

DAFTAR PUSTAKA

- Abdel-Aal, E. S. M., Young, J. C., dan Rabalski, I. (2006). Anthocyanin composition in black, blue, pink, purple, and red cereal grains. *Journal of Agricultural and Food Chemistry*, 54(13), 4696–4704. <https://doi.org/10.1021/jf0606609>
- Abd-Allah, A.B., Megahed, A.A.Y., Gomaa, R.S., dan Hussein, S.F.E. “Effect of moderate intensity exercise on serum visfatin level in male rat model of obesity”. *AAMJ*. 10, 20–42, 2013.
- Abel, E. D., O’Shea, K. M., dan Ramasamy, R. (2012). Insulin resistance: metabolic mechanisms and consequences in the heart. *Arteriosclerosis, Thrombosis, and Vascular Biology*, 32(9), 2068–2076. <https://doi.org/10.1161/ATVBAHA.111.241984>
- Akagiri, S., Naito, Y., Ichikawa, H., Mizushima, K., dan Takagi, T. (2008). A Model Mouse of Metabolic Syndrome ; Increase in Visceral Adipose Tissue Precedes the Development of Fatty Liver and Insulin Resistance in High-Fat Diet-Fed Male KK / Ta Mice. *Journal of Clinical Biochemistry and Nutrition*, 42(March), 150–157. <https://doi.org/10.3164/jcbrn.2008022>
- Akaki, J., Tachi, S., Nakamura, N., Arai, T., Yamasaki, H., Inoue, M., dan Makino, T. (2018). Promotive effect of Bofutsushosan (Fangfengtongshengsan) on lipid and cholesterol excretion in feces in mice treated with a high-fat diet. *Journal of Ethnopharmacology*, 220(March), 1–8. <https://doi.org/10.1016/j.jep.2018.03.028>
- Akkarachiyasit, S., Charoenlertkul, P., Yibchok-Anun, S., dan Adisakwattana, S. (2010). Inhibitory activities of cyanidin and its glycosides and synergistic effect with acarbose against intestinal α -glucosidase and pancreatic α -amylase. *International Journal of Molecular Sciences*, 11(9), 3387–3396. <https://doi.org/10.3390/ijms11093387>
- Akkarachiyasit, S., Yibchok-Anun, S., Wacharasindhu, S., dan Adisakwattana, S. (2011). In vitro inhibitory effects of cyanidin-3-rutinoside on pancreatic α -amylase and its combined effect with acarbose. *Molecules*, 16, 2075–2083. <https://doi.org/10.3390/molecules16032075>
- Alberti, K. G. M. M., Zimmet, P., dan Shaw, J. (2006). Metabolic syndrome--a new world-wide definition. A Consensus Statement from the International Diabetes Federation. *Diabetic Medicine : A Journal of the British Diabetic Association*, 23(5), 469–480. <https://doi.org/10.1111/j.1464-5491.2006.01858.x>

- Ambika, S., dan Saravanan, R. (2016). Effect of bergenin on hepatic glucose metabolism and insulin signaling in C57BL / 6J mice with high fat-diet induced type 2 diabetes. *J Appl Biomed.* 14(3), 221–227.
- Anderson, E. J., Lustig, M. E., Boyle, K. E., Woodlief, T. L., Kane, D. a, Lin, C., ... Neuffer, P. D. (2009). Mitochondrial H₂O₂ emission and cellular redox state link excess fat intake to insulin resistance in both rodents and humans. *The Journal of Clinical Investigation*, 119(3), 573–581.
<https://doi.org/10.1172/JCI37048DS1>
- Anonim. (2008). Diagnosis and Classification of Diabetes Mellitus. *Diabetes Care.* 30, S62-S67
- Anonim. (2010). Dietary Guidelines for Americans 2010. *U.S. Department of Agriculture and U.S. Department of Health and Human Services.*
- Anonim. (2013). Peraturan Menteri Kesehatan Republik Indonesia Nomor 75 Tahun 2013 tentang Angka Kecukupan Gizi yang Dianjurkan bagi Bangsa Indonesia. <https://doi.org/10.1017/CBO9781107415324.004>
- Anonim. (2014). Global status report on noncommunicable diseases 2014. World Health Organization Press, Switzerland
- Anonim. (2017). Panduan Tata Laksana Dislipidemia 2017. Penerbit Perhimpunan Dokter Spesialis Kardiovaskular Indonesia, Jakarta.
- Anonim. (2018a). Noncommunicable Disease (NCD) Country Profiles 2018: Indonesia. https://www.who.int/nmh/countries/idn_en.pdf. [13 Mei 2019].
- Anonim (2018b). Hasil Utama Riskesdas 2018. Kementerian Kesehatan Republik Indonesia, Jakarta
- Antunes, L.C., Elkfury, J.L., Jornada, M.N., Foletto, K.C., dan Bertoluci, M.C. (2016). Validation of HOMA-IR in a model of insulin-resistance induced by a high-fat diet in Wistar rats. *Arch Endocrinol Metab.* 60, 2, 138–142.
- Astuti, M., Naruki, S., Nurlaili, E.P., dan Fibri, D.L.N. 2014. Pengembangan formula pangan fungsional kaya protein dan antioksidan kedelai hitam yang disuplementasi dengan ekstrak antosianin beras hitam. Laporan Akhir Kegiatan Penelitian Unggulan PT. Yogyakarta: Universitas Gadjah Mada. Yogyakarta.
- Atalayer, D. dan Astbury, N.M. (2013). Anorexia of Aging and Gut Hormones. *Aging and Disease*, 04(05), 264–275.
<http://doi.org/10.14336/ad.2013.0400264>

- Aulinger, B.A., Vahl, T.P., Wilson-Pérez, H.E., Prigeon, R.L., dan D'Alessio, D.A. (2015). β -cell sensitivity to GLP-1 in healthy humans is variable and proportional to insulin sensitivity. *J Clin Endocrinol Metab.* 100, 2489–2496, 2015.
- Avignon, A., Hokayem, M., Bisbal, C., dan Lambert, K. (2012). Dietary antioxidants: Do they have a role to play in the ongoing fight against abnormal glucose metabolism? *Nutrition (Burbank, Los Angeles County, Calif.)*, 28(7–8), 715–721. <https://doi.org/10.1016/j.nut.2012.01.001>
- Azmir, J., Zaidul, I. S. M., Rahman, M. M., Sharif, K. M., Mohamed, A., Sahena, F., ... & Omar, A. K. M. (2013). Techniques for extraction of bioactive compounds from plant materials: A review. *Journal of Food Engineering*, 117(4), 426–436.
- Bailey, S. A., Zidell, R. H., dan Perry, R. W. (2004). Relationships Between Organ Weight and Body/Brain Weight in the Rat: What Is the Best Analytical Endpoint? *Toxicologic Pathology*, 32(4), 448–466. <https://doi.org/10.1080/01926230490465874>
- Balasubashini, M. S., Rukkumani, R., Viswanathan, P., dan Menon, V. P. (2004). Ferulic Acid Alleviates Lipid Peroxidation in Diabetic Rats. *Phytotherapy Research*, 18(4), 310–314. <https://doi.org/10.1002/ptr.1440>
- Bansal, P., Paul, P., Mudgal, J., Nayak, P. G., Thomas, S., Priyadarsini, K. I., dan Unnikrishnan, M. K. (2012). Experimental and Toxicologic Pathology Antidiabetic, antihyperlipidemic and antioxidant effects of the flavonoid rich fraction of *Pilea microphylla* (L.) in high fat diet / streptozotocin-induced diabetes in mice. *Experimental and Toxicologic Pathology*, 64(6), 651–658. <https://doi.org/10.1016/j.etp.2010.12.009>
- Bardini, G., Rotella, C. M., dan Giannini, S. (2012). Dyslipidemia and diabetes: reciprocal impact of impaired lipid metabolism and Beta-cell dysfunction on micro-and macrovascular complications. *The review of diabetic studies: RDS*, 9(2-3), 82. <https://doi.org/10.1900/RDS.2012.9.82>
- Batista, Â. G., Lenquiste, S. A., Cazarin, C. B. B., da Silva, J. K., Luiz-Ferreira, A., Bogusz, S., ... Maróstica, M. R. (2014). Intake of jaboticaba peel attenuates oxidative stress in tissues and reduces circulating saturated lipids of rats with high-fat diet-induced obesity. *Journal of Functional Foods*, 6, 450–461. <https://doi.org/10.1016/j.jff.2013.11.011>
- Bays, H. E., Toth, P. P., Kris-Etherton, P. M., Abate, N., Aronne, L. J., Brown, W. V., ... Samuel, V. T. (2013). Obesity, adiposity, and dyslipidemia: a consensus statement from the National Lipid Association. *Journal of Clinical Lipidology*, 7(4), 304–383. <https://doi.org/10.1016/j.jacl.2013.04.001>

- Beninger, C. W., Hosfield, G. L., & Nair, M. G. (1998). Flavonol glycosides from the seed coat of a new Manteca-type dry bean (*Phaseolus vulgaris* L.). *Journal of Agricultural and Food Chemistry*, 46(8), 2906-2910.
- Beninger, C. W., & Hosfield, G. L. (2003). Antioxidant activity of extracts, condensed tannin fractions, and pure flavonoids from *Phaseolus vulgaris* L. seed coat color genotypes. *Journal of Agricultural and Food Chemistry*, 51(27), 7879-7883.
- Biddinger, S. B., dan Kahn, C. R. (2005). FROM MICE TO MEN: Insights into the Insulin Resistance Syndromes. *Annual Review of Physiology*, 68(1), 123–158. <https://doi.org/10.1146/annurev.physiol.68.040104.124723>
- Boden, G. (2011). Obesity, Insulin Resistance and Free Fatty Acids. *Curr Opin Endocrinol Diabetes Obes*, 18(2), 139–143. <https://doi.org/10.1097/MED.0b013e3283444b09.45Obesity>
- Boden, G., She, P., Mozzoli, M., Cheung, P., Gumireddy, K., Reddy, P., ... Ruderman, N. (2005). Activate the Proinflammatory Nuclear Factor- κ B Pathway in Rat Liver. *DIABETES*, 54, 3458–3465.
- Borai, A., Livingstone, C., Kaddam, I., dan Ferns, G. (2011). Selection of the appropriate method for the assessment of insulin resistance. *BMC Med Res Methodol*. 11, 158, 2011.
- Bornsek, S. M., Ziberna, L., Polak, T., Vanzo, A., Ulrih, N. P., Abram, V., ... Passamonti, S. (2012). Bilberry and blueberry anthocyanins act as powerful intracellular antioxidants in mammalian cells. *Food Chemistry*, 134(4), 1878–1884. <https://doi.org/10.1016/j.foodchem.2012.03.092>
- Botchlett, R., Woo, S. L., Liu, M., Pei, Y., Guo, X., Li, H., dan Wu, C. (2017). Nutritional approaches for managing obesity-associated metabolic diseases. *The Journal of endocrinology*, 233(3), R145.
- Bouayed, J., dan Bohn, T. (2010). Exogenous Antioxidants—Double-Edged Swords in Cellular Redox State: Health Beneficial Effects at Physiologic Doses versus Deleterious Effects at High Doses. *Oxidative Medicine and Cellular Longevity*, 3(4), 228–237. <https://doi.org/10.4161/oxim.3.4.12858>
- Boucher, J., Kleinridders, A., dan Kahn, C. R. (2014). Insulin receptor signaling in normal and insulin-resistant states. *Cold Spring Harbor perspectives in biology*, 6(1), a009191.
- Bremer, A. A., Mietus-Snyder, M., dan Lustig, R. H. (2012). Toward a Unifying Hypothesis of Metabolic Syndrome. *PEDIATRICS*, 129(3), 557–570.

<https://doi.org/10.1542/peds.2011-2912>

- Bryant, N. J., Govers, R., dan James, D. E. (2002). Regulated transport of the glucose transporter GLUT4. *Nature Reviews. Molecular Cell Biology*, 3(4), 267–277. <https://doi.org/10.1038/nrm782>
- Buettner, R., Schölmerich, J., dan Bollheimer, L. C. (2007). High-fat diets: modeling the metabolic disorders of human obesity in rodents. *Obesity (Silver Spring, Md.)*, 15(4), 798–808. <https://doi.org/10.1038/oby.2007.608>
- Cahová, M., Ānková, H. V. A. V. Ř., dan Kazdová, L. (2007). Glucose-Fatty Acid Interaction in Skeletal Muscle and Adipose Tissue in Insulin Resistance. *Physiol. Res.*, 56, 1–15.
- Cai, D., Yuan, M., Frantz, D. F., Melendez, P. A., Hansen, L., Lee, J., dan Shoelson, S. E. (2005). Local and systemic insulin resistance resulting from hepatic activation of IKK- β and NF- κ B. *Nature Medicine*, 11(2), 183–190. <https://doi.org/10.1038/nm1166>
- Caprio, S., Perry, R., dan Kursawe, R. (2017). Adolescent Obesity and Insulin Resistance: Roles of Ectopic Fat Accumulation and Adipose Inflammation. *Gastroenterology*, 152(7), 1638–1646. <https://doi.org/10.1053/j.gastro.2016.12.051>
- Casedas, G., Les, F., Gonzales-Burgos, E., Gomez-Serranillos, M.P., Smith, C., dan Lopez, V. (2019). Cyanidin-3-O-glucosidase inhibits different enzymes involved in central nervous system pathologies and type-2 diabetes. *South African Journal of Botany*. 120, 241–246.
- Cevallos-Casals, B. A., dan Cisneros-Zevallos, L. (2003). Stoichiometric and kinetic studies of phenolic antioxidants from Andean purple corn and red-fleshed sweetpotato. *Journal of Agricultural ...*, 51, 3313–3319. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jf034109c>
- Chang, J., Hsu, M., Huang, H., Chung, D., Chang, Y., dan Wang, C. (2013). Mulberry Anthocyanins Inhibit Oleic Acid Induced Lipid Accumulation by Reduction of Lipogenesis and Promotion of Hepatic Lipid Clearance. *Journal of Agricultural and Food Chemistry*, 61, 6069–6076.
- Chang, N. W., Wu, C. T., Wang, S. Y., Pei, R. J., dan Lin, C. F. (2010). *Alpinia pricei* Hayata rhizome extracts have suppressive and preventive potencies against hypercholesterolemia. *Food and Chemical Toxicology*, 48(8–9), 2350–2356. <https://doi.org/10.1016/j.fct.2010.05.070>
- Charradi, K., Elkahoui, S., Limam, F., dan Aouani, E. (2013). High-fat diet induced an oxidative stress in white adipose tissue and disturbed plasma transition

metals in rat: prevention by grape seed and skin extract. *The Journal of Physiological Sciences : JPS*, 63(6), 445–455. <https://doi.org/10.1007/s12576-013-0283-6>

Chavez, J. A., dan Summers, S. a. (2003). Characterizing the effects of saturated fatty acids on insulin signaling and ceramide and diacylglycerol accumulation in 3T3-L1 adipocytes and C2C12 myotubes. *Archives of Biochemistry and Biophysics*, 419(2), 101–109. <https://doi.org/10.1016/j.abb.2003.08.020>

Chen, J.-H., Wang, C.-J., Wang, C.-P., Sheu, J.-Y., Lin, C.-L., dan Lin, H.-H. (2013). Hibiscus sabdariffa leaf polyphenolic extract inhibits LDL oxidation and foam cell formation involving up-regulation of LXR α /ABCA1 pathway. *Food Chemistry*, 141(1), 397–406. <https://doi.org/10.1016/j.foodchem.2013.03.026>

Choi, K., Choi, S.I., Park, M.H., dan Han, J.S. (2017). Cyanidin-3-O-glucoside ameliorates postprandial hyperglycemia in diabetic mice. *Journal of Life Science*. 27(1), 32–37.

Choi, W. H., Um, M. Y., Ahn, J., Jung, C. H., dan Ha, T. Y. (2014). Long-term intake of rice improves insulin sensitivity in mice fed a high-fat diet. *Nutrition*, 30(7–8), 920–927. <https://doi.org/10.1016/j.nut.2013.12.021>

Choi, W.H., Ahn, J., Jung, C.H., Seo, J.S., dan Ha, T.Y. (2017). Korean diet prevents obesity and ameliorates insulin resistance in mice fed a high-fat diet. *J Ethn Foods*. 4(1), 36–43.

Church, C., Horowitz, M., dan Rodeheffer, M. (2012). WAT is a functional adipocyte? *Adipocyte*, 1(1), 38–45. doi:10.4161/adip.19132

Cremonini, E., Bettaieb, A., Haj, F.G., Fraga, C.G., dan Oteiza, P.I. (2016). “(-)-Epicatechin improves insulin sensitivity in high fat diet-fed mice”. *Arch Biochem Biophys*. 599, 13–21.

Crichton, G. E., & Alkerwi, A. A. (2015). Physical activity, sedentary behavior time and lipid levels in the Observation of Cardiovascular Risk Factors in Luxembourg study. *Lipids in health and disease*, 14(1), 87.

Cruciani-Guglielmacci, C., Vincent-Lamon, M., Rouch, C., Orosco, M., Ktorza, a, dan Magnan, C. (2005). Early changes in insulin secretion and action induced by high-fat diet are related to a decreased sympathetic tone. *American Journal of Physiology. Endocrinology and Metabolism*, 288(1), E148–54. <https://doi.org/10.1152/ajpendo.00225.2004>

Cuevas Montilla, E., Hillebrand, S., Antezana, A., dan Winterhalter, P. (2011). Soluble and bound phenolic compounds in different Bolivian purple corn (*Zea*

- mays L.) cultivars. *Journal of Agricultural and Food Chemistry*, 59(13), 7068–7074. <https://doi.org/10.1021/jf201061x>
- de Pascual-Teresa, S., dan Sanchez-Ballesta, M. T. (2007). Anthocyanins: from plant to health. *Phytochemistry Reviews*, 7(2), 281–299. <https://doi.org/10.1007/s11101-007-9074-0>
- de Pascual-Teresa, S., Santos-Buelga, C., dan Rivas-Gonzalo, J. C. (2002). LC-MS analysis of anthocyanins from purple corn cob. *Journal of the Science of Food and Agriculture*, 82(9), 1003–1006. <https://doi.org/10.1002/jsfa.1143>
- Delarue, J., dan Magnan, C. (2007). Free fatty acids and insulin resistance. *Current Opinion in Clinical Nutrition and Metabolic Care*, 10(2), 142–148. <https://doi.org/10.1097/MCO.0b013e328042ba90>
- De Oliveira Sá, G., dos Santos Neves, V., de Oliveira Fraga, S.R., Souza-Mello, V., dan Barbosa-da-Silva, S. (2017). High-intensity interval training has beneficial effects on cardiac remodeling through local renin-angiotensin system modulation in mice fed high-fat or high-fructose diets. *Life Sci.* 189, 8–17.
- Devasagayam, T. P. A., Tilak, J. C., Boloor, K. K., dan Sane, K. S. (2004). Free Radicals and Antioxidants in Human Health : Current Status and Future Prospects Research. *Japi*, 52(October), 794–804.
- Díaz, A. M., Caldas, G. V., & Blair, M. W. (2010). Concentrations of condensed tannins and anthocyanins in common bean seed coats. *Food Research International*, 43(2), 595–601.
- Dimauro, I., Pearson, T., Caporossi, D., dan Jackson, M. J. (2012). A simple protocol for the subcellular fractionation of skeletal muscle cells and tissue. *BMC research notes*, 5(1), 513.
- Dowman, J.K., Tomlinson, J.W. dan Newsome, P.N. (2010). Pathogenesis of non-alcoholic fatty liver disease. *Q J Med*, 103:71–83.
- Drewnowski, A., dan Almiron-Roig, E. (2010). Human perceptions and preferences for fat-rich foods. In J. P. Montmayeur dan J. le Coutre (Eds.), *Fat Detection: Taste, Texture, and Post Ingestive Effects* (p. 265). Boca Raton (FL).
- Eckel, R. H., Grundy, S. M., dan Zimmet, P. Z. (2005). The metabolic syndrome. *The Lancet*, 365(9468), 1415–1428. [https://doi.org/10.1016/S0140-6736\(05\)66378-7](https://doi.org/10.1016/S0140-6736(05)66378-7)
- Egert, S., dan Rimbach, G. (2011). Which Sources of Flavonoids : Complex Diets or Dietary Supplements ? 1. *Advances in Nutrition an International Revies Journal*, 2(10), 8–14. <https://doi.org/10.3945/an.110.000026.8>

- El-sayed, M., Ghareeb, D., Talat, H.A., dan Sarhan, E.M. (2009). High fat diet induced insulin resistance and elevated retinol binding protein 4 in female rats , treatment and protection with Berberis vulgaris extract and vitamin A. *Pak J Pharm Sci.* 26, 1189–1196.
- Fang, J. (2014). Bioavailability of anthocyanins. *Drug Metab Rev*, 2532(4), 508–520. <https://doi.org/10.3109/03602532.2014.978080>
- Feillet-coudray, C., Sutra, T., Fouret, G., Ramos, J., Wrutniak-cabello, C., dan Cabello, G. (2009). Free Radical Biology dan Medicine Oxidative stress in rats fed a high-fat high-sucrose diet and preventive effect of polyphenols : Involvement of mitochondrial and NAD (P) H oxidase systems. *Free Radical Biology and Medicine*, 46(5), 624–632. <https://doi.org/10.1016/j.freeradbiomed.2008.11.020>
- Ferramosca, A., dan Zara, V. (2014). Modulation of hepatic steatosis by dietary fatty acids. *World J Gastroenterol*, 20(7): 1746-1755
- Feshani, A. M., Kouhsari, S. M., dan Mohammadi, S. (2011). Vaccinium arctostaphylos, a common herbal medicine in Iran: molecular and biochemical study of its antidiabetic effects on alloxan-diabetic Wistar rats. *Journal of Ethnopharmacology*, 133(1), 67–74. <https://doi.org/10.1016/j.jep.2010.09.002>
- Flanagan, A. M., Brown, J. L., Santiago, C. a., Aad, P. Y., Spicer, L. J., dan Spicer, M. T. (2008). High-fat diets promote insulin resistance through cytokine gene expression in growing female rats. *The Journal of Nutritional Biochemistry*, 19(8), 505–513. <https://doi.org/10.1016/j.jnutbio.2007.06.005>
- Frayn, K. N. (2002). Adipose tissue as a buffer for daily lipid flux. *Diabetologia*, 45(9), 1201–1210. <https://doi.org/10.1007/s00125-002-0873-y>
- Fukamachi, K., Imada, T., Ohshima, Y., Xu, J., dan Tsuda, H. (2008). Purple corn color suppresses Ras protein level and inhibits 7,12-dimethylbenz[a]anthracene-induced mammary carcinogenesis in the rat. *Cancer Science*, 99(9), 1841–1846. <https://doi.org/10.1111/j.1349-7006.2008.00895.x>
- Galipeau, D., Verma, S., dan McNeill, J. H. (2002). Female rats are protected against fructose-induced changes in metabolism and blood pressure. *American Journal of Physiology-Heart and Circulatory Physiology*, 283(6), H2478–H2484. <https://doi.org/10.1152/ajpheart.00243.2002>
- Galvano, F., La Fauci, L., Lazzarino, G., Fogliano, V., Ritieni, A., Ciappellano, S., ... Galvano, G. (2004). Cyanidins: metabolism and biological properties. *The*

Journal of Nutritional Biochemistry, 15(1), 2–11.
<https://doi.org/10.1016/j.jnutbio.2003.07.004>

Gerozissis, K. (2003). Brain Insulin: Regulation, Mechanism of Action and Functions. *Cellular and Molecular Neurobiology*, 23 (1), 1-25.

Goossens, G. H. (2008). The role of adipose tissue dysfunction in the pathogenesis of obesity-related insulin resistance. *Physiology dan Behavior*, 94, 206–218.
<https://doi.org/10.1016/j.physbeh.2007.10.010>

Griffin, M.E., Marcucci, M.J., Cline, G.W., Bell, K., Barucci, N., Lee, D., Goodyear, L.J., Kraegen, E.W., White, M.F., dan Shulman, G.I. (1999). Free fatty acid-induced insulin resistance is associated with activation of protein kinase C theta and alterations in the insulin signaling cascade. *Diabetes*, 48 : 1270-1274.

Grill, V., & Qvigstad, E. (2000). Fatty acids and insulin secretion. *British Journal of Nutrition*, 83(S1). <http://doi.org/10.1017/s0007114500000994>

Gülçin, I. (2012). Antioxidant activity of food constituents: An overview. *Archives of Toxicology*, 86(3), 345–391. <https://doi.org/10.1007/s00204-011-0774-2>

Guo, C., Huang, T., Chen, A., Chen, X., Wang, L., Shen, F., et al. (2016). Glucagon-like peptide 1 improves insulin resistance in vitro through anti-inflammation of macrophages. *Brazilian J Med Biol Res.* 49, 1–9.

Guo, H., Liu, G., Zhong, R., Wang, Y., Wang, D., dan Xia, M. (2012). Cyanidin-3-O - b -glucoside regulates fatty acid metabolism via an AMP-activated protein kinase- dependent signaling pathway in human HepG2 cells. *Lipids in Health and Disease*, 11(10), 1–13.

Gupta, N. A., Mells, J., Dunham, R. M., Grakoui, A., Handy, J., Saxena, N. K., dan Anania, F. A. (2010). Glucagon-like peptide-1 receptor is present on human hepatocytes and has a direct role in decreasing hepatic steatosis in vitro by modulating elements of the insulin signaling pathway. *Hepatology*, 51(5), 1584-1592.

Gutierrez-Rodelo, C., Roura-Gubierna, A., dan Olivares-Reyes, J.A. (2017). Molecular mechanism of insulin resistance: an-update. *Gaceta Medica De Mexico*. 153, 197-209.

Han, J., Yang, N., Zhang, F., Zhang, C., Liang, F., Xie, W., et al. (2015). Rhizoma Anemarrhenae extract ameliorates hyperglycemia and insulin resistance via AMP-activated protein kinase in diabetic rodents. *J Ethnopharmacol.* 172, 368–376.

- Harakotr, B., Suriharn, B., Tangwongchai, R., Scott, M. P., dan Lertrat, K. (2014a). Anthocyanins and antioxidant activity in coloured waxy corn at different maturation stages. *Journal of Functional Foods*, 9, 109–118. <https://doi.org/10.1016/j.jff.2014.04.012>
- Harakotr, B., Suriharn, B., Scott, M. P., dan Lertrat, K. (2014b). Genotypic variability in anthocyanins, total phenolics, and antioxidant activity among diverse waxy corn germplasm. *Euphytica*. <https://doi.org/10.1007/s10681-014-1240-z>
- Hariri, N., dan Thibault, L. (2010). High-fat diet-induced obesity in animal models Nutrition Research Reviews. *Nutrition Research Reviews*, 23, 270–299. <https://doi.org/10.1017/S0954422410000168>
- Hasenour, C. M., Berglund, E. D., dan Wasserman, D. H. (2013). Emerging role of AMP-activated protein kinase in endocrine control of metabolism in the liver. *Molecular and Cellular Endocrinology*, 366(2), 152–162. <https://doi.org/10.1016/j.mce.2012.06.018>
- Hastuti, P., Narwidina, P., Astuti, M. dan Meliala, A. (2011). Development of Anthocyanin-Based Drink using Aqueous Extract of Anthocyanins from Black Rice (*Oryza sativa* L indica). Proceeding of International Conference on Nutraceuticals and Functional Foods, Bali, October 12-15, 2010. Indonesian Centre for Rice Research.
- Hsieh, J., Longuet, C., Baker, C. L., Qin, B., Federico, L. M., Drucker, D. J., dan Adeli, K. (2010). The glucagon-like peptide 1 receptor is essential for postprandial lipoprotein synthesis and secretion in hamsters and mice. *Diabetologia*, 53(3), 552-561.
- Huizen, J. (2018, May 17). Dyslipidemia: Everything you need to know. Medical News Today. Retrieved from <https://www.medicalnewstoday.com/articles/321844.php>.
- Hu, E. A., Pan, A., Malik, V., & Sun, Q. (2012). White rice consumption and risk of type 2 diabetes: meta-analysis and systematic review. *BMJ*, 344(mar15 3), e1454–e1454. doi:10.1136/bmj.e1454
- Hu, Q.P., dan Xu, J.G. (2011). Profiles of carotenoids, anthocyanins, phenolics, and antioxidant activity of selected color waxy corn grains during maturation. *Journal of Agricultural and Food Chemistry*, 59(5), 2026–2033. <https://doi.org/10.1021/jf104149q>
- Hubscher, S.G. (2006). Histological assessment of non-alcoholic fatty liver disease. *Histopathology*, 49, 450–465. DOI: 10.1111/j.1365-2559.2006.02416.x

Hwang, Y. P., Choi, J. H., Han, E. H., Kim, H. G., Wee, J.-H., Jung, K. O., ... Jeong, H. G. (2011). Purple sweet potato anthocyanins attenuate hepatic lipid accumulation through activating adenosine monophosphate-activated protein kinase in human HepG2 cells and obese mice. *Nutrition Research (New York, N.Y.)*, 31(12), 896–906. <https://doi.org/10.1016/j.nutres.2011.09.026>

Ibrahim, M. A., dan Islam, M. S. (2014). Anti-diabetic effects of the acetone fraction of *Senna singueana* stem bark in a type 2 diabetes rat model. *Journal of Ethnopharmacology*, 153(2), 392–399. <https://doi.org/10.1016/j.jep.2014.02.042>

International Diabetes Federation. (2013). IDF Diabetes Atlas, 6th edn.

Jakulj, F., Zernicke, K., Bacon, S. L., Wielingen, L. E. Van, Key, B. L., West, S. G., dan Campbell, T. S. (2007). A High-Fat Meal Increases Cardiovascular Reactivity to Psychological Stress in Healthy Young Adults. *The Journal of Nutrition*, 137, 935–939.

Jayaprakasam, B., Vareed, S. K., Olson, L. K., dan Nair, M. G. (2005). Insulin Secretion by Bioactive Anthocyanins and Anthocyanidins Present in Fruits. *Journal of Agricultural and Food Chemistry*, 53, 28–31. <https://doi.org/10.1021/JF049018+>

Jia, Y., Kim, J., Jun, H., Kim, S., Lee, J., Hien, M., ... Lee, S. (2013). Biochimica et Biophysica Acta Cyanidin is an agonistic ligand for peroxisome proliferator-activated receptor- α reducing hepatic lipid. *BBA - Molecular and Cell Biology of Lipids*, 1831(4), 698–708. <https://doi.org/10.1016/j.bbalip.2012.11.012>

Jing, P. (2006). *Purple corn anthocyanins : chemical structure, chemoprotective activity and structure / function relationships*. Doctoral dissertation, The Ohio State University, Columbus, OH.

Jing, P., & Giusti, M. M. (2007). Effects of extraction conditions on improving the yield and quality of an anthocyanin-rich purple corn (*Zea mays* L.) color extract. *Journal of food science*, 72(7), C363-C368.

Jing, P., Noriega, V., Schwartz, S. J., dan Giusti, M. M. (2007). Effects of growing conditions on purple corn cob (*Zea mays* L.) anthocyanins. *Journal of Agricultural and Food Chemistry*, 55, 8625–8629. <http://doi.org/10.1021/jf070755q>

Johnson, B.H. dan Hecht, M.H. (1994). Recombinant proteins can be isolated from *E. coli* cells by repeated cycles of freezing and thawing. *Biotechnology*, 12: 1357-1360

- Jung, H., Pan, C., dan Yoon, W. B. (2016). Mathematical models of pretreatment processes to utilize purple-fleshed potato (*Solanum tuberosum* L.) peels for anthocyanin extraction. *Food Science and Biotechnology*, 25(5), 1361–1367. <http://doi.org/10.1007/s10068-016-0213-5>
- Kahn, B. B., dan Flier, J. S. (2000). On diabetes : insulin resistance Obesity and insulin resistance. *The Journal of Clinical Investigation*, 106(4), 473–481.
- Kahn, S.E., Hull, R.L., dan Utzschneider, K.M. (2006). Mechanisms linking obesity to insulin resistance and type 2 diabetes. *Nature.*, 444, 840–846.
- Kanda, Y., Shimoda, M., Hamamoto, S., Tawaramoto, K., Kawasaki, F., Hashiramoto, M., ... Kaku, K. (2010). Molecular mechanism by which pioglitazone preserves pancreatic β -cells in obese diabetic mice: evidence for acute and chronic actions as a PPAR γ agonist. *American Journal of Physiology-Endocrinology and Metabolism*, 298(2), E278–E286. <http://doi.org/10.1152/ajpendo.00388.2009>
- Karacor, K., Cam, M., Orhan, N., Cosgun, E., dan Demirin, H. (2014). High Fatty Diet Effects on Rat Liver. *Eur J Gen Med* 2014; 11(2): 99-108. DOI : 10.15197/sabad.1.11. 47
- Kaur, J. (2014). A comprehensive review on metabolic syndrome. *Cardiology Research and Practice*, 2014, 943162. <https://doi.org/10.1155/2014/943162>
- Khan, Y., Khan, M. M., Chandani, A. L., & Farooqui, M. R. (2017). Dyslipidemia and obesity management; lifestyle modification: an Indian perspective. *International Journal of Advances in Medicine*, 4(5), 1196.
- Khoo, H. E., Azlan, A., Tang, S. T., & Lim, S. M. (2017). Anthocyanidins and anthocyanins: colored pigments as food, pharmaceutical ingredients, and the potential health benefits. *Food & nutrition research*, 61(1), 1361779. <http://doi.org/10.1080/16546628.2017.1361779>
- Kong, J. M., Chia, L. S., Goh, N. K., Chia, T. F., dan Brouillard, R. (2003). Analysis and biological activities of anthocyanins. *Phytochemistry*, 64(5), 923–933. [https://doi.org/10.1016/S0031-9422\(03\)00438-2](https://doi.org/10.1016/S0031-9422(03)00438-2)
- Kumar, V., Abbas, A.K., dan Aster, J.C. (2015). *Buku Ajar Patologi Robbins*. Edisi ke-9. (diterjemahkan oleh: Nasar, I.M. dan Cornain, S.), Elsevier Pte. Ltd.. Singapura
- Kusumawardhani, A. (2014). Pengaruh Campuran Ekstrak Antosianin Beras Hitam (*Oryza sativa* L.) dan Ekstrak Protein Kedelai Hitam (*Glycine max* (L)Merr.) terhadap Profil Lipid dan Status Antioksidan Plasma Tikus Dislipidemia. Tesis. Universitas Gadjah Mada. Yogyakarta.

- Kwee, E. M. dan Niemeyer, E. D. (2011). Variations in phenolic composition and antioxidant properties among 15 basil (*Ocimum basilicum* L.) cultivars. *Food Chemistry*, 128(4), 1044–1050. <https://doi.org/10.1016/j.foodchem.2011.04.011>
- Lam, T.K., van de Werve, G., Giacca, A. (2003). Free fatty acids increase basal hepatic glucose production and induce hepatic insulin resistance at different sites. *Am J Physiol Endocrinol Metab*, 284 : E281-90.
- Lao, F. (2016). *Purple Corn (Zea mays L.) Cob Anthocyanins: Extraction, Quantification, Spray Drying and Complexation with Proteins*. Dissertation. The Ohio State University, Ohio
- Le, K.A., Ith, M., Kreis, R., Faeh, D., Bortolotti, M., Tran, C., Boesch, C., dan Tappy, L. (2009). Fructose overconsumption causes dyslipidemia and ectopic lipid deposition in healthy subjects with and without a family history of type 2 diabetes. *Am J Clin Nutr*, 89, 1760-1765.
- Lee, J. (2005). Determination of total monomeric anthocyanin pigment content of fruit juices, beverages, natural colorants, and wines by the pH differential method: collaborative study. *Journal of AOAC International*. 88(5): 1269-1278.
- Lee, Y., Shin, S., Shigihara, T., Hahm, E., Liu, M., Han, J., et al. (2007). Glucagon-Like Peptide-1 gene therapy in obese diabetic mice results in Long-Term Cure of Diabetes by Improving Insulin Sensitivity and Reducing Hepatic Gluconeogenesis. *Diabetes*. 56, 1671–1679.
- Lee, C.Y. (2012). Quercetin / adenosine combination may induce insulin resistance in high fat diet-fed mice. *Obes Res Clin Pract*. 6(1), e85–90.
- Lee, Y.-M., Yoon, Y., Yoon, H., Park, H.-M., Song, S., & Yeum, K.-J. (2017). Dietary Anthocyanins against Obesity and Inflammation. *Nutrients*, 9(10), 1089. <http://doi.org/0.3390/nu9101089>
- Leopoldini, M., Marino, T., Russo, N., dan Toscano, M. (2004). Antioxidant properties of phenolic compounds: H-atom versus electron transfer mechanism. *Journal of Physical Chemistry A*, 108(22), 4916–4922. <https://doi.org/10.1021/jp037247d>
- Leopoldini, M., Russo, N., dan Toscano, M. (2011). The molecular basis of working mechanism of natural polyphenolic antioxidants. *Food Chemistry*, 125(2), 288–306. <https://doi.org/10.1016/j.foodchem.2010.08.012>
- Lewis, G., Carpentier, A., Adeli, K., dan Giacca, A. (2002). Disordered fat storage

and mobilization in the pathogenesis of insulin resistance and type 2 diabetes. *Endocrine Reviews*, 23(March), 201–229. Retrieved from <http://press.endocrine.org/doi/abs/10.1210/edrv.23.2.0461>

Li, C.Y., Kim, H.W., Li, H., Lee, D.C., dan Rhee, H.I. (2014). Antioxidative effect of purple corn extracts during storage of mayonnaise. *Food Chemistry*, 152, 592–596. <https://doi.org/10.1016/j.foodchem.2013.11.152>

Li, J., Lim, S. S., Lee, J.Y., Kim, J.K., Kang, S.W., Kim, J.L., dan Kang, Y.H. (2012). Purple corn anthocyanins dampened high-glucose-induced mesangial fibrosis and inflammation: possible renoprotective role in diabetic nephropathy. *The Journal of Nutritional Biochemistry*, 23(4), 320–331. <https://doi.org/10.1016/j.jnutbio.2010.12.008>

Li, T., Li, S., Du, L., Wang, N., Guo, M., Zhang, J., ... Zhang, H. (2010). Effects of haw pectic oligosaccharide on lipid metabolism and oxidative stress in experimental hyperlipidemia mice induced by high-fat diet. *Food Chemistry*, 121(4), 1010–1013. <https://doi.org/10.1016/j.foodchem.2010.01.039>

Lichtenstein, A. H., Kennedy, E., Barrier, P., Danford, D., Ernst, N. D., Grundy, S. M., ... Booth, S. L. (1998). Dietary fat consumption and health. *Nutr Rev*, 56(5 Pt 2), S3-19; discussion S19-28. <https://doi.org/10.1111/j.1753-4887.1998.tb01728.x>

Listenberger, L. L., Han, X., Lewis, S. E., Cases, S., Farese, R. V, Ory, D. S., dan Schaffer, J. E. (2003). Triglyceride accumulation protects against fatty acid-induced lipotoxicity. In *Proc Natl Acad Sci U S A* (pp. 3077–3082). <https://doi.org/10.1073/pnas.0630588100>

Liu, Y., Song, A., Zang, S., Wang, C., Song, G., Li, X., ... Duan, L. (2015). Jinlida reduces insulin resistance and ameliorates liver oxidative stress in high-fat fed rats. *Journal of Ethnopharmacology*, 162(2015), 244–252. <https://doi.org/10.1016/j.jep.2014.12.040>

Long, N., Suzuki, S., Sato, S., Naiki-Ito, A., Sakatani, K., Shirai, T., dan Takahashi, S. (2013). Purple corn color inhibition of prostate carcinogenesis by targeting cell growth pathways. *Cancer Science*, 104(3), 298–303. <https://doi.org/10.1111/cas.12078>

Lopez-Martinez, L. X., Oliart-Ros, R. M., Valerio-Alfaro, G., Lee, C.-H., Parkin, K. L., dan Garcia, H. S. (2009). Antioxidant activity, phenolic compounds and anthocyanins content of eighteen strains of Mexican maize. *LWT - Food Science and Technology*, 42(6), 1187–1192. <https://doi.org/10.1016/j.lwt.2008.10.010>

Lopez-Martinez, L. X., Parkin, K. L., dan Garcia, H. S. (2011). Phase II-inducing,

polyphenols content and antioxidant capacity of corn (*Zea mays* L.) from phenotypes of white, blue, red and purple colors processed into masa and tortillas. *Plant Foods for Human Nutrition (Dordrecht, Netherlands)*, 66(1), 41–47. <https://doi.org/10.1007/s11130-011-0210-z>

Marten, B., Pfeuffer, M., dan Schrezenmeir, J. (2006). Medium-chain triglycerides. *International Dairy Journal*, 16(11), 1374–1382. <https://doi.org/10.1016/j.idairyj.2006.06.015>

Matsumoto, H., Inaba, H., Kishi, M., Tominaga, S., Hirayama, M., dan Tsuda, T. (2002). Orally Administered Delphinidin 3-Rutinoside and Cyanidin 3-Rutinoside Are Directly Absorbed in Rats and Humans and Appear in the Blood as the Intact Forms. *Journal of Agricultural and Food Chemistry*, 49(3), 1546–1551. <https://doi.org/10.1021/jf001246q>

Matthews, D.R., Hosker, J.P., Rudenski, A.S., Naylor, B.A., Treacher, D.F., dan Turner, R.C. (1985). Homeostasis model assessment: insulin resistance and beta-cell function from fasting plasma glucose and insulin concentrations in man. *Diabetologia*. 28(7), 412–419.

Ming, M., Guanhua, L., Zhanhai, Y., Guang, C., dan Xuan, Z. (2009). Effect of the *Lycium barbarum* polysaccharides administration on blood lipid metabolism and oxidative stress of mice fed high-fat diet in vivo. *Food Chemistry*, 113(4), 872–877. <https://doi.org/10.1016/j.foodchem.2008.03.064>

Mlinar, B., Marc, J., Jane, A., dan Pfeifer, M. (2007). Molecular mechanisms of insulin resistance and associated diseases. *Clinica Chimica Acta*, 375, 20–35. <https://doi.org/10.1016/j.cca.2006.07.005>

Mokdad, A. H., Marks, J. S., Stroup, D. F., dan Gerberding, J. L. (2004). Actual Causes of Death in the United States , 2000. *Journal of the American Medical Association*, 291(10), 1238–1245.

Moreno, Y. S., Sánchez, G. S., Hernández, D. R., dan Lobato, N. R. (2005). Characterization of Anthocyanin Extracts from Maize Kernels. *Journal of Chromatographic Science*, 43(October), 483–487.

Mouri, M. I. dan Badireddy, M. (2019). Hyperglycemia. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; [updated 2019 Jan 21]

Narwidina, P., Astuti, M., Hastuti, P., dan Meilala, A. (2011). Effect of Anthocyanins of Black Rice on the Antioxidant Activity in Human Plasma and Endurance after Physical Stress. Proceeding of International Conference on Nutraceuticals and Functional Foods, Bali, October 12-15, 2010. Indonesian Centre for Rice Research.

- Nascimento, A. C., Mota, C., Coelho, I., Gueifão, S., Santos, M., Matos, A. S., ... Castanheira, I. (2014). Characterisation of nutrient profile of quinoa (*Chenopodium quinoa*), amaranth (*Amaranthus caudatus*), and purple corn (*Zea mays* L.) consumed in the North of Argentina: Proximates, minerals and trace elements. *Food Chemistry*, 148, 420–426. <https://doi.org/10.1016/j.foodchem.2013.09.155>
- Nasri, R., Abdelhedi, O., Jemil, I., Daoued, I., Hamden, K., Kallel, C., et al. (2015). Ameliorating effects of goby fish protein hydrolysates on high-fat-high-fructose diet-induced hyperglycemia, oxidative stress and deterioration of kidney function in rats. *Chem Biol Interact.* 242, 71–80.
- Nepal, S., Malik, S., Kumar, A., Bharti, S., Kumar, N., Mehmood, K., ... Singh, D. (2012). Experimental and Toxicologic Pathology Abresham ameliorates dyslipidemia, hepatic steatosis and hypertension in high-fat diet fed rats by repressing oxidative stress, TNF- α and normalizing NO production. *Experimental and Toxicologic Pathology*, 64(7–8), 705–712. <https://doi.org/10.1016/j.etp.2011.01.003>
- Newsholme, P., Haber, E. P., Hirabara, S. M., Rebelato, E. L. O., Procopio, J., Morgan, D., ... Curi, R. (2007). Diabetes associated cell stress and dysfunction: role of mitochondrial and non-mitochondrial ROS production and activity. *The Journal of Physiology*, 583(Pt 1), 9–24. <https://doi.org/10.1113/jphysiol.2007.135871>
- Noeman, S. a, Hamooda, H. E., dan Baalash, A. a. (2011). Biochemical study of oxidative stress markers in the liver, kidney and heart of high fat diet induced obesity in rats. *Diabetology dan Metabolic Syndrome*, 3(1), 17. <https://doi.org/10.1186/1758-5996-3-17>
- Norberto, S., Silva, S., Meireles, M., Faria, A., dan Pintado, M. (2013). Blueberry anthocyanins in health promotion: A metabolic overview. *JOURNAL OF FUNCTIONAL FOODS*, 5, 1518–1528. <https://doi.org/10.1016/j.jff.2013.08.015>
- Nugraheni, P.S. (2007). Absorpsi Ekstrak Antosianin dan Minuman Berbasis Ekstrak Antosianin Kulit Kedelai Hitam pada Gastrointestinal Tract Tikus secara In Situ. Thesis. Universitas Gadjah Mada. Yogyakarta.
- Ørsgaard, A., dan Holst, J.J. The role of somatostatin in GLP-1-induced inhibition of glucagon secretion in mice. *Diabetologia*. 60(9), 1731–1739, 2017.
- Park, S. H., Ko, S. K., dan Chung, S. H. (2005). Euonymus alatus prevents the hyperglycemia and hyperlipidemia induced by high-fat diet in ICR mice. *Journal of Ethnopharmacology*, 102(3), 326–335. <https://doi.org/10.1016/j.jep.2005.06.041>

- Paśko, P., Bartoń, H., Zagrodzki, P., Chłopicka, J., Izewska, A., Gawlik, M., ... Gorinstein, S. (2011). Effect of amaranth seeds in diet on oxidative status in plasma and selected tissues of high fructose-fed rats. *Food Chemistry*, 126(1), 85–90. <https://doi.org/10.1016/j.foodchem.2010.10.081>
- Pedreschi, R., dan Cisneros-Zevallos, L. (2007). Phenolic profiles of Andean purple corn (*Zea mays* L.). *Food Chemistry*, 100(3), 956–963. <https://doi.org/10.1016/j.foodchem.2005.11.004>
- Pojer, E., Mattivi, F., Johnson, D., dan Stockley, C. S. (2013). The Case for Anthocyanin Consumption to Promote Human Health: A Review. *Comprehensive Reviews in Food Science and Food Safety*, 12(5), 483–508. <https://doi.org/10.1111/1541-4337.12024>
- Pramitasari, R. (2014). Potensi Antioksidatif Minuman Fungsional Berbasis Beras Hitam (*Oryza sativa* L. Indica) dan Kedelai Hitam (*Glycine max* L. Merr.) untuk lansia Penyandang Diabetes Mellitus Tipe 2. Tesis. Universitas Gadjah Mada. Yogyakarta.
- Ramos-Escudero, F., Muñoz, A. M., Alvarado-Ortíz, C., Alvarado, Á., dan Yáñez, J.A. (2012). Purple corn (*Zea mays* L.) phenolic compounds profile and its assessment as an agent against oxidative stress in isolated mouse organs. *Journal of Medicinal Food*, 15(2), 206–215. <https://doi.org/10.1089/jmf.2010.0342>
- Rizzo, M., Nikolic, D., Maria, A., Mannina, C., Montalto, G., McAdams, B.S., et al. (2018). GLP-1 receptor agonists and reduction of cardiometabolic risk: Potential underlying mechanisms. *Biochim Biophys Acta Mol Basis Dis*. 1864, 2814-2821.
- Saltiel, A.R., dan Kahn, C.R. (2001). Insulin signalling and the regulation of glucose and lipid metabolism. *Nature*, 414(6865), 799–806. <https://doi.org/10.1038/414799a>
- Samuel, V.T., Liu, Z.X., Qu, X., Elder, B.D., Bilz, S., Befroy, D., ... Shulman, G.I. (2004). Mechanism of hepatic insulin resistance in non-alcoholic fatty liver disease. *The Journal of Biological Chemistry*, 279(31), 32345–32353. <https://doi.org/10.1074/jbc.M313478200>
- Sancho, R.S., dan Pastore, G.M. (2012). Evaluation of the effects of anthocyanins in type 2 diabetes. *Food Research International*, 46(1), 378–386. <https://doi.org/10.1016/j.foodres.2011.11.021>
- Sarepoua, E., Tangwongchai, R., Suriharn, B., dan Lertrat, K. (2015). Influence of variety and harvest maturity on phytochemical content in corn silk. *Food*

Chemistry, 169, 424–429. <https://doi.org/10.1016/j.foodchem.2014.07.136>

Schemmel, R., Mickelsen, O., dan Motawi, K. (1972). Conversion of Dietary to Body Energy in Rats as Affected by Strain, Sex and Ration. *The Journal of Nutrition*, 102(9), 1187–1197. <http://doi.org/10.1093/jn/102.9.1187>

Sesti, G. (2006). Pathophysiology of insulin resistance. *Best Practice dan Research Clinical Endocrinology dan Metabolism*, 20(4), 665–679. <https://doi.org/10.1016/j.beem.2006.09.007>

Shanik, M.H., Xu, Y., Skrha, J., Dankner, R., Zick, Y., dan Roth, J. (2008). Insulin resistance and hyperinsulinemia: is hyperinsulinemia the cart or the horse? *Diabetes Care*, 31 Suppl 2, S262–8. <https://doi.org/10.2337/dc08-s264>

Shil, J., Nawaz, H., Pohorly, J., Mittal, G., Kakuda, Y. dan Jiang, Y. (2005). Extraction of polyphenolics from plant material for functional foods-engineering and technology. *Food. Rev. Int.*, 21: 139–166

Sies, H., Stahl, W., dan Sevanian, A. (2005). Nutritional , Dietary and Postprandial Oxidative Stress. *J Nutr*, 135, 969–972. <https://doi.org/10.1093/jn/135.5.969>

Sorace, P., Lafontaine, T., dan Thomas, T.R. (2006). Know the Risks : Lifestyle Management of Dyslipidemia. *ACSM'S HEALTH dan FITNESS JOURNAL*, 10(4), 18–25.

Sousa, T., Albino-Teixeira, A., Carvalho, F., dan Afonso, J. (2012). *Lipid Peroxidation and Antioxidants in Arterial Hypertension*. INTECH Open Access Publisher. Retrieved from http://cdn.intechopen.com/pdfs/38459/InTech-Lipid_peroxidation_and_antioxidants_in_arterial_hypertension.pdf

Speciale, A., dan Cimino, F. (2014). Bioavailability and molecular activities of anthocyanins as modulators of endothelial function. *Genes Nutr*, 9(404), 1–19. <https://doi.org/10.1007/s12263-014-0404-8>

Sreekumar, R., Unnikrishnan, J., Fu, A., Nygren, J., Short, K.R., Schimke, J., ... Clinic, M. (2002). Impact of high-fat diet and antioxidant supplement on mitochondrial functions and gene transcripts in rat muscle. *Am J Physiol Endocrinol Metab*, 282, E1055–E1061.

Stanhope, K.L., dan Havel, P.J. (2008). Fructose consumption: potential mechanisms for its effects to increase visceral adiposity and induce dyslipidemia and insulin resistance. *Curr Opin Lipidol.*, 19(1), 16–24. <https://doi.org/10.1097/MOL.0b013e3282f2b24a.Fructose>

Steyl, S. (2017). Overexpression of manganese superoxide dismutase in mouse liver

leads to defects in oxidative phosphorylation. *The FASEB Journal*, 31(1_supplement), 634-5.

Sui, X., Zhang, Y., Zhou, W. (2016). In vitro and in silico studies of the inhibition activity of anthocyanins against porcine pancreatic- α -amylase. *Journal of Functional Foods*. 21, 50-57.

Sun, C.D., Zhang, B., Zhang, J.K., Xu, C.J., Wu, Y.L., Li, X., dan Chen, K.S. (2012). Cyanidin-3-glucoside-rich extract from Chinese bayberry fruit protects pancreatic β cells and ameliorates hyperglycemia in streptozotocin-induced diabetic mice. *Journal of Medicinal Food*, 15(3), 288–298. <https://doi.org/10.1089/jmf.2011.1806>

Suwannaphet, W., Meeprom, A., Yibchok-anun, S., dan Adisakwattana, S. (2010). Preventive effect of grape seed extract against high-fructose diet-induced insulin resistance and oxidative stress in rats. *Food Chem Toxicol*. 48(7), 1853–1857.

Takikawa, M., Inoue, S., Horio, F., dan Tsuda, T. (2010). Dietary anthocyanin-rich bilberry extract ameliorates hyperglycemia and insulin sensitivity via activation of AMP-activated protein kinase in diabetic mice. *The Journal of Nutrition*, 140, 527–533. <https://doi.org/10.3945/jn.109.118216>. Berry

Terada, S., Yamamoto, S., Sekine, S., dan Aoyama, T. (2012). Dietary intake of medium- and long-chain triacylglycerols ameliorates insulin resistance in rats fed a high-fat diet. *Nutrition*, 28(1), 92–97. <https://doi.org/10.1016/j.nut.2011.04.008>

Tsai, W., Li, Y., Lin, C., Chao, T., dan Chen, J. (2004). Effects of oxidative stress on endothelial function after a high-fat meal. *Clinical Science*, 106, 315–319.

Tsuda, T., Horio, F., Uchida, K., Aoki, H., dan Osawa, T. (2003). Dietary Cyanidin 3-O- β -D-Glucoside-Rich Purple Corn Color Prevents Obesity and Ameliorates Hyperglycemia in Mice. *The Journal of Nutrition*, 133, 2125–2130.

Tsujinaka, K., Nakamura, T., Maegawa, H., Fujimiya, M., Nishio, Y., Kudo, M., dan Kashiwagi, A. (2005). Diet high in lipid hydroperoxide by vitamin E deficiency induces insulin resistance and impaired insulin secretion in normal rats. *Diabetes Research and Clinical Practice*, 67(2), 99–109. <https://doi.org/10.1016/j.diabres.2004.06.006>

Urias-Lugo, D.A., Heredia, J.B., Serna-Saldivar, S.O., Muy-Rangel, M.D. dan Valdez-Torres, J.B. (2015). Total phenolics, total anthocyanins and antioxidant capacity of native and elite blue maize hybrids (*Zea mays* L.), CyTA - *Journal of Food*, 13:3, 336-339, DOI:

10.1080/19476337.2014.980324

- Vanzo, A., Vrhovsek, U., Tramer, F., Mattivi, F., dan Passamonti, S. (2011). Exceptionally fast uptake and metabolism of cyanidin 3-glucoside by rat kidneys and liver. *Journal of Natural Products*, 74(5), 1049–1054. <https://doi.org/10.1021/np100948a>
- Veerapur, V. P., Prabhakar, K. R., Thippeswamy, B. S., Bansal, P., Srinivasan, K. K., & Unnikrishnan, M. K. (2012). Antidiabetic effect of *Ficus racemosa* Linn. stem bark in high-fat diet and low-dose streptozotocin-induced type 2 diabetic rats: a mechanistic study. *Food Chemistry*, 132(1), 186–193. <http://doi.org/10.1016/j.foodchem.2011.10.052>
- Vijayaraghavan, K. (2010). Treatment of dyslipidemia in patients with type 2 diabetes. *Lipids in Health and Disease*, 9, 144–155.
- Vikrant, V., Grover, J.K., Tandon, N., Rathi, S.S., dan Gupta, N. (2001). Treatment with extracts of *Momordica charantia* and *Eugenia jambolana* prevents hyperglycemia and hyperinsulinemia in fructose fed rats. *J Ethnopharmacol.* 76(2), 139–143.
- Wang, L. dan Stoner, G. (2008). Anthocyanins and their role in cancer prevention. *Cancer Lett.*, 269(2), 281–290. <https://doi.org/10.1016/j.canlet.2008.05.020>. Anthocyanins
- Wang, J, Hu, X., Ai, W., Zhang, F., Yang, K., Wang, L., et al. (2017). Phytol increases adipocyte number and glucose tolerance through activation of PI3K / Akt signaling pathway in mice fed high-fat and high-fructose diet. *Biochem Biophys Res Commun.* 489(4), 432–438.
- Wang, Y., Branicky, R., Noë, A., & Hekimi, S. (2018). Superoxide dismutases: dual roles in controlling ROS damage and regulating ROS signaling. *The Journal of cell biology*, 217(6), 1915–1928. <http://doi.org/10.1083/jcb.201708007>
- Wasito, R. dan Wuryastuti, H. (2015). *Antibodi & Imunohistokimia-Kupas Tuntas*. Rapha Publishing-Penerbit Andi, Yogyakarta
- Welch, C.R., Wu, Q., dan Simon, J.E. (2008). Recent Advances in Anthocyanin Analysis and Characterization. *Curr Anal Chem*, 4(2): 75–101. <http://doi.org/10.2174/157341108784587795>
- Winder, W.W., dan Hardie, D.G. (1999). AMP-activated protein kinase, a metabolic master switch: possible roles in Type 2 diabetes. *American Physiological Society*, E1–E10.

- Wu, T., Qi, X., Liu, Y., Guo, J., Zhu, R., Chen, W., ... Yu, T. (2013). Dietary supplementation with purified mulberry (*Morus australis* Poir) anthocyanins suppresses body weight gain in high-fat diet fed C57BL/6 mice. *Food Chemistry*, 141(1), 482–487. <https://doi.org/10.1016/j.foodchem.2013.03.046>
- Wu, X., dan Beecher, G. (2006). Concentrations of anthocyanins in common foods in the United States and estimation of normal consumption. *Journal of Agric. Food Chem.* 54, 4069–4075. <http://pubs.acs.org/doi/abs/10.1021/jf0603001>
- Xu, J.Z., Fan, J.G., Ding, X.D., Qiao, L., dan Wang, G.L. (2010). Characterization of High- Fat, Diet Induced, Non-alcoholic Steatohepatitis with Fibrosis in Rats. *Digestive Disease Sciences*, 55(4): 931-940
- Xu, J., Cao, K., Feng, Z., dan Liu, J. (2018). Benefits of the soluble and insoluble fractions of bitter melon in mice fed a high-fat diet. *J Funct Foods*. 42, 216–223.
- Xu, H., Li, X., Adams, H., Kubena, K., dan Guo, S. (2019). Etiology of Metabolic Syndrome and Dietary Intervention. *Int. J. Mol. Sci.*, 20, 128.
- Yang, R.L., Li, W., Shi, Y.H., dan Le, G.W. (2008a). Lipoic acid prevents high-fat diet – induced dyslipidemia and oxidative stress : A microarray analysis. *Nutrition*, 24, 582–588. <https://doi.org/10.1016/j.nut.2008.02.002>
- Yang, Z., Fan, G., Gu, Z., han, Y., dan Chen, Z. (2008). Optimization extraction of anthocyanins from purple corn (*Zea mays* L.) cob using tristimulus colorimetry. *Eur. Food Res. Technol.*, 227: 409-415
- Yang, Z., dan Zhai, W. (2010). Identification and antioxidant activity of anthocyanins extracted from the seed and cob of purple corn (*Zea mays* L.). *Innovative Food Science dan Emerging Technologies*, 11(1), 169–176. <https://doi.org/10.1016/j.ifset.2009.08.012>
- Ye, J. (2013). Mechanisms of insulin resistance in obesity. *Front Med.*, 7(1), 14–24. <https://doi.org/10.1007/s11684-013-0262-6>
- Yook, J., Kim, K., Park, J.E., Lee, S., dan Cha, Y. (2015). Microalgal Oil Supplementation Has an Anti-Obesity Effect in C57BL / 6J Mice Fed a High Fat Diet. *Prev Nutr Food Sci*. 20(4), 230–237.
- Yoshioka, H., Mizuno, Y., Yamaguchi, T., Ichimaru, Y., dan Takeya, K. (2018). Methyl dehydroabietate counters high fat diet-induced insulin resistance and hepatic steatosis by modulating peroxisome proliferator-activated receptor signaling in mice. *Biomed Pharmacother*. 99, 214–219.
- Zhang, B., Kang, M., Xie, Q., Xu, B., Sun, C., Chen, K., dan Wu, Y. (2011).

Anthocyanins from Chinese bayberry extract protect β cells from oxidative stress-mediated injury via HO-1 upregulation. *Journal of Agricultural and Food Chemistry*, 59(2), 537–545. <https://doi.org/10.1021/jf1035405>

Zhao, X., Zhang, C., Guigas, C., Ma, Y., Corrales, M., Tauscher, B., dan Hu, X. (2008). Composition, antimicrobial activity, and antiproliferative capacity of anthocyanin extracts of purple corn (*Zea mays* L.) from China. *European Food Research and Technology*, 228(5), 759–765. <https://doi.org/10.1007/s00217-008-0987-7>

Žilić, S., Serpen, A., Akıllıoğlu, G., Gökmen, V., dan Vančetović, J. (2012). Phenolic Compounds, Carotenoids, Anthocyanins, and Antioxidant Capacity of Colored Maize (*Zea mays* L.) Kernels. *Japi*, 60, 1224–1231.