

## DAFTAR PUSTAKA

- Abdul-Ghani, M.A., & Defronzo, R.A., 2010. Pathogenesis of insulin resistance in skeletal muscle. *J. Biomed. Biotechnol.* 1–19. doi:10.1155/2010/476279
- Abeyrathna, P., & Su, Y., 2015. The critical role of Akt in cardiovascular function. *Vascul. Pharmacol.* 74: 38–48. doi:10.1016/j.vph.2015.05.008
- Berná, G., Oliveras-López, M.J., Jurado-Ruíz, E., Tejedo, J., Bedoya, F., Soria, B., et al., 2014. Nutrigenetics and nutrigenomics insights into diabetes etiopathogenesis. *Nutrients* 6: 5338–5369. doi:10.3390/nu6115338
- Bouché, C., Serdy, S., Kahn, C.R., & Goldfine, A.B., 2004. The cellular fate of glucose and its relevance in type 2 diabetes. *Endocr. Rev.* 25: 807–830. doi:10.1210/er.2003-0026
- Bowen, R., 2019. Physiologic Effects of Insulin [WWW Document]. *VIVO Pathophysiol.* URL [http://www.vivo.colostate.edu/hbooks/pathphys/endocrine/pancreas/insulin\\_phys.html](http://www.vivo.colostate.edu/hbooks/pathphys/endocrine/pancreas/insulin_phys.html) (accessed 12.8.19).
- Braithwaite, S.S., Palazuk, B., Colca, J.R., Edwards, C.W., & Hofmann, C., 1995. Reduced expression of hexokinase II in insulin-resistant diabetes. *Diabetes* 44: 43–48. doi:10.2337/diabetes.44.1.43
- Cao, X., Liu, B., Cao, W., Zhang, W., Zhang, F., Zhao, H., et al., 2013. Autophagy inhibition enhances apigenin-induced apoptosis in human breast cancer cells. *Chinese J. Cancer Res.* 25: 212–222. doi:10.3978/j.issn.1000-9604.2013.04.01
- Carnagarin, R., Dharmarajan, A.M., & Dass, C.R., 2015. Molecular aspects of glucose homeostasis in skeletal muscle - A focus on the molecular mechanisms of insulin resistance. *Mol. Cell. Endocrinol.* 417: 52–62. doi:10.1016/j.mce.2015.09.004
- Chayati, I., Sunarti, S., Marsono, Y., & Astuti, M., 2019. Anthocyanin Extract of Purple Corn Improves Hyperglycemia and Insulin Resistance of Rats Fed High Fat and Fructose Diet via GLP1 and GLP1R Mechanism. *J. Food Nutr. Res.* 7: 303–310. doi:10.12691/jfnr-7-4-7
- Chen, W., Balland, E., & Cowley, M.A., 2017. Hypothalamic Insulin Resistance in Obesity: Effects on Glucose Homeostasis. *Neuroendocrinology* 104: 364–381. doi:10.1159/000455865
- Choi, K., & Kim, Y.B., 2010. Molecular mechanism of insulin resistance in obesity and type 2 diabetes. *Korean J. Intern. Med.* 25: 119–129. doi:10.3904/kjim.2010.25.2.119

- Clifford, T., Howatson, G., West, D.J., & Stevenson, E.J., 2015. The potential benefits of red beetroot supplementation in health and disease. *Nutrients* 7: 2801–2822. doi:10.3390/nu7042801
- Colak, A., & Diniz, G., 2012. Impaired Glucose Tolerance, Obesity and Inflammatory Mediators [WWW Document]. *IntechOpen*. URL <https://www.intechopen.com/books/glucose-tolerance/impaired-glucose-tolerance-obesity-and-inflammatory-mediators>
- Deeseenthum, S., Luang-In, V., John, S.M., Chottanom, P., & Chunchom, S., 2018. Effects of kefir fermentation on antioxidation activities (in vitro) and antioxidative stress (in vivo) of three thai rice milk varieties prepared by ultrasonication technique. *Pharmacogn. J.* 10: 1061–1066. doi:10.5530/pj.2018.5.179
- Deshmukh, A.S., 2015. Insulin-stimulated glucose uptake in healthy and insulin-resistant skeletal muscle. *Horm. Mol. Biol. Clin. Investig.* 26: 13–24. doi:10.1515/hmbci-2015-0041
- Deshmukh, G.P., nka, P., Sindhav, R., & Jose, N., 2018. Application of Beetroot as Natural Coloring Pigment and Functional Ingredient in Dairy and Food Products. *Int. J. Curr. Microbiol. Appl. Sci.* 7: 2010–2016. doi:10.20546/ijemas.2018.712.231
- El-Hawary SS, Hammouda FM, Tawfik WA, Kassem HA, Abdelshafeek KA, El-Shamy SS. 2017. Investigation of some chemical constituents, cytotoxicity and antioxidant activities of beta vulgaris var. altissima cultivated in Egypt. *Rasayan J Chem*;10(4):1391–401.
- Elkhateeb, Y.A.M., & Alrshidi, S.F.A.A., 2018. Assessment of Knowledge about Risk Effects of Fast Foods and its Relation to Antioxidants among Students of Hail University. *Acta Sci. Gastrointest. Disord.* 1: 16–20.
- Feng, X., Wang, T., Chen, Y.I., Liu, J., Liu, Y.I., & Wang, W., 2012. Pollen Typhae total flavone improves insulin-induced glucose uptake through the  $\beta$ -arrestin-2-mediated signaling in C2C12 myotubes. *Int. J. Mol. Med.* 30: 914–922. doi:10.3892/ijmm.2012.1061
- Ferrannini, E., Bjorkman, O., Reichard, G.A., Pilo, A., Olsson, M., Wahren, J., et al., 1985. The disposal of an oral glucose load in healthy subjects. A quantitative study. *Diabetes* 34: 580–588. doi:10.2337/diab.34.6.580
- Forman, D.T., D, P., & A, K.W., 1973. Enzyme Changes in Diabetes Mellitus. *Ann. Clin. Lab. Sci.* 3: 374–385.
- Gayathri, G.A., & Mahalingam, G., 2016. Review on enhancement of glucose uptake and up-regulation of glucose transporters by antidiabetic medicinal plants. *Asian J. Pharm. Clin. Res.* 9: 34–39.

- Gezginci-Oktayoglu, S., Sacan, O., Bolkent, S., Ipci, Y., Kabasakal, L., Sener, G., et al., 2014. Chard (*Beta vulgaris* L. var. *cicla*) extract ameliorates hyperglycemia by increasing GLUT2 through Akt2 and antioxidant defense in the liver of rats. *Acta Histochem.* 116: 32–39. doi:10.1016/j.acthis.2013.04.016
- Guo, S., 2013. Molecular Basis of Insulin Resistance: The Role of IRS and Foxo1 in the Control of Diabetes Mellitus and Its Complications. *Drug Discov. Today Dis Mechanism* 10: 1–11. doi:10.1016/j.ddmec.2013.06.003.Molecular
- Han, Q., Yeung, S.C., Ip, M.S.M., & Mak, J.C.W., 2018. Dysregulation of cardiac lipid parameters in high-fat high-cholesterol diet-induced rat model. *Lipids Health Dis.* 17: 1–10. doi:10.1186/s12944-018-0905-3
- Han, Y., Jung, H.W., & Park, Y.K., 2015. Effects of Icaritin on insulin resistance via the activation of AMPK pathway in C2C12 mouse muscle cells. *Eur. J. Pharmacol.* 758: 60–63. doi:10.1016/j.ejphar.2015.03.059
- Harrison, S., Brassard, D., Lemieux, S., & Lamarche, B., 2019. Consumption and Sources of Saturated Fatty Acids According to the 2019 Canada Food Guide: Data from the 2015 Canadian Community Health Survey. *Nutrients* 11: 1–10. doi:10.3390/nu11091964
- Hesselink, M.K.C., Schrauwen-hinderling, V., & Schrauwen, P., 2016. Skeletal muscle mitochondria as a target to prevent or treat type 2 diabetes mellitus. *Nat. Rev. Endocrinol.* 12: 1–11. doi:10.1038/nrendo.2016.104
- Hidayat, F., Farida, A., Ermaya, D., & Sholihati, 2019. Kajian Penambahan Pasta Umbi Bit Merah (*Beta vulgaris* L) dan Tepung Kacang Hijau (*Phaseolus radiatus* L) dalam Pembuatan Roll Cookies. *J. Rona Tek. Pertan.* 12: 1–11.
- Horita, S., Nakamura, M., Suzuki, M., Satoh, N., Suzuki, A., & Seki, G., 2016. Selective insulin resistance in the kidney. *Biomed Res. Int.* 2016: 1–8. doi:10.1155/2016/5825170
- Huang, X., Liu, G., Guo, J., & Su, Z.Q., 2018. The PI3K/AKT pathway in obesity and type 2 diabetes. *Int. J. Biol. Sci.* 14: 1483–1496. doi:10.7150/ijbs.27173
- Jaiswal, N., Maurya, C.K., Pandey, J., Rai, A.K., & Tamrakar, A.K., 2015. Fructose-induced ROS generation impairs glucose utilization in L6 skeletal muscle cells. *Free Radic. Res.* 49: 1055–1068. doi:10.3109/10715762.2015.1031662
- Kanaley, J.A., Shadid, S., Sheehan, M.T., Guo, Z.K., & Jensen, M.D., 2013. Hyperinsulinemia and skeletal muscle fatty acid trafficking. *Am. J. Physiol. - Endocrinol. Metab.* 305: 540–549. doi:10.1152/ajpendo.00143.2013
- Kaneto, H., Katakami, N., Matsuhisa, M., & Matsuoka, T.A., 2010. Role of

- reactive oxygen species in the progression of type 2 diabetes and atherosclerosis. *Mediators Inflamm.* 2010. doi:10.1155/2010/453892
- Kim, J.J., & Sears, D.T., 2010. TLR4 and insulin resistance. *Gastroenterol. Res. Pract.* 1–11.
- Kirkham, P.A., & Barnes, P.J., 2008. Oxidative stress in Diabetes Mellitus. *Rom. J Biophys* 18: 225–236. doi:10.1378/chest.12-2664
- Klaunig JE, Kamendulis LM, Hocevar BA. 2010. Oxidative stress and oxidative damage in carcinogenesis. *Toxicol Pathol* 38(1):96–109.
- Köseler, E., Kızıltan, G., Türker, P.F., Saka, M., Ok, M.A., Bacanlı, D., et al., 2018. The effects of glucose and fructose on body weight and some biochemical parameters in rats. *Prog. Nutr.* 20: 46–51. doi:10.23751/pn.v20i1.5956
- Kumar, P.S., Bhaumik, A., Chopra, M., & Devi, K.N., 2016. Evaluation of Anti diabetic activity of Ethanolic Extract of Beet Root (EEBT-Beta vulgaris) against Streptozocin induced diabetic Rats. *J. drug Discov. ...* 4: 1–6.
- Kumar, V., & Gaur, P., 2017. Antiobesity Activity of Liraglutide on High Fat Diet-Induced Obesity in Wistar Rats. *Curr. Res. Diabetes Obes. J.* 3: 1–5. doi:10.19080/crdoj.2017.03.555602
- Kwon, E.Y., Jung, U.J., Park, T., Yun, J.W., & Choi, M.S., 2015. Luteolin attenuates hepatic steatosis and insulin resistance through the interplay between the liver and adipose tissue in mice with diet-induced obesity. *Diabetes* 64: 1658–1669. doi:10.2337/db14-0631
- Lin, W.T., Chan, T.F., Huang, H.L., Lee, C.Y., Tsai, S., Wu, P.W., et al., 2016. Fructose-Rich Beverage Intake and Central Adiposity, Uric Acid, and Pediatric Insulin Resistance. *J. Pediatr.* 171: 90-96.e1. doi:10.1016/j.jpeds.2015.12.061
- Liu, Y., Liang, X., Zhang, G., Kong, L., Peng, W., & Zhang, H., 2018. Galangin and Pinocembrin from Propolis Ameliorate Insulin Resistance in HepG2 Cells via Regulating Akt/mTOR Signaling. *Evidence-based Complement. Altern. Med.* 2018: 1–10. doi:10.1155/2018/7971842
- Lopaschuk, G.D., 2016. Fatty Acid Oxidation and Its Relation with Insulin Resistance and Associated Disorders. *Ann. Nutr. Metab.* 68: 15–20. doi:10.1159/000448357
- Lorizola, I.M., Id, C.P.B.F., Id, M.P., Milanski, M., Botelho, B., Bezerra, M.N., et al., 2018. Beet Stalks and Leaves (*Beta vulgaris* L.) Protect Against High-Fat Diet-Induced Oxidative Damage in the Liver in Mice. *Nutrients* 10: 1–16. doi:10.3390/nu10070872

- Ma, C., Yu, H., Xiao, Y., & Wang, H., 2017. Momordica charantia extracts ameliorate insulin resistance by regulating the expression of socs-3 and jnk in type 2 diabetes mellitus rats. *Pharm. Biol.* 55: 2170–2177. doi:10.1080/13880209.2017.1396350
- Maffei, A., Lembo, G., & Carnevale, D., 2018. PI3Kinases in diabetes mellitus and its related complications. *Int. J. Mol. Sci.* 19: 1–14. doi:10.3390/ijms19124098
- Malik VS, Hu FB. Sugar-Sweetened Beverages and Cardiometabolic Health: An Update of the Evidence. *Nutrients.* 2019;11:1–17.
- Martins, A.R., Nachbar, R.T., Gorjao, R., Vinolo, M.A., Festuccia, W.T., Lambertucci, R.H., et al., 2012. Mechanisms underlying skeletal muscle insulin resistance induced by fatty acids: Importance of the mitochondrial function. *Lipids Health Dis.* 11: 30. doi:10.1186/1476-511X-11-30
- Mukai, R., & Terao, J., 2013. Role of dietary flavonoids in oxidative stress and prevention of muscle atrophy. *J. Phys. Fit. Sport. Med.* 2: 385–392. doi:10.7600/jpfsm.2.385
- Ojiako, O.A., Chikezie, P.C., & Ogbuji, A.C., 2016. Blood glucose level and lipid profile of alloxan-induced hyperglycemic rats treated with single and combinatorial herbal formulations. *J. Tradit. Complement. Med.* 6: 184–192. doi:10.1016/j.jtcme.2014.12.005
- Pajovi, S.B., 2008. Nutrigenomic. *Genetika* 40: 67–74.
- Pari, L., & Srinivasan, S., 2010. Antihyperglycemic effect of diosmin on hepatic key enzymes of carbohydrate metabolism in streptozotocin-nicotinamide-induced diabetic rats. *Biomed. Pharmacother.* 64: 477–481. doi:10.1016/j.biopha.2010.02.001
- Park, S.S., & Seo, Y.K., 2020. Excess accumulation of lipid impairs insulin sensitivity in skeletal muscle. *Int. J. Mol. Sci.* 21. doi:10.3390/ijms21061949
- Parklak, W., Munkong, N., Somnuk, S., Somparn, N., Naowaboot, J., Yoysungnoen, B., et al., 2017. Rice bran water extract attenuates pancreatic abnormalities in high-fat diet-induced obese rats. *Trop. J. Pharm. Res.* 16: 819–825. doi:10.4314/tjpr.v16i4.11
- Punitha, I.S.R., Rajendran, K., Shirwaikar, Arun, & Shirwaikar, Annie, 2005. Alcoholic Stem Extract of *Coscinium fenestratum* Regulates Carbohydrate Metabolism and Improves Antioxidant Status in Streptozotocin – Nicotinamide Induced Diabetic Rats. *Evidence-based Complement. Altern. Med.* 3: 375–381. doi:10.1093/ecam/neh099
- Rabeh, N.M., 2015. Effect of Red Beetroot (*Beta vulgaris* L.) And its Fresh Juice

- Against Carbon Tetrachloride Induced Hepatotoxicity in Rats. *World Appl. Sci. J.* 33: 931–938. doi:10.5829/idosi.wasj.2015.33.06.260
- Rajasekar, P., & Anuradha, C.V., 2007. Effect of L-carnitine on skeletal muscle lipids and oxidative stress in rats fed high-fructose diet. *Exp. Diabesity Res.* 2007. doi:10.1155/2007/72741
- Roberts, D.J., & Miyamoto, S., 2015. Hexokinase II integrates energy metabolism and cellular protection: Aktting on mitochondria and TORCing to autophagy. *Cell Death Differ.* 22: 248–257. doi:10.1038/cdd.2014.173
- Saklayen, M.G., 2018. The global epidemic of the metabolic syndrome. *Hypertens. Obes.* 20: 1–8.
- Salawu, S.O., Udi, E., Akindahunsi, A.A., Boligon, A.A., & Athayde, M.L., 2015. Antioxidant potential, phenolic profile and nutrient composition of flesh and peels from Nigerian white and purple skinned sweet potato (*Ipomea batatas* L.). *Asian J. Plant Sci. Res.* 5: 14–23.
- Sangeetha, R., 2019. Luteolin in the Management of Type 2 Diabetes Mellitus. *Curr. Res. Nutr. Food Sci.* 07: 393–398.
- Satoh, T., 2014. Molecular mechanisms for the regulation of insulin-stimulated glucose uptake by small guanosine triphosphatases in skeletal muscle and adipocytes. *Int. J. Mol. Sci.* 15: 18677–18692. doi:10.3390/ijms151018677
- Schwarz, J.M., Noworolski, S.M., Wen, M.J., Dyachenko, A., Prior, J.L., Weinberg, M.E., et al., 2015. Effect of a high-fructose weight-maintaining diet on lipogenesis and liver fat. *J. Clin. Endocrinol. Metab.* 100: 2434–2442. doi:10.1210/jc.2014-3678
- Seifert, E.L., Estey, C., Xuan, J.Y., & Harper, M.E., 2010. Electron transport chain-dependent and -independent mechanisms of mitochondrial H<sub>2</sub>O<sub>2</sub> emission during long-chain fatty acid oxidation. *J. Biol. Chem.* 285: 5748–5758. doi:10.1074/jbc.M109.026203
- Shridhar, G., Rajendra, N., Murigendra, H., Shridevi, P., Prasad, M., Mujeeb, M., et al., 2015. Modern Diet and its Impact on Human Health. *J. Nutr. Food Sci.* 05: 9–11. doi:10.4172/2155-9600.1000430
- Sokolowska, E., & Blachnio-Zabielska, A., 2019. The Role of Ceramides in Insulin Resistance. *Front. Endocrinol. (Lausanne)*. 10: 1–13. doi:10.3389/fendo.2019.00577
- Steele, C.C., Pirkle, J.R.A., & Kirkpatrick, K., 2017. Diet-induced impulsivity: Effects of a high-fat and a high-sugar diet on impulsive choice in rats. *PLoS One* 12: 1–16. doi:10.1371/journal.pone.0180510
- Świdarska, E., Strycharz, J., Wróblewski, A., Szemraj, J., Drzewoski, J., &

- Śliwińska, A., 2018. Blood Glucose Level. IntechOpen, pp. 1–18.
- Taniguchi, C.M., Emanuelli, B., & Kahn, C.R., 2006. Critical nodes in signalling pathways: Insights into insulin action. *Nat. Rev. Mol. Cell Biol.* 7: 85–96. doi:10.1038/nrm1837
- Turner, N., Cooney, G.J., Kraegen, E.W., & Bruce, C.R., 2014. Fatty acid metabolism, energy expenditure and insulin resistance in muscle. *J. Endocrinol.* 220: 61–79. doi:10.1530/JOE-13-0397
- Wa, R., Bradley, M., & Elliott, T., 2014. Akt/PKB activation and insulin signaling: a novel insulin signaling pathway in the treatment of type 2 diabetes. *Diabetes, Metab. Syndr. Obes. Targets Ther.* 7: 55–64. doi:10.2147/DMSO.S48260
- Wang, N., Li, T., & Han, P., 2016. The effect of tianmai xiaoke pian on insulin resistance through PI3-K/AKT signal pathway. *J. Diabetes Res.* 2016: 1–8. doi:10.1155/2016/9261259
- White JS, Hobbs LJ, Fernandez S. Fructose content and composition of commercial HFCS-sweetened carbonated beverages. *Int J Obes [Internet]*. 2015;39(1):176–82. Available from: <http://dx.doi.org/10.1038/ijo.2014.73>
- Yang, M., Jiang, Z. huan, Li, C. guang, Zhu, Y. juan, Li, Z., Tang, Y. zhao, et al., 2018. Apigenin prevents metabolic syndrome in high-fructose diet-fed mice by Keap1-Nrf2 pathway. *Biomed. Pharmacother.* 105: 1283–1290. doi:10.1016/j.biopha.2018.06.108
- Zabielski, P., Chacinska, M., Charkiewicz, K., & Baranowski, M., 2017. Effect of metformin on bioactive lipid metabolism in insulin-resistant muscle. *J. Endocrinol.* 233: 329–340. doi:10.1530/JOE-16-0381
- Zein H, Hashish AE, Ismaiel G. 2015. The antioxidant and Anticancer Activities of Swiss Chard and Red Beetroot Leaves. *Curr Sci Int*;04(04):491–8.
- Ždychová, J., & Komers, R., 2005. Emerging role of Akt kinase/protein kinase B signaling in pathophysiology of diabetes and its complications. *Physiol. Res.* 54: 1–16.
- Zhang, Zhenwen, Fang, P., Guo, L., He, B., Shi, M., Zhu, Y., et al., 2017. Akt2-dependent beneficial effect of galanin on insulin-induced glucose uptake in adipocytes of diabetic rats. *Cell. Physiol. Biochem.* 41: 1777–1787. doi:10.1159/000471870
- Zhang, Zhengyi, Liu, H., & Liu, J., 2017. Akt activation: A potential strategy to ameliorate insulin resistance. *Diabetes Res. Clin. Pract.* doi:10.1016/j.diabres.2017.10.004