostic and targeted therapy applications , and clinical trials. *Journal of Biomedical Science*, 31, 1–16. <https://doi.org/10.1186/s12929-024-01055-0>.
- Cheng, Y. (2022). Protocol Protocol for renal ischemia-reperfusion injury by flank incisions in mice incisions in mice. *STAR Protocols*, 3(4), 101678. <https://doi.org/10.1016/j.xpro.2022.101678>
- Chittiprol S, Chen P, Petrovic-Djergovic D, Eichler T, Ransom RF. (2011). Marker expression, behaviors, and responses vary in different lines of conditionally immortalized cultured podocytes. *Am J Physiol Renal Physiol*. 2011 Sep;301(3):F660-71. doi: 10.1152/ajprenal.00234. Epub 2011 Jun 1. PMID: 21632959; PMCID: PMC3174553.
- Chittiprol S, Chen P, Petrovic-Djergovic D, Eichler T, Ransom RF. (2011). Marker expression, behaviors, and responses vary in different lines of conditionally immortalized cultured podocytes. *Am J Physiol Renal Physiol*, 301(3):F660-71. doi: 10.1152/ajprenal.00234. PMID: 21632959; PMCID: PMC3174553.
- Christensen, M., & Liang, M. (2023). Critical care: A concept analysis. *International Journal of Nursing Sciences*. doi.org/10.1016/j.ijnss.2023.06.020
- Chung HY, Baek BS, Song SH, Kim MS, Huh JI, Shim KH, Kim KW, Lee KH. (1997). Xanthine dehydrogenase/xanthine oxidase and oxidative stress. *Age (Omaha)*, 20, 127-140.
- Coca, S. G., Singanamala, S. dan Parikh, C. R. Chronic kidney disease after acute kidney injury: a systematic review and meta-analysis. *Kidney Int*, 81, 442–448

(2012).

- Corridon, P. R. (2023). *Enhancing the expression of a key mitochondrial enzyme at the inception of ischemia-reperfusion injury can boost recovery and halt the progression of acute kidney injury*. *Front. Physiol*, 1–16. doi.org/10.3389/fphys.2023.1024238.
- Cowled P, Fitridge R. Pathophysiology of Reperfusion Injury. (2011). *Mechanisms of Vascular Disease: A Reference Book for Vascular Specialists [Internet]*. Adelaide (AU): University of Adelaide Press. 18. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK534267/>.
- Cowled, P., Fitridge, R. Pathophysiology of Reperfusion Injury. (2011). *Mechanisms of Vascular Disease: A Reference Book for Vascular Specialists [Internet]*. Adelaide (AU): University of Adelaide Press, 18. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK534267/>.
- Daenen K, Andries A, Mekahli D, Van Schepdael A, Jouret F, Bammens B. (2019). Oxidative stress in chronic kidney disease. *Pediatr Nephro*,34(6):975-991. doi: 10.1007/s00467-018-4005-4.
- Davies, M. J. (2016). Protein oxidation and peroxidation. *Biochemical Journal*, 473(7), 805–825. <https://doi.org/10.1042/BJ20151227>
- Dehkordi, A. H., Ghaderi, M., Mardani, H., Joneghani, A. S., & Dehkordi, A. H. (2022). Antioxidants And Their Role In The Prevention And Treatment Of Chronic Kidney Disease (Ckd), Perspective Of Complementary Nursing And Medicine : A Review. *Przegl Epidemiol*, 76(1), 51–57.
- Del Moral, R.M., Gomez-Morales, M., Hernandez-Cortes, P., Aguilar, D., Caballero, T., Aneiros-Fernandez, J. (2013) PARP inhibition attenuates histopathological lesion in ischemia/reperfusion renal mouse model after cold prolonged ischemia. *Scientific World Journal* 2013: 486574. doi: 10.1155/2013/486574 PMID: 24319370.
- Dieterich, S., Bieligg, U., Beulich, K., Hasenfuss, G., Prestle, J. (2000). Gene Expression of Antioxidative Enzymes in Increased Expression of Katalase in the End-Stage Failing Heart. *Circulation*, 101.
- DiRocco, D., Bisi, J., Roberts, P. (2014) CDK4/6 inhibition induces epithelial cell cycle arrest and ameliorates acute kidney injury. *Am J Physiol Renal Physiol*, 306(4):F379–F388.
- Djordjevic, V., Kostic, J., Krivokapic, Z., Krtinić, D., Rankovic, M. Z., Petkovic, M., & Cosic, V. (2022). Decreased Activity of Erythrocyte Katalase and Glutathione Peroxidase in Patients with Schizophrenia. *Medicina*, 58(10), 1491–1491. <https://doi.org/10.3390/medicina58101491>
- Dobashi, K., Ghosh, B., Orak, J. K., Singh, I., & Singh, A. K. (2000). Kidney ischemia-reperfusion: Modulation of antioxidant defenses. *Molecular and Cellular Biochemistry*, 205(1), 1–11. doi.org/10.1023/A:1007047505107.
- Donate-Correa, J., Martín-Carro, B., Cannata-Andía, J. B., Mora-Fernández, C., &

- Navarro-González, J. F. (2023). Klotho, Oxidative Stress, and Mitochondrial Damage in Kidney Disease. *Antioxidants*, 12(2), 239–239. <https://doi.org/10.3390/antiox12020239>
- Dong, Y., Zhang, Q., Wen, J., Chen, T., He, L., Wang, Y., dan Yin, J. (2019). Ischemic Duration and Frequency Determines AKI-to-CKD Progression Monitored by Dynamic Changes of Tubular Biomarkers in IRI Mice. *Front Physiol*, 26, 1–15. <https://doi.org/10.3389/fphys.2019.00153>.
- Drobiova, H., Sindhu, S., Ahmad, R., Haddad, D., Al-mull, F., Madhoun, A. (2023). Wharton ' s jelly mesenchymal stem cells: a concise review of their secretome and prospective clinical applications. *Front Cell Dev Biol*, 1–20. <https://doi.org/10.3389/fcell.2023.1211217>.
- Duan, J., Gaffrey, M. J., & Qian, W.-J. (2017). Quantitative proteomic characterization of redox-dependent post-translational modifications on protein cysteines. *Molecular BioSystems*, 13(5), 816–829. <https://doi.org/10.1039/C6MB00861E>
- Eirin, A., Zhu, X., Puranik, A., Woollard J, Tang H, Dasari S, Lerman A, Wijnen A, Lerman LO.(2017). Integrated transcriptomic and proteomic analysis of the molecular cargo of extracellular vesicles derived from porcine adipose tissue-derived mesenchymal stem cells. *PLoS One*, 12(3):e0174303. doi: 10.1371/journal.pone.0174303. PMID: 28333993; PMCID: PMC5363917.
- Elmore, S. (2007). Apoptosis: a review of programmed cell death. *Toxicol Pathol*; 35:495–516. <https://doi.org/10.1080/01926230701320337>.
- Farías, J.G., Herrera, E.A., Carrasco-Pozo, C. (2016). Pharmacological models and approaches for pathophysiological conditions associated with hypoxia and oxidative stress. *Pharmacol Ther*, 158:1–23.
- Ferenbach, D. A., Bonventre, J. V, & Division, R. (2016). Mechanisms of maladaptive repair after AKI leading to accelerated kidney ageing and CKD. *HHS Public Access*, 11(5), 264–276. <https://doi.org/10.1038/nrneph.2015.3>.
- Fong, C. Y., Chak, L. L., Biswas, A., Tan, J. H., Gauthaman, K., Chan, W. K., et al. (2011). Human Wharton's jelly stem cells have unique transcriptome profiles compared to human embryonic stem cells and other mesenchymal stem cells. *Stem Cell Rev*, 7(1), 1–16. doi:10.1007/s12015-010-9166-x.
- Fontecha-Barriuso, M.; Martin-Sanchez, D.; Martinez-Moreno, J.M.; Monsalve, M.; Ramos, A.M.; Sanchez-Niño, M.D.; Ruiz-Ortega, M.; Ortiz, A.; Sanz, A.B.(2017). The Role of PGC-1 α and Mitochondrial Biogenesis in Kidney Diseases. *Biomolecules* ,10, 347.
- Formanowicz, D, Podkowińska, A. (2020). Chronic Kidney Disease as Oxidative Stress- and Inflammatory-Mediated Cardiovascular Disease. *Antioxidants (Basel)*, 9(8),740-752. doi: 10.3390/antiox9080752.
- Francis, A., Harhay, M. N., Ong, A. C. M., Tummalapalli, S. L., Ortiz, A., & Fogo, A. B. (2024). Chronic kidney disease and the global public health agenda : an international consensus. *Nature Reviews Nephrology*, 20, 473–485. <https://doi.org/10.1038/s41581-024-00820-6>.
- Frank, R. S., Frank, T. S., Zelenock, G. B., & D'Alecy, L. G. (1993). Ischemia with

- intermittent reperfusion reduces functional and morphologic damage following renal ischemia in the rat. *Annals of Vascular Surgery*, 7(2), 150–155. <https://doi.org/10.1007/BF02001009>.
- Fujigaki, Y. (2012). Different modes of renal proximal tubule regeneration in health and disease. *World Journal of Nephrology*, 1(4), 92–99. <https://doi.org/10.5527/WJN.V1.I4.92>.
- Galluzzi, L., Vitale, I., Aaronson, S. A., Abrams, J. M., Adam, D., Agostinis, P. (2018). Molecular mechanisms of cell death: recommendations of the nomenclature committee on cell death. *Cell death Differ.* 25 (3), 486–541. 10.1038/s41418-017-0012.
- Gao, L., Zang, M. L. H., Qin, Q. M., Ling, Y., Ren, J. G., & Meng, X. (2018). Restoration of E-cadherin by PPBICA protects against cisplatin- induced acute kidney injury by attenuating in fl ammation and programmed cell death. *Laboratory Investigation*, 98(7), 911–923. <https://doi.org/10.1038/s41374-018-0052-5>.
- Giuliani, K., Adams, B.C., Healy, HG, Kassianos AJ. Regulated cell death in chronic kidney disease: current evidence and future clinical perspectives. *Front Cell Dev Biol*, 31;12:1497460. doi: 10.3389/fcell.2024.1497460. PMID: 39544363; PMCID: PMC11560912.
- Goren, O., Matot, I. (2015). Perioperative acute kidney injury. *Br J Anaesth*, 115:ii3–ii14.
- Goriya, S., dan Priya, N. (2024). Association of hs-CRP with Serum Creatinine Levels in Chronic Kidney Diseases. *Indian Journal of Clinical Medicine*, 14(1). doi.org/10.1177/26339447241287048
- Gounden V, Bhatt H, Jialal I. (2024). *Renal Function Tests* Treasure Island (FL): StatPearls Publishing
- Goyal, A., Daneshpajouhnejad, P., Hashmi, M.F. (2023). Acute Kidney Injury. In: StatPearls [Internet]. *Treasure Island (FL): StatPearls Publishing*; 2025 Jan. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441896/>
- Granata, S., Votrico, V., Spadaccino, F., Catalano, V., Nett, G.S., Ranieri, E., Stallone, G., Zaza, G. (2022). Oxidative Stress and Ischemia/Reperfusion Injury in Kidney Transplantation: Focus on Ferroptosis, Mitophagy and New Antioxidants. *Antioxidants (Basel)*, 12;11(4):769.
- Gu, D., Zou, X., Ju, G., Zhang, G., Bao, E., & Zhu, Y. (2016). Mesenchymal Stromal Cells Derived Extracellular Vesicles Ameliorate Acute Renal Ischemia Reperfusion Injury by Inhibition of Mitochondrial Fission through miR-30. *Stem Cells International*, 2016, 2093940–2093940. <https://doi.org/10.1155/2016/2093940>
- Güler, M. C., Tanyeli, A., Nur, F., Akdemir, E., Eraslan, E., Şebin, S. Ö., Erdoğan, D. G., dan Nacar, T. (2022). An Overview of Ischemia – Reperfusion Injury :

- Review on Oxidative Stress and Inflammatory Response. *Eurasian J Med*, 54, 62–65. <https://doi.org/10.5152/eurasianjmed.2022.22293>
- Hain, D., Bednarski, D., Cahill, M., Dix, A., Foote, B., Haras, M. S., dan Pace, R. (2023). Iron-Deficiency Anemia in CKD: A Narrative Review for the Kidney Care Team. *Kidney Med*, 1–10.
- Hall, J.E. (2016). *Unit V: the body fluids and kidneys*. In: Hall JE, ed. *Guyton and Hall Textbook of Medical Physiology*. 13th ed. Philadelphia: Elsevier; 2016:367–382.
- Halliwell and J. M. Gutteridge.(1999). *Oxidative stress: adaptation, damage, repair and death,* in *Free Radicals in Biology and Medicine*. New York: Oxford Science Publications, New York, NY, USA, 5rd edition, 2005.
- Hemalatha P, Reddy AG, Reddy YR, Shivakumar P. (2011). Evaluation of protective effect of N-acetyl cysteine on arsenic-induced hepatotoxicity. *J Nat Sci Biol Med*; 4(2): 393-395.
- Hesketh, E. E., Czopek, A., Clay, M., Borthwick, G., Ferenbach, D. A., Kluth, D. C., & Hughes, J. (2014). Renal ischaemia reperfusion injury: a mouse model of injury and regeneration. *Journal of Visualized Experiments*, 88, 51816. <https://doi.org/10.3791/51816>.
- Hink, H.U., Santanam, N., Dikalov, S. McCann, L. Nguyen, A.D., Parthasarathy, S., Harrison, D.G., Fukai, T. (2022). Peroxidase properties of extracellular superoxide dismutase: role of uric acid in modulating in vivo activity. *Arterioscler Thromb Vasc Biol*, 22, 1402–1408. doi: 10.1161/01.atv.0000027524.86752.02.
- Holmström K. M., Finkel T. (2014). Cellular mechanisms and physiological consequences of redox-dependent signalling. *Nature Reviews Molecular Cell Biology* ;15(6):411–421. doi: 10.1038/nrm3801.
- Hsieh, J. Y., Fu, Y. S., Chang, S. J., Tsuang, Y. H., Wang, H. W. (2010). Functional Module analysis Reveals differential osteogenic and stemness potentials in human mesenchymal stem cells from bone marrow and Wharton’s jelly of umbilical cord. *Stem Cells Dev*, 19 (12), 1895–1910. doi:10.1089/scd.2009.0485.
- Huang, R., Fu, P. (2023). Kidney fibrosis: from mechanisms to therapeutic medicines. *Signal Transduction and Targeted Therapy*, 8. <https://doi.org/10.1038/s41392-023-01379-7>.
- Huber, C. C., & Wang, H. (2024). Pathogenic and therapeutic role of exosomes in neurodegenerative disorders. *Neural Regeneration Research*, 19(1), 75–79.
- International Society of Nephrology. (2024). *Kidney Disease Improving Global Outcome Guideline*. 105(4).
- Iswara, Salsabila Kasta Hygiea. (2026). Pengaruh Pemberian Eksosom HWJ-MSCs Terhadap Glomerulosklerosis Pada Ginjal Tikus Dengan Cedera Iskemia Reperfusi Periode Kronis: Kajian Terhadap Kadar Albumin, Proteinuria, Glomerulosklerosis, Ekspresi Mrna B-Catenin, E-Cadherin, Nephrin, Dan

Vimentin. [Tesis, Universitas Gadjah Mada].

- Itoh, K., Chiba, T., Takahashi, S., Ishii, T., Igarashi, K., Katoh, Y., Yamamoto, M. (1999). An Nrf2/small Maf heterodimer mediates the induction of phase II detoxifying enzyme genes through antioxidant response elements. *Biochemical and Biophysical Research Communications*, 236(2), 313–322. <https://doi.org/10.1006/bbrc.1997.6943>
- Jose, S., Kc, R., & Chandran, S. S. (2022). Oxidative stress in patients with diabetic nephropathy. *National Journal of Physiology*, 12(10). <https://doi.org/10.5455/njppp.2022.12.11326202119022022>.
- Kansanen, E., Kuosmanen, S.M., Leinonen, H., Levonen, A.L. (2013). The Keap1-Nrf2 pathway: Mechanisms of activation and dysregulation in cancer. *Redox Biol*, 18;1(1):45-9. doi: 10.1016/j.redox.2012.10.001. PMID: 24024136; PMCID: PMC3757665.
- Kim D., Staples M., Shinozuka K., Pantcheva P., Kang S.D., Borlongan C.V. (2013). Wharton's jelly-derived mesenchymal stem cells: Phenotypic characterization and optimizing their therapeutic potential for clinical applications. *Int. J. Mol. Sci.* 14 (6), 11692–11712.
- Kim, D., Han, S., Choi, H., Chang, Y. K., Choi, D. E. (2025). Hypothermia Mitigates Renal Fibrosis Through the Upregulation of PGC-1 α After Ischemia–Reperfusion Injury. *Biomedicines*, 13(6), 1337. doi.org/10.3390/biomedicines13061337.
- Kim, D.W., Staples M., Shinozuka, K., Pantcheva, P., Kang, S.D., Borlongan, C.V. (2013). Wharton's jelly-derived mesenchymal stem cells: phenotypic characterization and optimizing their therapeutic potential for clinical applications. *Int J Mol Sci*, 14(6), 692-712.
- Kochevar, I.E. (2003). Apoptosis Mechanisms Initiated by Oxidative Stress. In: Forman, H.J., Fukuto, J., Torres, M. Signal Transduction by Reactive Oxygen and Nitrogen Species: Pathways and Chemical Principles. *Springer, Dordrecht*. doi.org/10.1007/0-306-48412-9_19.
- Kot, K., Kupnicka, P., Tarnowski, M., Tomasiak, P., & Bogacka, D. K. (2023). The role of apoptosis and oxidative stress in the pathophysiology of *Acanthamoeba* spp . infection in the kidneys of hosts with different immunological status. *Parasites & Vectors*, 1–14. <https://doi.org/10.1186/s13071-023-06052-0>.
- Kovesdy, C., P. (2022). Epidemiology of chronic kidney disease: an update 2022. *Kidney Int Suppl*, 12:7–11. doi: 10.1016/j.kisu.2021.11.003.
- Krol, G. D. (2011). *Chronic Kidney Disease (CKD) Clinical Practice Recommendations for Primary Care Physicians* (pp. 4–10). Henry Fold Helath System.
- Kuwagata, S., Kume, S., Chin-Kanasaki, M., Araki, H., Araki, S., Nakazawa, J., Sugaya, T., Koya, D., Haneda, M., Maegawa, H., & Uzu, T. (2016). MicroRNA148b-3p inhibits mTORC1-dependent apoptosis in diabetes by

- repressing TNFR2 in proximal tubular cells. *Kidney International*, 90(6), 1211–1225. <https://doi.org/10.1016/J.KINT.2016.06.036>
- Kwong-Han, K., Zunaina, E., Hanizasurana, H., Che-Badariah, A. A., & Che-Maraina, C. H. (2022). Comparison of Katalase, glutathione peroxidase and malondialdehyde levels in tears among diabetic patients with and without diabetic retinopathy. *Journal of Diabetes and Metabolic Disorders*, 21(1), 681–688. <https://doi.org/10.1007/s40200-022-01030-2>
- Lameire NH, Levin A, Kellum JA, Cheung M, Jadoul M, Winkel- mayer WC, *et al.* 2021. Harmonizing acute and chronic kidney disease definition and classification: report of a kidney disease: improv- ing global outcomes (KDIGO) consensus conference. *Kidney Int*;100:516-26.
- Lasorsa, F., Rutigliano, M., Milella, M., Amati, A., Crocetto, F., Pandolfo, S. D., Barone, B., Ferro, M., Spilotros, M., Battaglia, M., Ditunno, P., & Lucarelli, G. (2024). Ischemia – Reperfusion Injury in Kidney Transplantation: Mechanisms and Potential Therapeutic Targets. *International Journal of Molecular Biology*, 345-361.
- Laura, A., Carla, A., dan Lins, J. (2015). Clinica Chimica Acta Renal posttransplantation diabetes mellitus : An overview. *Clinica Chimica Acta*, 450, 327–332. <https://doi.org/10.1016/j.cca.2015.09.010>
- Lee M-C-i, Velayutham M, Komatsu T, Hille R, Zweier J. (2014): Measurement and Characterization of Superoxide Generation from Xanthine Dehydrogenase: A A Redox-Regulated Pathway of Radical Generation in Ischemic Tissues. *Biochemistry*, 53, 6615-6623.
- Lee, C. M., Villanueva, B. H. A., Minh, H., Hussain, Q., & Chuang, K. P. (2025). Evaluation of Feline Exosome Mediated Renal Regeneration in Adenine-Induced Chronic Kidney Disease. *Biomolecules*, 15(12), 1647. <https://doi.org/10.3390/biom15121647>
- Lee, M.C., Velayutham, M., Komatsu, T., Hille R, Zweier J. (2014): Measurement and Characterization of Superoxide Generation from Xanthine Dehydrogenase: A A Redox-Regulated Pathway of Radical Generation in Ischemic Tissues. *Biochemistry*, 53, 6615-6623.
- Leeans, J.C., Kors, L., Anders, H.J., Florquin, S.(2014). Pattern recognition receptors and the inflammasome in kidney disease. *Nat Rev Nephrol*, 10, 398–414.
- Leeans, J.C, Kors, L., Anders, H.J., Florquin S.(2014). Pattern recognition receptors and the inflammasome in kidney disease. *Nat Rev Nephrol*;10: 398–414.
- Letts J. A., Sazanov L. A. (2017). Clarifying the supercomplex: the higher-order organization of the mitochondrial electron transport chain. *Nature Structural dan Molecular Biology*, 24 (10):800–808. doi: 10.1038/nsmb.3460.
- Levin, A., Stevens, P. E., Bilous, R. W., Coresh, J., De Francisco, A. L. M., De Jong, P. E., Griffith, K. E., Hemmelgarn, B. R., Iseki, K., Lamb, E. J., Levey, A. S., Riella, M. C., Shlipak, M. G., Wang, H., White, C. T., Winearls, C. G. (2013). Kidney disease: Improving global outcomes (KDIGO) CKD work

- group. KDIGO 2012 clinical practice guideline for the evaluation and management of chronic kidney disease. *Kidney International Supplements*, 3(1), 1-150. <https://doi.org/10.1038/kisup.2012.73>
- Li, L., Lu, M., Peng, Y., Huang, J., Tang, X., Chen, J., Li, J., Hong, X., He, M., Fu, H., Liu, R., Fan, F., Zhou, L., dan Liu, Y. (2024). Oxidatively stressed extracellular microenvironment drives fibroblast activation and kidney fibrosis. *Redox Biology*, 67(August). <https://doi.org/10.1016/j.redox.2023.102868>.
- Lin, D., Hsu, Y., Chang, C., dan Hsieh, C. (2023). Insights into the Molecular Mechanisms of NRF2 in Kidney Injury and Diseases. *Int J Mol Sci*, 24 (7), 6053.
- Lindgren D., Boström, A.K., Nilsson, K., Hansson, J., Sjölund, J., Möller, C., Jirström, K., Nilsson, E., Landberg, G., Axelson, H., Johansson, M.E. (2011). Isolation and characterization of progenitor-like cells from human renal proximal tubules. *Am J Pathol*, 178(2):828-837. doi: 10.1016/j.ajpath.2010.10.026. PMID: 21281815; PMCID: PMC3070548.
- Ling, X. C., dan Kuo, K. (2018). Oxidative stress in chronic kidney disease. *Renal Replacement Therapy*, 2, 1–9.
- Lingappan, K. (2018). NF-κB in Oxidative Stress. *Curr Opin Toxicol*. Feb;7:81-86. doi: 10.1016/j.cotox.2017.11.002. Epub 2017 Nov 7. PMID: 29862377; PMCID: PMC5978768.
- Lisha. (2019). Ischemia reperfusion injury and its therapy: An overview. *The Pharma Innovation Journal*, 8(1), 144–146.
- Little, M. H., dan Kairath, P. (2016). Regenerative medicine in kidney disease. *Kidney International*, 90(2), 289–299. doi.org/10.1016/j.kint.2016.03.030.
- Liu H., Jing X, Dong A, Bai B, Wang H. (2017). Overexpression of TIMP3 Protects Against Cardiac Ischemia/ Reperfusion Injury by Inhibiting Myocardial Apoptosis Through ROS/Mapks Pathway. *Cell Physiol Biochem*;44:1011-1023.
- Liu Y. (2010). New insights into epithelial-mesenchymal transition in kidney fibrosis. *J Am Soc Nephrol*, 21:212–222.
- Liu Y. (2010). New insights into epithelial-mesenchymal transition in kidney fibrosis. *J Am Soc Nephrol*, 21:212–222.
- Liu, B.C., Tang, T.T., Lv, L.L., & Lan, H.Y. (2018). Renal tubule injury: a driving force toward chronic kidney disease. *Kidney International*, 93(3), 568–579. <https://doi.org/10.1016/J.KINT.2017.09.033>
- Liu, B.C., Tang, T.T., Lv, L.L., Lan, H.Y. (2018). Renal tubule injury: a driving force toward chronic kidney disease. *Kidney Int*, 93(3):568-579. doi: 10.1016/j.kint.2017.09.033. PMID: 29361307.
- Liu, C., Li, Q., Ma, J., Lu, B., Criswell, T., dan Zhang, Y. (2024). ScienceDirect Exosome-mediated renal protection: Halting the progression of fibrosis.

- Genes dan Diseases*, 11(6), 101117. doi.org/10.1016/j.gendis.2023.101117.
- Liu, L., Bai, F., Song, H. (2022). Upregulation of TIPE1 in tubular epithelial cell aggravates diabetic nephropathy by disrupting PHB2 mediated mitophagy. *Redox Biol*,50:102260.
- Liu, Y., Shi, Y., Han, R., dan Liu, C. (2023). Signaling pathways of oxidative stress response : the potential therapeutic targets in gastric cancer. *Front Immunol*, 1–12. doi.org/10.3389/fimmu.2023.1139589.
- Ma, Z., Yang, J., Lu, Y. (2020). Mesenchymal stem cell-derived exosomes: Toward cell-free therapeutic strategies in regenerative medicine. *World J Stem Cells*,12(8), 814–841.
- MacMillan-Crow, L. A., & Crow, J. P. (2011). Does more MnSOD mean more hydrogen peroxide. *Anti-Cancer Agents in Medicinal Chemistry*, 11(2), 178–180. <https://doi.org/10.2174/187152011795255939>
- Mahadevan, V. (2019). Anatomy of the kidney and ureter. *Surgery*, 37(7), 359–364. <https://doi.org/10.1016/j.mpsur.2019.04.005>
- Mahdavi LS, *et al.* Effects of intraperitoneal administration of cadmium on apoptotic Bcl-2 and Bax genes expression in rat hippocampal cells. *Novin Genetic*. 2017; 12: 81-89.
- Malek, M., & Nematbakhsh, M. (2015). Renal ischemia/reperfusion injury; from pathophysiology to treatment. *Journal of Renal Injury Prevention*, 4(2), 20–27. <https://doi.org/10.12861/JRIP.2015.06>.
- Mangolo, Irene Enjelin. (2024). Pengaruh Eksosom *HWJ-MSC* Terhadap Cedera Tubulus, Ekspresi mRNA IL-6 dan SOD-1 Pada Tikus dengan Model Cedera kemia Reperfusi Ginjal. [Universitas Gadjah Mada, Tesis].
- McComb, S., Chan, P. K., Guinot, A., Hartmannsdottir, H., Jenni, S., Dobay, M. P., *et al.* (2019). Efficient apoptosis requires feedback amplification of upstream apoptotic signals by effector Caspase-3 or -7. *Sci. Adv.* 5 (7), eaau9433. 10.1126/sciadv.aau9433.
- Meltzer, J. S. (2019). 40 - Renal Physiology. In *Pharmacology and Physiology for Anesthesia* (Second Edi). Elsevier Inc. <https://doi.org/10.1016/B978-0-323-48110-6.00040-5>
- Meran, S., & Steadman, R. (2011). Fibroblasts and myofibroblasts in renal fibrosis. *International Journal of Experimental Pathology*, 92(3), 158–167. <https://doi.org/10.1111/J.1365-2613.2011.00764.X>
- Mitchell S, Vargas J, Hoffmann. (2016). A. Signaling via the NFκB system. *Wiley Interdiscip Rev Syst Biol Med*. 2016;8:227–241. doi: 10.1002/wsbm.1331.
- Mohamed, T., Luisa, M., dan Lopez, S. S. (2020). Development of the renal vasculature. *Semin Cell Dev Biol*, 6(9), 132-146. doi.org/10.1016/j.semcdb.2018.06.001. Development
- Moinuddin, Z. (2015). Anatomy of the kidney and ureter. *Anaesthesia and Intensive Care Medicine*, 1–6. <https://doi.org/10.1016/j.mpaic.2015.04.001>.

- Moonen, L., D'Haese, P.C., Vervaet, B.A. (2018) Epithelial cell cycle behaviour in the injured kidney. *Int J Mol Sci*, 19(7):2038.
- Myers, B. D. (2007). Pathogenetic Processes in Human Acute Renal Failure. *Seminars in Dialysis*, 9(6), 444–453. <https://doi.org/10.1111/J.1525-139X.1996.TB00305.X>
- Nandi A., Yan, L.J., Jana, C.K., Das, N. (2019). Role of Katalase in Oxidative Stress- and Age-Associated Degenerative Diseases. *Oxid Med Cell Longev*, 11 (9), 613090. doi: 10.1155/2019/9613090. PMID: 31827713; PMCID: PMC6885225.
- Ngo, V., dan Duennwald, M. L. (2022). *Nrf2 and Oxidative Stress : A General Overview of Mechanisms and Implications in Human Disease*.
- Nguan CY, Guan Q, Gleave ME, Du C (2014) Promotion of cell proliferation by clusterin in the renal tissue repair phase after ischemia-reperfusion injury. *Am J Physiol Renal Physiol* 306: F724–733. doi: 10.1152/ajprenal.00410.2013 PMID: 24477687.
- Nieuwenhuijs-moeke, G. J., Pischke, S. E., Berger, S. P., & Leuvenink, H. G. D. (2020). Ischemia and Reperfusion Injury in Kidney Transplantation: Relevant Mechanisms in Injury and Repair. *Journal of Clinical Medicine*; 253 (9): 1-33.
- Ninic, A., Sopić, M., Munjas, J., Spasojevic-Kalimanovska, V., Kotur-Stevuljevic, J., Bogavac-Stanojevic, N., Ivanisevic, J., Simic-Ogrizovic, S., Kravljaca, M., & Jelic-Ivanovic, Z. (2018). Association Between Superoxide Dismutase Isoenzyme Gene Expression and Total Antioxidant Status in Patients with an End-Stage Renal Disease. *Balkan Medical Journal*, 35(6), 431–436. doi.org/10.4274/BALKANMEDJ.2018.0170.
- Ollson, M., Zhivotovsky, B. (2016). Caspases and cancer. *Cell Death Differ*, 18, 1441–1449. doi.org/10.1038/cdd.2011.30.
- Olson G.E., Whitin J.C., Hill K.E., Winfrey V.P., Motley A.K., Austin L.M., Deal J., Cohen H.J., Burk R.F. (2010). Extracellular glutathione peroxidase (Gpx3) binds specifically to basement membranes of mouse renal cortex tubule cells. *Am. J. Physiol. Ren. Physiol.*; 298:F1244–F1253. doi: 10.1152/ajprenal.00662.2009.
- Pabla, N., Wei, Q., & Dong, Z. (2009). Apoptosis in Acute Kidney Injury. 565–579. https://doi.org/10.1007/978-1-60327-381-7_25
- Parvez S., Long M. J. C., Poganik J. R., Aye Y. 2018. Redox signaling by reactive electrophiles and oxidants. *Chemical Reviews*, 118 (18), 8798–8888. doi: 10.1021/acs.chemrev.7b00698.
- Polykretis, P., Luchinat, E., Boscaro, F., & Banci, L. (2020). Methylglyoxal interaction with superoxide dismutase 1. *Redox Biology*, 30, 101421–101421. <https://doi.org/10.1016/J.REDOX.2019.101421>
- Prakash, J, de Borst, M.H., Lacombe, M., Opdam, F., Klok, P.A., van Goor, H.,

- Meijer, D.K., Moolenaar, F., Poelstra, K., Kok, R.J. (2008). Inhibition of renal rho kinase attenuates ischemia/reperfusion-induced injury. *J Am Soc Nephrol*, 19 (11), 2086-2097. doi: 10.1681/ASN.2007070794. Epub 2008 Jul 23. PMID: 18650485; PMCID: PMC2573003.
- Prunotto, M., Budd, D.C., Gabbiani, G. (2012). Epithelial-mesenchymal crosstalk alteration in kidney fibrosis. *J Pathol*, 228, 131–147.
- Putri, Ghea Farmaning Thias. (2024). Pengaruh Pemberian *Exosome* (Huc-Msc-*Exo*) Terhadap Gambaran Cedera Tubulus, Kadar Bun, Dan Apoptosis Sel Epitel Ginjal Pada Tikus Model Cedera Iskemia Reperfusi (IR) Periode Kronis. [Tesis, Universitas Gadjah Mada].
- Qian, F., Fu, L., He, W.-R., He, Q., Jin, J., & Zheng, D. (2023). Adipose-derived stem cell exosomes regulate Nrf2/Keap1 in diabetic nephropathy by targeting FAM129B. *Diabetology & Metabolic Syndrome*, 15(1).
- Qian, F., Fu, L., He, W.-R., He, Q., Jin, J., & Zheng, D. (2023). Adipose-derived stem cell exosomes regulate Nrf2/Keap1 in diabetic nephropathy by targeting FAM129B. *Diabetology & Metabolic Syndrome*, 15(1). <https://doi.org/10.1186/s13098-023-01119-5>
- Rabilloud, T., Chevallet, M., Luche, S., & Leize-Wagner, E. (2008). Oxidative stress response: a proteomic view. *arXiv: Genomics*. <https://doi.org/10.1586/14789450.2.6.949>.
- Rasmussen, M., Hansen, K.H., Scholze A. (2023). Nrf2 Protein Serum Concentration in Human CKD Shows a Biphasic Behavior. *Antioxidants (Basel)*;12(4):932. doi: 10.3390/antiox12040932. PMID: 37107307; PMCID: PMC10135793.
- Rivera, A. K., Cruz-Gregorio, A., Pedraza-Chaverri, J., & Scholze, A. (2022). Nrf2 Activation in Chronic Kidney Disease: Promises and Pitfalls. *Antioxidants*, 11(6), 1112. doi.org/10.3390/antiox11061112.
- Sankari, S.L., Masthan, K.M., Babu, N.A., Bhattacharjee, T., Elumalai, M. (2012). Apoptosis in cancer--an update. *Asian Pac J Cancer Prev*, 13(10):4873-8.
- Sari, F. T., Arfian, N., & Sari, D. C. R. (2020). Effect of kidney ischemia/reperfusion injury on proliferation, apoptosis, and cellular senescence in acute kidney injury in mice. *The Medical Journal of Malaysia*, 75, 20–23.
- Schiller M., Heyder P., Ziegler S., Niessen A., Claßen L., Lauffer A., et al. (2013). During apoptosis HMGB1 is translocated into apoptotic cell-derived membranous vesicles. *Autoimmunity* 46 (5), 342–346. 10.3109/08916934.2012.750302.
- Schmidt, E. E. Kelley, and A. C. Straub (2019). The impact of xanthine oxidase (XO) on hemolytic diseases. *Redox Biology*, vol. 21, pp. 101072–101072.
- Scholze, A., Krueger, K., Diedrich, M., R ath, C., Torges, A., Jankowski, V., Maier, A., Thilo, F., Zidek, W., Tepel, M., & Tepel, M. (2011). Superoxide

- dismutase type 1 in monocytes of chronic kidney disease patients. *Amino Acids*, 41(2), 427–438. <https://doi.org/10.1007/S00726-010-0763-4>
- Sebbagh, M., Renvoizé, C., Hamelin, J., Riché, N., Bertoglio, J., Bréard, J. (2001). Caspase-3-mediated cleavage of ROCK I induces MLC phosphorylation and apoptotic membrane blebbing. *Nat Cell Biol*, 3(4):346-52. doi: 10.1038/35070019. PMID: 11283607.
- Sharfuddin AA, Molitoris BA.(2011). Pathophysiology of ischemic acute kidney injury. *Nat Rev Nephrol*. 7:189–200.
- Shen, K., Wang, X., Wang, Y., Jia, Y., Zhang, Y., Wang, K., Luo, L., Cai, W., Li, J., Li, S., & Du, Y. (2023). miR-125b-5p in adipose derived stem cells exosome alleviates pulmonary microvascular endothelial cells ferroptosis via Keap1/Nrf2/GPX4 in sepsis lung injury. *Redox Biology*, 62, 102655–102655. doi.org/10.1016/j.redox.2023.102655
- Simone S, Rascio F, Castellano G, Divella C, Chieti A, Ditunno P, Battaglia M, Crovace A, Staffieri F, Oortwijn B, Stallone G, Gesualdo L, Pertosa G, Grandaliano G. (2014). Complement-dependent NADPH oxidase enzyme activation in renal ischemia/reperfusion injury. *Free Radic Biol Med*;74:263-273.
- Small DM, Coombes JS, Bennett N, *et al.* (2012). Oxidative stress, anti-oxidant therapies and chronic kidney disease. *Nephrology (Carlton)*;17: 311–321.
- Smith, T., Zaidi, A., Victoria, C., Brown, M., & Pino-chavez, G. (2024). Robust Rat and Mouse Models of Bilateral Renal Ischemia Reperfusion Injury. *In Vivo*, 10, 1049–1057. <https://doi.org/10.21873/invivo.13538>.
- Sotomayor, C.G., Cortés, I., Gormaz, J.G., Vera, S., Libuy, M., Valls, N., Rodrigo g, R. Role of Oxidative Stress in Renal Transplantation: Bases for an n-3 PUFA Strategy Against Delayed Graft Function. *Curr Med Chem*, 24(14):1469-1485. doi: 10.2174/0929867324666170227115435. PMID: 28245764.
- Stanifer, J. W., Muir, A., Jafar, T. H. dan Patel, U. D. Chronic kidney disease in low- and middle-income countries. *Nephrol. Dial. Transplant*. 31, 868–874 (2016).
- Sutton TA, Molitoris BA. Mechanisms of cellular injury in ischemic acute renal failure. *Semin Nephrol*. 1998;18(5):490–497.
- Tang, C., Cai, J., Yin, X.M., Weinberg, J.M., Venkatachalam, M.A., Dong, Z. 2021. Mitochondrial quality control in kidney injury and repair. *Nat. Rev. Nephrol*. 17, 299–318.
- Urbanelli, L., Magini, A., Buratta, S., Brozzi, A., Sagini, K., Polchi, A., Tancini, B., Emiliani, C. (2013). Signaling Pathways in Exosomes Biogenesis, Secretion and Fate. *Genes*, 4(2), 152–170.
- Utsugi, M., Dobashi, K., Ishizuka, T., Masubuchi, K., Shimizu, Y., Nakazawa, T., & Mori, M. (2003). C-Jun-NH2-Terminal Kinase Mediates Expression of

- Connective Tissue Growth Factor Induced by Transforming Growth Factor- β 1 in Human Lung Fibroblasts. *American Journal of Respiratory Cell and Molecular Biology*, 28(6), 754–761. <https://doi.org/10.1165/RCMB.4892>
- Vahidinia, Z., Tameh, A. A., Barati, S., Izadpanah, M., dan Hosseini, E. S. (2024). Nrf2 activation: a key mechanism in stem cell exosomes - mediated therapies. *Cellular dan Molecular Biology Letters*, 29(1), 22-30 <https://doi.org/10.1186/s11658-024-00551-3>.
- Vaidya, S.R., Aeddula, N.R. (2024). *Chronic Kidney Disease*. Treasure Island (FL): StatPearls Publishing.
- Vaziri, N.D., Dicus, M., Ho, N.D., Boroujerdi, L.; Sindhu, R.K. (2005). Oxidative stress and dysregulation of superoxide dismutase and NADPH oxidase in renal insufficiency. *Kidney Int*, 63, 179–185.
- Walsh J. G., Cullen S. P., Sheridan C., Lüthi A. U., Gerner C., Martin S. J. (2008). Executioner Caspase-3 and Caspase-7 are functionally distinct proteases. *Proc. Natl. Acad. Sci. U. S. A.*, 105 (35), 12815–12819.
- Wang, J., Zheng, Y., Li, Y.-L., Xiao, Y., Ren, Y.-Y., & Tian, Y.-Q. (2025). Emerging role of mesenchymal stem cell-derived exosomes in the repair of acute kidney injury. *World Journal of Stem Cells*. <https://doi.org/10.4252/wjsc.v17.i3.103360>
- Wang, Z., Zhang, C. (2022). From AKI to CKD: Maladaptive Repair and the Underlying Mechanisms. *International Journal of Molecular Science*, 23(10880), 1-16.
- Wei, Q., Dong, G., Chen, J. K., Ramesh, G., Dong, Z., Dong, Z., & Dong, Z. (2013). Bax and Bak have critical roles in ischemic acute kidney injury in global and proximal tubule-specific knockout mouse models. *Kidney International*, 84(1), 138–148. <https://doi.org/10.1038/KI.2013.68>
- Weight, S. C., Furness, P. N., & Nicholson, M. L. (2003). New model of renal warm ischaemia-reperfusion injury for comparative functional, morphological and pathophysiological studies. *British Journal of Surgery*, 85(12), 1669–1673. <https://doi.org/10.1046/J.1365-2168.1998.00851.X>.
- Wicaksono, D., S. (2025) *Pengaruh Pemberian Eksosom Human's Wharton Jelly Umbilical Cord Mesenchymal Stem Cells Terhadap Faktor Neurotropik Pada Tikus Model Iskemia Serebral Global Transien*. [Tesis, Universitas Gadjah Mada].
- Williams P, Lopez H, Britt D, Chan C, Ezrin A, Hottendorf R. (1997). Characterization of renal ischemia-reperfusion injury in rats. *J Pharmacol Toxicol Methods*, 37(1), 1-7.
- Wu, C. C., & Bratton, S. B. (2013). Regulation of the Intrinsic Apoptosis Pathway by Reactive Oxygen Species. *Antioxidants & Redox Signaling*, 19(6), 546–558. <https://doi.org/10.1089/ARS.2012.4905>
- Wu, M.Y., Yiang, G.T., Liao, W.T., Tsai, A.P., Cheng Y.L., Cheng P.W., Li C.Y., Li C.J. (2018). Current Mechanistic Concepts in Ischemia and Reperfusion Injury. *Cell Physiol Biochem*, 46(4), 1650-1667. doi: 10.1159/000489241.

Epub 2018 Apr 20. PMID: 29694958.

- Xie, X., Yang, X., Wu, J., Tang, S., Yang, L., Fei, X., Wang, M. (2022). Exosome from indoleamine 2,3-dioxygenase-overexpressing bone marrow mesenchymal stem cells accelerates repair process of ischemia/reperfusion-induced acute kidney injury by regulating macrophages polarization. *Stem Cell Res Ther*, 28;13(1):367. doi: 10.1186/s13287-022-03075-9. PMID: 35902956; PMCID: PMC9331485.
- Yamakura, F., & Kawasaki, H. (2010). Post-translational modifications of superoxide dismutase. *Biochimica et Biophysica Acta*, 1804 (2), 318–325. <https://doi.org/10.1016/J.BBAPAP.2009.10.010>
- Yang L, Besschetnova TY, Brooks CR, Shah JV, Bonventre JV. Epithelial cell cycle arrest in G2/M mediates kidney fibrosis after injury. *Nat Med*. 2010 May;16(5):535-43, 1p following 143. doi: 10.1038/nm.2144. Epub 2010 May 2. PMID: 20436483; PMCID: PMC3928013.
- Yang, L., Besschetnova, T. Y., Besschetnova, T. Y., Brooks, C. R., Shah, J. V., Shah, J. V., Shah, J. V., Bonventre, J. V., & Bonventre, J. V. (2010). Epithelial cell cycle arrest in G2/M mediates kidney fibrosis after injury. *Nature Medicine*, 16(5), 535–543. <https://doi.org/10.1038/NM.2144>.
- Yang, L., Wang, B., Guo, F. (2022). FFAR4 improves the senescence of tubular epithelial cells by AMPK/Sirt3 signaling in acute kidney injury. *Signal Transduct Target Ther*, 7 (1):384.
- Yoshida, T., Shimizu, A., Masuda, Y., Mii, A., Fujita, E., Yoshizaki, K., Higo, S., Kanzaki, G., Kajimoto, Y., Takano, H., & Fukuda, Y. (2012). Caspase-3-independent internucleosomal DNA fragmentation in ischemic acute kidney injury. *Nephron Experimental Nephrology*, 120(3).
- Youle, R.J., Strasser, A. (2008). The BCL-2 protein family: opposing activities that mediate cell death. *Nat Rev Mol Cell Biol*, 9:47-59.
- Younus, H. (2018). Therapeutic potentials of superoxide dismutase. *International Journal of Health Science*, 310 (3).
- Yu, Y., Chen, M., Guo, Q., Shen, L., Liu, X., Pan, J., Zhang, Y., Xu, T., Zhang, D., & Wei, G. (2023). Human umbilical cord mesenchymal stem cell exosome-derived miR-874-3p targeting RIPK1/PGAM5 attenuates kidney tubular epithelial cell damage. *Cellular & Molecular Biology Letters*, 28(1). <https://doi.org/10.1186/s11658-023-00425-0>.
- Yuan, L., Yang, J., Liu F. (2023). Macrophage-derived exosomal miR-195a-5p impairs tubular epithelial cells mitochondria in acute kidney injury mice. *FASEB J*, 37(1):e22691.
- Zhang, G., Zou, X., Huang, Y., Liu, G., Chen, M., Zhu, Y., Wang, F., dan Miao, S. (2016). Mesenchymal Stromal Cell-Derived Extracellular Vesicles Protect Against Acute Kidney Injury Through Anti-Oxidation by Enhancing Nrf2 / ARE Activation in Rats. *Karger: Kidney Blood Pressure Research*, 210009(87), 119–128. <https://doi.org/10.1159/000443413>.

- Zhang, G., Zou, X., Miao, S., Chen, J., Du, T., Zhong, L., Ju, G., Liu, G., dan Zhu, Y. (2014). The Anti-Oxidative Role of Micro-Vesicles Derived from Human Wharton-Jelly Mesenchymal Stromal Cells through NOX2 / gp91 (phox) Suppression in Alleviating Renal Ischemia-Reperfusion Injury in Rats. *Journal Pone*, 9(3), 1–11. <https://doi.org/10.1371/journal.pone.0092129>
- Zhang, J., Wang, X., Wei, J., Wang, L., Jiang, S., Xu, L., Qu, L., Yang, K., Fu, L., Buggs, J., Cheng, F., Liu, R., Zhang, J., Wang, X., Wei, J., Wang, L., Jiang, S., Xu, L., Qu, L., Liu, R. A. (2025). A two-stage bilateral ischemia-reperfusion injury-induced AKI to CKD transition model in mice. *Am J Physiol Renal Physiol*, 304–311. doi.org/10.1152/ajprenal.00017.2020.
- Zhou, Z.-M., Yang, F., & Cao, W. (2012). Comparison of different methods for PAS staining of renal biopsy tissue sections. *Journal of Southern Medical University*, 32(3), 371–373.
- Zhu, G., Pei, L., Lin, F. (2019). Exosomes from human-bone-marrow-derived mesenchymal stem cells protect against renal ischemia/reperfusion injury via transferring miR-199a-3p. *J Cell Physiol*. 2019; 234: 23736–23749.
- Zsom, L., Zsom, M., Salim, S. A., dan Fülöp, T. (2022). Estimated Glomerular Filtration Rate in Chronic Kidney Disease : A Critical Review of Estimate-Based Predictions of Individual Outcomes in Kidney Disease. *Toxins (Basel)*, 14(2), 127.
- Zuk A, Bonventre JV, Matlin KS.(2001). Expression of fibronectin splice variants in the postischemic rat kidney. *Am J Physiol Renal Physiol*, 280(6):F1037–F1053.