

DAFTAR PUSTAKA

- Acharya, A., Berry, D.C., Zhang, H., Jiang, Y., Jones, B.T., Hammer, R.E., *et al.* (2019). MiR-26 suppresses adipocyte progenitor differentiation and fat production by targeting Fbx119. *Genes Dev.* 33 : 1367–1380.
- Agus, A., Planchais, J., & Sokol, H. (2018). Gut Microbiota Regulation of Tryptophan Metabolism in Health and Disease. *Cell Host Microbe* 23 : 716–724.
- Ahmadipour, B., & Khajali, F. (2019). Expression of antioxidant genes in broiler chickens fed nettle (*Urtica dioica*) and its link with pulmonary hypertension. *Anim. Nutr.* 5 : 264–269.
- Ahmed Kk, M., & Parsuraman, S. (2014). *Urtica dioica* L., (Urticaceae): A stinging nettle. *Syst. Rev. Pharm.* 5 : 6–8.
- Alam, M.A., Subhan, N., Hossain, H., Hossain, M., Reza, H.M., Rahman, M.M., *et al.* (2016). Hydroxycinnamic acid derivatives: A potential class of natural compounds for the management of lipid metabolism and obesity. *Nutr. Metab.* 13 : 1–13.
- Aliyev, A.T., Ozcan-Sezer, S., Akdemir, A., & Gurer-Orhan, H. (2021). In vitro evaluation of estrogenic, antiestrogenic and antitumor effects of amentoflavone. *Hum. Exp. Toxicol.* 40 : 1510–1518.
- Aloo, S.-O., Ofosu, F.K., Kim, N.-H., Kilonzi, S.M., & Oh, D.-H. (2023). Insights on Dietary Polyphenols as Agents against Metabolic Disorders: Obesity as a Target Disease. *Antioxidants (Basel, Switzerland)* 12.
- Angalapameswari, S., Soujanya, K.R., Yamini, N., & Alagusundaram, M. (2020). A Review on Stinging Nettle Root 10 : 82–90.
- Ardid-ruiz, A., Ibars, M., & Su, M. (2016). Modulation of leptin resistance by food compounds 1–15.
- Azis, S.V.R.H.Y. (2011). *Standarisasi Bahan Obat Alam*. Yogyakarta : Graha Ilmu.
- Balunas, M., Su, B., Brueggemeier, R., & Kinghorn, A. (2012). Natural Products as Aromatase Inhibitors. *Anticancer. Agents Med. Chem.* 8 : 646–682.
- Balunas, M.J., & Kinghorn, A.D. (2010). Natural compounds with aromatase inhibitory activity: An update. *Planta Med.* 76 : 1087–1093.
- Balunas, M.J., Su, B., Brueggemeier, R.W., & Kinghorn, A.D. (2008). Xanthenes from the Botanical Dietary Supplement Mangosteen (*Garcinia mangostana*) with Aromatase Inhibitory Activity 1161–1166.
- Barata Cavalcanti, O., Barquera, S., Baur, L., Busch, V., Buse, K., Dietz, B., *et al.* (2022). Global Atlas report on Obesity.

- Barker, D.J.P. (2007). The origins of the developmental origins theory. *J. Intern. Med.* 261 : 412–417.
- Barros, R.P.D.A., Morani, A., Moriscot, A., & Machado, U.F. (2008). Insulin resistance of pregnancy involves estrogen-induced repression of muscle GLUT4. *Mol. Cell. Endocrinol.* 295 : 24–31.
- Blüher, M. (2013). Adipose tissue dysfunction contributes to obesity related metabolic diseases. *Best Pract. Res. Clin. Endocrinol. Metab.* 27 : 163–177.
- Bonizzi, A., Piuri, G., Corsi, F., Cazzola, R., & Mazzucchelli, S. (2021). HDL Dysfunctionality: Clinical Relevance of Quality Rather Than Quantity. *Biomedicines* 9.
- Bowers, L.W., Brenner, A.J., & Linda, A. (2014). Obesity-associated systemic interleukin-6 promotes pre-adipocyte aromatase expression via increased breast cancer cell prostaglandin E2 production.
- Bracht, J.R., Vieira-Potter, V.J., De Souza Santos, R., Öz, O.K., Palmer, B.F., & Clegg, D.J. (2020). The role of estrogens in the adipose tissue milieu. *Ann. N. Y. Acad. Sci.* 1461 : 127–143.
- Brown, K.A., Hunger, N.I., Docanto, M., & Simpson, E.R. (2010). Metformin inhibits aromatase expression in human breast adipose stromal cells via stimulation of AMP-activated protein kinase 591–596.
- C., B.P., & C., S. (2016). Aromatase Inhibitors - Types and Advantages. *Int. J. Pharm. Pharm. Sci.* 8 : 1–7.
- Calippe, B., Douin-Echinard, V., Delpy, L., Laffargue, M., Lélou, K., Krust, A., *et al.* (2010). 17 β -Estradiol Promotes TLR4-Triggered Proinflammatory Mediator Production through Direct Estrogen Receptor α Signaling in Macrophages In Vivo. *J. Immunol.* 185 : 1169–1176.
- Cancello, R., Tordjman, J., Poitou, C., Guilhem, G., Bouillot, J.L., Hugol, D., *et al.* (2006). Increased infiltration of macrophages in omental adipose tissue is associated with marked hepatic lesions in morbid human obesity. *Diabetes* 55 : 1554–1561.
- Carrageta, D.F., Oliveira, P.F., Alves, M.G., & Monteiro, M.P. (2019). Obesity and male hypogonadism: Tales of a vicious cycle. *Obes. Rev.* 20 : 1148–1158.
- Chambers, K.F., Day, P.E., Aboufarrag, H.T., & Kroon, P.A. (2019). Polyphenol Effects on Cholesterol Metabolism via Bile Acid Biosynthesis, CYP7A1: A Review. *Nutrients* 11.
- Chao, H., Tsai, P., Lee, S., Lin, Y., & Wu, M. (2017). Effects of Myricetin-Containing Ethanol Solution on High-Fat Diet Induced Obese Rats 82.
- Chlebowski, R.T., Anderson, G.L., Geller, M., & Col, N. (2006). Coronary heart disease and stroke with aromatase inhibitor, tamoxifen, and menopausal hormone therapy use. *Clin. Breast Cancer* 6 : S58–S64.

- Chu, M.C., Cospers, P., Nakhuda, G.S., & Lobo, R.A. (2006). A comparison of oral and transdermal short-term estrogen therapy in postmenopausal women with metabolic syndrome. *Fertil. Steril.* 86 : 1669–1675.
- Chung, H., Lucia, A., Ferreira, A., Epstein, S., Paiva, S.A.R., Castaneda-sceppa, C., *et al.* (2009). Site-specific concentrations of carotenoids in adipose tissue : relations with dietary and serum carotenoid concentrations in healthy adults 1 – 4 533–539.
- Cohen, P.G. (2001). Aromatase, adiposity, aging and disease. The hypogonadal-metabolic-atherogenic-disease and aging connection. *Med. Hypotheses* 56 : 702–708.
- Cohen, P.G. (1999). The hypogonadal–obesity cycle: role of aromatase in modulating the testosterone–estradiol shunt – a major factor in the genesis of morbid obesity. *Med. Hypotheses* 52 : 49–51.
- Colleluori, G., Chen, R., Turin, C.G., Vigevano, F., Qualls, C., Johnson, B., *et al.* (2020). Aromatase Inhibitors Plus Weight Loss Improves the Hormonal Profile of Obese Hypogonadal Men Without Causing Major Side Effects. *Front. Endocrinol. (Lausanne)*. 11 : 1–12.
- Costa, I.C., Carvalho, H.N., Pacheco-Figueiredo, L., Tomada, I., & Tomada, N. (2013). Hormonal Modulation in Aging Patients with Erectile Dysfunction and Metabolic Syndrome. *Int. J. Endocrinol.* 2013 : 107869.
- Costello, V.L., Chevance, G., Wing, D., Mansour-Assi, S.J., Sharp, S., Golaszewski, N.M., *et al.* (2021). Impact of the covid-19 pandemic on objectively measured physical activity and sedentary behavior among overweight young adults: Yearlong longitudinal analysis. *JMIR Public Heal. Surveill.* 7.
- Cremonini, E., Iglesias, D.E., Kang, J., Lombardo, G.E., Mostofinejad, Z., Wang, Z., *et al.* (2020). (–)-Epicatechin and the comorbidities of obesity. *Arch. Biochem. Biophys.* 690.
- D. R. Laurence; A. L. Bacharach (1964). *Evaluation of Drug Activities: Pharmacometrics, Evaluation of Drug Activities.* London : Academic Press.
- D'Eon, T.M., Souza, S.C., Aronovitz, M., Obin, M.S., Fried, S.K., & Greenberg, A.S. (2005). Estrogen regulation of adiposity and fuel partitioning: Evidence of genomic and non-genomic regulation of lipogenic and oxidative pathways. *J. Biol. Chem.* 280 : 35983–35991.
- da-Silva, W.S., Harney, J.W., Kim, B.W., Li, J., Bianco, S.D.C., Crescenzi, A., *et al.* (2007). The small polyphenolic molecule kaempferol increases cellular energy expenditure and thyroid hormone activation. *Diabetes* 56 : 767–776.
- Denis, G. V., & Obin, M.S. (2013). “Metabolically healthy obesity”: Origins and implications. *Mol. Aspects Med.* 34 : 59–70.

- Depkes (2000). Parameter Standar Umum Ekstrak Tumbuhan Obat.
- Dewick, P.M. (2003). The Mevalonate and Deoxyxylulose Phosphate Pathways: Terpenoids and Steroids, Medicinal Natural Products.
- Di Virgilio, N., Papazoglou, E.G., Jankauskiene, Z., Di Lonardo, S., Praczyk, M., & Wielgusz, K. (2015). The potential of stinging nettle (*Urtica dioica* L.) as a crop with multiple uses. *Ind. Crops Prod.* 68 : 42–49.
- Eastell, R., & Hannon, R. (2005). Long-term effects of aromatase inhibitors on bone. *J. Steroid Biochem. Mol. Biol.* 95 : 151–154.
- Elghondakly, M., Moawad, A., & Hetta, M. (2020). Cytotoxicity and chromatographic analysis of *Dioon spinulosum*, family Zamiaceae. *J. Appl. Pharm. Sci.* 10 : 75–82.
- Elisaf, M.S., Bairaktari, E.T., Nicolaidis, C., Kakaidi, B., Tzallas, C.S., Katsaraki, A., *et al.* (2001). Effect of letrozole on the lipid profile in postmenopausal women with breast cancer. *Eur. J. Cancer* 37 : 1510–1513.
- Fadilah, N.N., & Susanti (2020). Aktivitas Antihiperurisemia Ekstrak Tanaman Jelatang (*Urtica dioica* L.) pada Mencit. *HIJP Heal. Inf. J. Penelit.* 12.
- Fallowfield, L.J., Kilburn, L.S., Langridge, C., Snowdon, C.F., Bliss, J.M., & Coombes, R.C. (2012). Long-term assessment of quality of life in the Intergroup Exemestane Study: 5 years post-randomisation. *Br. J. Cancer* 106 : 1063–1067.
- Fazakerley, D.J., Krycer, J.R., Kearney, A.L., Hocking, S.L., & James, D.E. (2019). Muscle and adipose tissue insulin resistance: Malady without mechanism? *J. Lipid Res.* 60 : 1720–1732.
- Fielding, C.J. (1984). The origin and properties of free cholesterol potential gradients in plasma, and their relation to atherogenesis. *J. Lipid Res.* 25 : 1624–1628.
- Gallagher, E.J., & LeRoith, D. (2015). Obesity and diabetes: The increased risk of cancer and cancer-related mortality. *Physiol. Rev.* 95 : 727–748.
- Galluzzo, P., Ascenzi, P., Bulzomi, P., & Marino, M. (2008). The nutritional flavanone naringenin triggers antiestrogenic effects by regulating estrogen receptor α -palmitoylation. *Endocrinology* 149 : 2567–2575.
- Ganjer, D. (1995). Aromatase Inhibitors from *Urtica dioica* Roots 138–140.
- Gao, Q., Mezei, G., Nie, Y., Rao, Y., Choi, C.S., Bechmann, I., *et al.* (2007). Anorectic estrogen mimics leptin's effect on the rewiring of melanocortin cells and Stat3 signaling in obese animals. *Nat. Med.* 13 : 89–94.
- Geisler, J., Lønning, P.E., Krag, L.E., Løkkevik, E., Risberg, T., Hagen, A.I., *et al.* (2006). Changes in bone and lipid metabolism in postmenopausal women with early breast cancer after terminating 2-year treatment with exemestane: A

randomised, placebo-controlled study. *Eur. J. Cancer* 42 : 2968–2975.

Gonzalez-Gil, A.M., & Elizondo-Montemayor, L. (2020). The role of exercise in the interplay between myokines, hepatokines, osteokines, adipokines, and modulation of inflammation for energy substrate redistribution and fat mass loss: A review. *Nutrients* 12 : 1.

Goossens, G.H., & Blaak, E.E. (2015). Adipose tissue dysfunction and impaired metabolic health in human obesity: A matter of oxygen? *Front. Endocrinol. (Lausanne)*. 6 : 1–5.

Güder, A., & Korkmaz, H. (2012). Evaluation of in-vitro Antioxidant Properties of Hydroalcoholic Solution Extracts *Urtica dioica* L., *Malva neglecta* Wallr. and Their Mixture. *Iran. J. Pharm. Res. IJPR* 11 : 913–923.

Hajhashemi, V., & Klooshani, V. (2013). Antinociceptive and anti-inflammatory effects of *Urtica dioica* leaf extract in animal models. *Avicenna J. phytomedicine* 3 : 193–200.

Hales, C.M., Carroll, M.D., Fryar, C.D., & Ogden, C.L. (2017). Prevalence of Obesity Among Adults and Youth: United States, 2015–2016. NCHS data brief, no 288. Hyattsville, MD: National Center for Health Statistics. *NCHS Data Brief* 1–8.

Hämäläinen, M., Nieminen, R., Vuorela, P., Heinonen, M., & Moilanen, E. (2007). Anti-inflammatory effects of flavonoids: Genistein, kaempferol, quercetin, and daidzein inhibit STAT-1 and NF- κ B activations, whereas flavone, isorhamnetin, naringenin, and pelargonidin inhibit only NF- κ B activation along with their inhibitory effect on i. *Mediators Inflamm.* 2007.

Hasim, H., Arifin, Y.Y., Andrianto, D., & Faridah, D.N. (2019). Ekstrak Etanol Daun Belimbing Wuluh (*Averrhoa bilimbi*) sebagai Antioksidan dan Antiinflamasi. *J. Apl. Teknol. Pangan* 8 : 86.

Hayashi, T., & Harada, N. (2014). Post-translational dual regulation of cytochrome P450 aromatase at the catalytic and protein levels by phosphorylation/dephosphorylation. *FEBS J.* 281 : 4830–4840.

Hemsell, D.L., Grodin, J.M., Brenner, P.F., Siiteri, P.K., & MacDonald, P.C. (1974). Plasma precursors of estrogen. II. Correlation of the extent of conversion of plasma androstenedione to estrone with age. *J. Clin. Endocrinol. Metab.* 38 : 476–479.

Heriansyah, T. (2013). PENGARUH BERBAGAI DURASI PEMBERIAN DIET TINGGI LEMAK TERHADAP PROFIL LIPID TIKUS PUTIH (*Rattus Novergicus* Strain Wistar) JANTAN. *J. Kedokt. Syiah Kuala* V 13 : 144–150.

Hoang, M.H., Jia, Y., Lee, J.H., Kim, Y., & Lee, S.J. (2019). Kaempferol reduces hepatic triglyceride accumulation by inhibiting Akt. *J. Food Biochem.* 43 : 1–7.

- Hoang, M.H., Jia, Y., Mok, B., Jun, H. jin, Hwang, K.Y., & Lee, S.J. (2015). Kaempferol ameliorates symptoms of metabolic syndrome by regulating activities of liver X receptor- β . *J. Nutr. Biochem.* 26 : 868–875.
- Hoene, M., & Weigert, C. (2008). The role of interleukin-6 in insulin resistance, body fat distribution and energy balance. *Obes. Rev.* 9 : 20–29.
- Hozumi, Y., Suemasu, K., Takei, H., Aihara, T., Takehara, M., Saito, T., *et al.* (2011). The effect of exemestane, anastrozole, and tamoxifen on lipid profiles in japanese postmenopausal early breast cancer patients: Final results of national surgical adjuvant study BC 04, the TEAM Japan sub-study. *Ann. Oncol.* 22 : 1777–1782.
- Huang, K., Liang, X. ci, Zhong, Y. li, He, W. yan, & Wang, Z. (2015). 5-Caffeoylquinic acid decreases diet-induced obesity in rats by modulating PPAR α and LXR α transcription. *J. Sci. Food Agric.* 95 : 1903–1910.
- Huss, J.M., Torra, I.P., Staels, B., Giguère, V., & Kelly, D.P. (2004). Estrogen-related receptor alpha directs peroxisome proliferator-activated receptor alpha signaling in the transcriptional control of energy metabolism in cardiac and skeletal muscle. *Mol. Cell. Biol.* 24 : 9079–9091.
- Iikuni, N., Kwan Lam, Q., Lu, L., Matarese, G., & Cava, A. (2008). Leptin and Inflammation. *Curr. Immunol. Rev.* 4 : 70–79.
- Imierska, M., Kurianiuk, A., & Błachnio-Zabielska, A. (2020). The influence of physical activity on the bioactive lipids metabolism in obesity-induced muscle insulin resistance. *Biomolecules* 10 : 1–20.
- Ito, T., Yamamoto, Y., Yamagishi, N., & Kanai, Y. (2021). Stomach secretes estrogen in response to the blood triglyceride levels. *Commun. Biol.* 4 : 1–10.
- Izadi, V., Farabad, E., & Azadbakht, L. (2013). Epidemiologic evidence on serum adiponectin level and lipid profile. *Int. J. Prev. Med.* 4 : 133–140.
- Jastreboff, A.M., Kotz, C.M., Kahan, S., Kelly, A.S., & Heymsfield, S.B. (2019). Obesity as a Disease: The Obesity Society 2018 Position Statement. *Obesity* 27 : 7–9.
- Jayachitra, J., & Nalini, N. (2012). Effect of naringenin (citrus flavanone) on lipid profile in ethanol-induced toxicity in rats. *J. Food Biochem.* 36 : 502–511.
- Jeong, S., & Yoon, M. (2011). 17 β -Estradiol inhibition of PPAR γ -induced adipogenesis and adipocyte-specific gene expression. *Acta Pharmacol. Sin.* 32 : 230–238.
- Jiang, H., Horiuchi, Y., Hironao, K.Y., Kitakaze, T., Yamashita, Y., & Ashida, H. (2020). Prevention effect of quercetin and its glycosides on obesity and hyperglycemia through activating AMPK α in high-fat diet-fed ICR mice. *J. Clin. Biochem. Nutr.* 67 : 74–83.
- Jiang, Y., Berry, D.C., Jo, A., Tang, W., Arpke, R.W., Kyba, M., *et al.* (2017). A

PPAR γ transcriptional cascade directs adipose progenitor cell-niche interaction and niche expansion. *Nat. Commun.* 8 : 1–16.

Johnson, T.A., Sohn, J., Inman, W.D., Bjeldanes, L.F., & Rayburn, K. (2013). Lipophilic stinging nettle extracts possess potent anti-inflammatory activity, are not cytotoxic and may be superior to traditional tinctures for treating inflammatory disorders. *Phytomedicine* 20 : 143–147.

Jung, U.J., Cho, Y.Y., & Choi, M.S. (2016). Apigenin ameliorates dyslipidemia, hepatic steatosis and insulin resistance by modulating metabolic and transcriptional profiles in the liver of high-fat diet-induced obese mice. *Nutrients* 8.

Kalra, S.P., Dube, M.G., Pu, S., Xu, B., Horvath, T.L., & Kalra, P.S. (1999). Interacting appetite-regulating pathways in the hypothalamic regulation of body weight. *Endocr. Rev.* 20 : 68–100.

Kappelle, P.J.W.H., Bijzet, J., Hazenberg, B.P., & Dullaart, R.P.F. (2011). Lower serum paraoxonase-1 activity is related to higher serum amyloid a levels in metabolic syndrome. *Arch. Med. Res.* 42 : 219–225.

Kasouni, A.I., Chatzimitakos, T.G., Stalikas, C.D., Trangas, T., Papoudou-bai, A., & Troganis, A.N. (2021). The Unexplored Wound Healing Activity of *Urtica dioica* L . Extract : An In Vitro and In Vivo Study 1–20.

Kawada, T., Kamei, Y., Fujita, A., & Hida, Y. (2000). Carotenoids and retinoids as suppressors on adipocyte differentiation via nuclear receptors 13 : 103–109.

Kemendes RI (2018). Hasil Riset Kesehatan Dasar Tahun 2018. *Kementrian Kesehatan. RI* 53 : 1689–1699.

Kianbakht, S; Khalighi-Sigaroodi, F; Dabaghian, F. (2013). Improved glycemic control in patients with advanced type 2 diabetes mellitus taking *Urtica dioica* leaf extract: a randomized double-blind placebo-controlled clinical trial. *Clin Lab* 59.

King, B.M. (2006). The rise, fall, and resurrection of the ventromedial hypothalamus in the regulation of feeding behavior and body weight. *Physiol. Behav.* 87 : 221–244.

Kitamura, T., Kahn, C.R., & Accili, D. (2003). Insulin Receptor Knockout Mice. *Annu. Rev. Physiol.* 65 : 313–332.

Klop, B., Elte, J.W.F., & Cabezas, M.C. (2013). Dyslipidemia in Obesity: Mechanisms and Potential Targets. *Nutrients* 5 : 1218–1240.

Knights, A.J., Funnell, A.P., Pearson, R.C., Crossley, M., & Bell-Anderson, K.S. (2014). Adipokines and insulin action. *Adipocyte* 3 : 88–96.

Knopp, R.H., & Zhu, X. (1997). Editorial: Multiple beneficial effects of estrogen on lipoprotein metabolism. *J. Clin. Endocrinol. Metab.* 82 : 3952–3954.

- Kolb, R., Sutterwala, F.S., & Zhang, W. (2016). Obesity and cancer: inflammation bridges the two. *Curr. Opin. Pharmacol.* 29 : 77–89.
- Korakas, E., Ikonomidis, I., Kousathana, F., Balampanis, K., Kountouri, A., Raptis, A., *et al.* (2020). Obesity and COVID-19: Immune and metabolic derangement as a possible link to adverse clinical outcomes. *Am. J. Physiol. - Endocrinol. Metab.* 319 : E105–E109.
- Kraus, R., & Spiteller, G. (1991). (10E,12Z)-9-Hydroxy-10,12-octadecadiensaure, 335 : 335–339.
- Kregiel, D., Pawlikowska, E., & Antolak, H. (2018). *Urtica* spp.: Ordinary plants with extraordinary properties. *Molecules* 23.
- Kumru, S., Godekmerdan, A., & Yilmaz, B. (2004). Immune effects of surgical menopause and estrogen replacement therapy in peri-menopausal women. *J. Reprod. Immunol.* 63 : 31–38.
- Lardone, M.C., & Argando, F. (2016). Overexpression of CYP19A1 aromatase in Leydig cells is associated with steroidogenic dysfunction in subjects with Sertoli cell-only syndrome 1–8.
- Laurans, L., Venteclef, N., Haddad, Y., Chajadine, M., Alzaid, F., Metghalchi, S., *et al.* (2018). Genetic deficiency of indoleamine 2,3-dioxygenase promotes gut microbiota-mediated metabolic health. *Nat. Med.* 24 : 1113–1120.
- Laurens, C., Bergouignan, A., & Moro, C. (2020). Exercise-Released Myokines in the Control of Energy Metabolism. *Front. Physiol.* 11 : 1–8.
- Lee, H., Jeong, J.H., & Ryu, J.-H. (2020). Lignan from *Alnus japonica* Inhibits Adipocyte Differentiation via Cell Cycle and FOXO1 Regulation. *Molecules* 25.
- Lee, H.S., & Lee, J. (2021). Effects of combined exercise and low carbohydrate ketogenic diet interventions on waist circumference and triglycerides in overweight and obese individuals: A systematic review and meta-analysis. *Int. J. Environ. Res. Public Health* 18 : 1–15.
- Lee, M.-K., Park, Y.B., Moon, S.-S., Bok, S.H., Kim, D.-J., Ha, T.-Y., *et al.* (2007). Hypocholesterolemic and antioxidant properties of 3-(4-hydroxy)propanoic acid derivatives in high-cholesterol fed rats. *Chem. Biol. Interact.* 170 : 9–19.
- Leguisamo, N.M., Lehnen, A.M., Machado, U.F., Okamoto, M.M., Markoski, M.M., Pinto, G.H., *et al.* (2012). GLUT4 content decreases along with insulin resistance and high levels of inflammatory markers in rats with metabolic syndrome. *Cardiovasc. Diabetol.* 11 : 1–10.
- Lephart, E.D. (2015). Modulation of Aromatase by Phytoestrogens. *Enzyme Res.* 2015 : 594656.
- Li, F., Gao, C., Yan, P., Zhang, M., Wang, Y., Hu, Y., *et al.* (2018). EGCG reduces obesity and white adipose tissue gain partly through AMPK activation in mice.

Front. Pharmacol. 9 : 1–9.

- Li, J., Dong, J.Z., Ren, Y.L., Zhu, J.J., Cao, J.N., Zhang, J., *et al.* (2018). Luteolin decreases atherosclerosis in LDL receptor-deficient mice via a mechanism including decreasing AMPK-SIRT1 signaling in macrophages. *Exp. Ther. Med.* 16 : 2593–2599.
- Li, M., van Esch, B.C.A.M., Wagenaar, G.T.M., Garssen, J., Folkerts, G., & Henricks, P.A.J. (2018). Pro- and anti-inflammatory effects of short chain fatty acids on immune and endothelial cells. *Eur. J. Pharmacol.* 831 : 52–59.
- Li, W., Yang, C., Mei, X., Huang, R., Zhang, S., Tang, Y., *et al.* (2021). Effect of the polyphenol-rich extract from *Allium cepa* on hyperlipidemic sprague-dawley rats. *J. Food Biochem.* 45 : e13565.
- Li, Z., Shu-jun, J., Fu-er, L.U., & Li-jun, X.U. (2014). Effects of Berberine and Cinnamic Acid on Palmitic Acid-Induced Intracellular Triglyceride Accumulation in NIT-1 Pancreatic β Cells 1–7.
- Liu, H., & Yaqoob, S. (2017). Anti-obesity effects of zeaxanthin on 3T3-L1 preadipocyte and high fat induced obese mice. *Food Funct.*
- Lomas, J., Anderson, G.M., Domnick-Pierre, K., Vayda, E., & Enkin, M.W. (1989). The New England Journal of Medicine Downloaded from nejm.org at PENN STATE UNIVERSITY on November 25, 2015. For personal use only. No other uses without permission. From the NEJM Archive. Copyright © 2010 Massachusetts Medical Society. All rights reserved. *N Engl J Med* 321 : 1306–1311.
- Lønning, P.E. (2006). Bone safety of aromatase inhibitors versus tamoxifen. *Int. J. Gynecol. Cancer* 16 : 518–520.
- Lu, D.F., Yang, L.J., Wang, F., & Zhang, G.L. (2012). Inhibitory effect of luteolin on estrogen biosynthesis in human ovarian granulosa cells by suppression of aromatase (CYP19). *J. Agric. Food Chem.* 60 : 8411–8418.
- Ludwig, D.S., Aronne, L.J., Astrup, A., De Cabo, R., Cantley, L.C., Friedman, M.I., *et al.* (2021). The carbohydrate-insulin model: A physiological perspective on the obesity pandemic. *Am. J. Clin. Nutr.* 114 : 1873–1885.
- Lukanova, A., Lundin, E., Zeleniuch-Jacquotte, A., Muti, P., Mure, A., Rinaldi, S., *et al.* (2004). Body mass index, circulating levels of sex-steroid hormones, IGF-I and IGF-binding protein-3: A cross-sectional study in healthy women. *Eur. J. Endocrinol.* 150 : 161–171.
- Lusis, A.J., Attie, A.D., & Reue, K. (2008). Metabolic syndrome: From epidemiology to systems biology. *Nat. Rev. Genet.* 9 : 819–830.
- Lustig, R.H., Collier, D., Kassotis, C., Roepke, T.A., Ji Kim, M., Blanc, E., *et al.* (2022). Obesity I: Overview and molecular and biochemical mechanisms. *Biochem. Pharmacol.* 199 : 115012.

- Ma, C.X., Adjei, Araba A., Salavaggione, O.E., Coronel, J., Pelleymounter, L., Wang, L., *et al.* (2005). Human aromatase: Gene resequencing and functional genomics. *Cancer Res.* 65 : 11071–11082.
- Mackness, M., & Mackness, B. (2015). Human paraoxonase-1 (PON1): Gene structure and expression, promiscuous activities and multiple physiological roles. *Gene* 567 : 12–21.
- Maher, A.C., Akhtar, M., & Tarnopolsky, M.A. (2010). Men supplemented with 17 β -estradiol have increased β -oxidation capacity in skeletal muscle. *Physiol. Genomics* 42 : 342–347.
- Mair, K.M., Gaw, R., & MacLean, M.R. (2020). Obesity, estrogens and adipose tissue dysfunction – implications for pulmonary arterial hypertension. *Pulm. Circ.* 10.
- Margolis, K.L., Bonds, D.E., Rodabough, R.J., Tinker, L., Phillips, L.S., Allen, C., *et al.* (2004). Effect of oestrogen plus progestin on the incidence of diabetes in postmenopausal women: Results from the Women’s Health Initiative Hormone Trial. *Diabetologia* 47 : 1175–1187.
- Martinelli, R., Nardelli, C., Pilone, V., Buonomo, T., Liguori, R., Castanò, I., *et al.* (2010). MiR-519d overexpression Is associated with human obesity. *Obesity* 18 : 2170–2176.
- Matthan, N.R., Jalbert, S.M., Barrett, P.H.R., Dolnikowski, G.G., Schaefer, E.J., & Lichtenstein, A.H. (2008). Gender-specific differences in the kinetics of nonfasting TRL, IDL, and LDL apolipoprotein B-100 in men and premenopausal women. *Arterioscler. Thromb. Vasc. Biol.* 28 : 1838–1843.
- Mauvais-Jarvis, F., Clegg, D.J., & Hevener, A.L. (2013). The role of estrogens in control of energy balance and glucose homeostasis. *Endocr. Rev.* 34 : 309–338.
- Meng, Z., Wang, M., Xing, J., Liu, Y., & Li, H. (2019). Myricetin ameliorates atherosclerosis in the low-density-lipoprotein receptor knockout mice by suppression of cholesterol accumulation in macrophage foam cells 1–9.
- Millar, C.L., Duclos, Q., & Blesso, C.N. (2017). Effects of dietary flavonoids on reverse cholesterol transport, HDL metabolism, and HDL function. *Adv. Nutr.* 8 : 226–239.
- Mittendorfer, B., Patterson, B.W., & Klein, S. (2003). Effect of sex and obesity on basal VLDL-triacylglycerol kinetics. *Am. J. Clin. Nutr.* 77 : 573–579.
- Molehin, D., Castro-Piedras, I., Sharma, M., Sennoune, S.R., Arena, D., Manna, P.R., *et al.* (2018). Aromatase acetylation patterns and altered activity in response to sirtuin inhibition. *Mol. Cancer Res.* 16 : 1530–1542.
- Mowel, W.K., Kotzin, J.J., Joannas, L., Basavappa, M.G., Manne, S., Henrickson, S.E., *et al.* (2020). The gut microbiota regulates white adipose tissue

inflammation.pdf 11 : 1–26.

- Murwani, S. (2013). Diet Aterogenik pada Tikus Putih (*Rattus norvegicus* strain Wistar) sebagai Model Hewan Aterosklerosis. *J. Kedokt. Brawijaya* 22.
- Nassiri-asl, M. (2014). Effects of *Urtica dioica* extract on lipid profile in hypercholesterolemic rats.
- Natesan, V., & Kim, S.J. (2021). Lipid metabolism, disorders and therapeutic drugs – Review. *Biomol. Ther.* 29 : 596–604.
- Obanda, D.N., Ribnicky, D., Yu, Y., Stephens, J., & Cefalu, W.T. (2016). An extract of *Urtica dioica* L. mitigates obesity induced insulin resistance in mice skeletal muscle via protein phosphatase 2A (PP2A). *Sci. Rep.* 6 : 1–9.
- Osborn, O., & Olefsky, J.M. (2012). The cellular and signaling networks linking the immune system and metabolism in disease. *Nat. Med.* 18 : 363–374.
- Otvos, J.D., Mora, S., Shalaurova, I., Greenland, P., MacKey, R.H., & Goff, D.C. (2011). Clinical implications of discordance between low-density lipoprotein cholesterol and particle number. *J. Clin. Lipidol.* 5 : 105–113.
- Ouchi, N., Parker, J.L., Lugus, J.J., & Walsh, K. (2011). Adipokines in inflammation and metabolic disease. *Nat. Rev. Immunol.* 11 : 85–97.
- Palmisano, B.T., Zhu, L., & Stafford, J.M. (2017). Role of estrogens in the regulation of liver lipid metabolism. *Adv. Exp. Med. Biol.* 1043 : 227–256.
- Patel, S., Homaei, A., Raju, A.B., & Meher, B.R. (2018). Estrogen: The necessary evil for human health, and ways to tame it. *Biomed. Pharmacother.* 102 : 403–411.
- Paulauskienė, A., Tarasevičienė, Ž., & Laukagalis, V. (2021). Influence of harvesting time on the chemical composition of wild stinging nettle (*Urtica dioica* L.). *Plants* 10.
- Pavlic, B., Šorgić, S., Popov, S., Savić, S., Pertonićević, M., Cvetanović, A., *et al.* (2017). Chemical composition of stinging nettle leaves obtained by different analytical approaches 32 : 18–26.
- Popkin, B.M., Du, S., Green, W.D., Beck, M.A., Algaith, T., Herbst, C.H., *et al.* (2020). Individuals with obesity and COVID-19: A global perspective on the epidemiology and biological relationships. *Obes. Rev.* 21 : 1–17.
- Qiao, L., Zou, C., Van Der Westhuyzen, D.R., & Shao, J. (2008). Adiponectin reduces plasma triglyceride by increasing VLDL triglyceride catabolism. *Diabetes* 57 : 1824–1833.
- Rahmati, M., Keshvari, M., Mirnasouri, R., & Chehelcheraghi, F. (2021). Exercise and *Urtica dioica* extract ameliorate hippocampal insulin signaling, oxidative stress, neuroinflammation, and cognitive function in STZ-induced diabetic rats. *Biomed. Pharmacother.* 139 : 111577.

- Rao, A., Kusters, A., Mells, J.E., Zhang, W., Setchell, K.D.R., Amanso, A.M., *et al.* (2016). Inhibition of ileal bile acid uptake protects against nonalcoholic fatty liver disease in high-fat diet-fed mice. *Sci. Transl. Med.* 8 : 357ra122.
- Repajić, M., Cegledi, E., Zorić, Z., Pedisić, S., Garofulić, I.E., Radman, S., *et al.* (2021). Bioactive compounds in wild nettle (*Urtica dioica* L.) leaves and stalks: Polyphenols and pigments upon seasonal and habitat variations. *Foods* 10.
- Rice, S., Mason, H.D., & Whitehead, S.A. (2006). Phytoestrogens and their low dose combinations inhibit mRNA expression and activity of aromatase in human granulosa-luteal cells. *J. Steroid Biochem. Mol. Biol.* 101 : 216–225.
- Roepke, T.A., Bosch, M.A., Rick, E.A., Lee, B., Wagner, E.J., Seidlova-Wuttke, D., *et al.* (2010). Contribution of a membrane estrogen receptor to the estrogenic regulation of body temperature and energy homeostasis. *Endocrinology* 151 : 4926–4937.
- Rogers, I. (2003). The influence of birthweight and intrauterine environment on adiposity and fat distribution in later life. *Int. J. Obes.* 27 : 755–777.
- Rogers, N.H., Witczak, C.A., Hirshman, M.F., Goodyear, L.J., & Greenberg, A.S. (2009). Estradiol stimulates Akt, AMP-activated protein kinase (AMPK) and TBC1D1/4, but not glucose uptake in rat soleus. *Biochem. Biophys. Res. Commun.* 382 : 646–650.
- Rutto, L.K., Xu, Y., Ramirez, E., & Brandt, M. (2013). Mineral properties and dietary value of raw and processed stinging nettle (*Urtica dioica* L.). *Int. J. Food Sci.* 2013.
- Safi, R., Kovacic, A., Gaillard, S., Murata, Y., Simpson, E.R., McDonnell, D.P., *et al.* (2005). Coactivation of liver receptor homologue-1 by peroxisome proliferator-activated receptor γ coactivator-1 α on aromatase promoter II and its inhibition by activated retinoid X receptor suggest a novel target for breast-specific antiestrogen therapy. *Cancer Res.* 65 : 11762–11770.
- Saharuddin, M., & Kondolele, C.A. (2020). Uji Aktivitas Antioksidan Ekstrak N-Butanol Daun Rambutan (*Nephelium Lappaceum* Linn) Dengan Metode DPPH (1,1-diphenyl-2-picrylhydrazyl) Artikel info Artikel history. *Journal.Yamasi.Ac.Id* 4 : 98–103.
- Samarajeewa, N.U., Docanto, M.M., Simpson, E.R., & Brown, K.A. (2013). CREB-Regulated Transcription Co-Activator Family Stimulates Promoter II-Driven Aromatase Expression in Preadipocytes 2 : 233–241.
- Samocha-Bonet, D., Dixit, V.D., Kahn, C.R., Leibel, R.L., Lin, X., Nieuwdorp, M., *et al.* (2014). Metabolically healthy and unhealthy obese - The 2013 stock conference report. *Obes. Rev.* 15 : 697–708.
- Sanderson, J.T. (2006). The steroid hormone biosynthesis pathway as a target for endocrine-disrupting chemicals. *Toxicol. Sci.* 94 : 3–21.

- Sanna, S., van Zuydam, N.R., Mahajan, A., Kurilshikov, A., Vich Vila, A., Vösa, U., *et al.* (2019). Causal relationships among the gut microbiome, short-chain fatty acids and metabolic diseases. *Nat. Genet.* 51 : 600–605.
- Satoh, K., Sakamoto, Y., Ogata, A., Nagai, F., Mikuriya, H., Numazawa, M., *et al.* (2002). Inhibition of aromatase activity by green tea extract catechins and their endocrinological effects of oral administration in rats. *Food Chem. Toxicol.* 40 : 925–933.
- Schwartz, M.W., Seeley, R.J., Zeltser, L.M., Drewnowski, A., Ravussin, E., Redman, L.M., *et al.* (2017). Obesity pathogenesis: An endocrine society scientific statement. *Endocr. Rev.* 38 : 267–296.
- Sell, H., Habich, C., & Eckel, J. (2012). Adaptive immunity in obesity and insulin resistance. *Nat. Rev. Endocrinol.* 8 : 709–716.
- Shreiner, A.B., Kao, J.Y., & Young, V.B. (2015). The gut microbiome in health and in disease. *Curr. Opin. Gastroenterol.* 31 : 69–75.
- Simopoulos, A.P. (2003). Essential fatty acids in health and chronic diseases. *Forum Nutr.* 56 : 67–70.
- Simpson, E.R. (2000). Role of aromatase in sex steroid action. *J. Mol. Endocrinol.* 25 : 149–156.
- Simpson, E.R., & Dowsett, M. (2002). Aromatase and its inhibitors: Significance for breast cancer therapy. *Recent Prog. Horm. Res.* 57 : 317–338.
- Smith, G.I., Reeds, D.N., Okunade, A.L., Patterson, B.W., & Mittendorfer, B. (2014). Systemic delivery of estradiol, but not testosterone or progesterone, alters very low density lipoprotein-triglyceride kinetics in postmenopausal women. *J. Clin. Endocrinol. Metab.* 99 : 1306–1310.
- Stanhope, K.L., Goran, M.I., Bosy-Westphal, A., King, J.C., Schmidt, L.A., Schwarz, J.M., *et al.* (2018). Pathways and mechanisms linking dietary components to cardiometabolic disease: thinking beyond calories. *Obes. Rev.* 19 : 1205–1235.
- Stárka, L., Hill, M., Pospíšilová, H., & Duškova, M. (2020). Estradiol, Obesity and Hypogonadism. *Physiol. Res.* 69 : 273–278.
- Steiner, B.M., & Berry, D.C. (2022). The Regulation of Adipose Tissue Health by Estrogens. *Front. Endocrinol. (Lausanne)*. 13 : 1–20.
- Sun, Y., & Ding, S. (2020). Er–mitochondria contacts and insulin resistance modulation through exercise intervention. *Int. J. Mol. Sci.* 21 : 1–19.
- Sunarti (2021). Pengaruh Dosis Fruktosa terhadap Indeks Massa Tubuh, Profil Glukosa Darah dan Kadar Trigliserida. *J. Gizi* 10.
- Suzuki, Y., Ohgami, K., Shiratori, K., Jin, X.H., Ilieva, I., Koyama, Y., *et al.* (2006). Suppressive effects of astaxanthin against rat endotoxin-induced uveitis by

- inhibiting the NF- κ B signaling pathway. *Exp. Eye Res.* 82 : 275–281.
- Taşdemir, E., Atmaca, M., Yıldırlm, Y., Bilgin, H.M., Demirtaş, B., Obay, B.D., *et al.* (2017). Influence of coumarin and some coumarin derivatives on serum lipid profiles in carbontetrachloride-exposed rats. *Hum. Exp. Toxicol.* 36 : 295–301.
- Tiano, J.P., & Mauvais-Jarvis, F. (2012). Molecular mechanisms of estrogen receptors' suppression of lipogenesis in pancreatic β -cells. *Endocrinology* 153 : 2997–3005.
- Tilg, H., Zmora, N., Adolph, T.E., & Elinav, E. (2020). The intestinal microbiota fuelling metabolic inflammation. *Nat. Rev. Immunol.* 20 : 40–54.
- Tontonoz, P., & Spiegelman, B.M. (2008). Fat and beyond: The diverse biology of PPAR γ . *Annu. Rev. Biochem.* 77 : 289–312.
- Turcot, L., & De, F. (2010). Susceptibility To Insulin Resistance. *Society* 17 : 1–5.
- Turer, A.T., & Scherer, P.E. (2012). Adiponectin: Mechanistic insights and clinical implications. *Diabetologia* 55 : 2319–2326.
- Upa, F.T., Saroyo, S., & Katili, D.Y. (2017). KOMPOSISI PAKAN TIKUS EKOR PUTIH (*Maxomys hellwandii*) DI KANDANG. *J. Ilm. Sains* 17 : 7.
- Upton, R. (2013). Stinging nettles leaf (*Urtica dioica* L.): Extraordinary vegetable medicine. *J. Herb. Med.* 3 : 9–38.
- Van Gaal, L.F., Wauters, M.A., Mertens, I.L., Considine, R. V, & De Leeuw, I.H. (1999). Clinical endocrinology of human leptin. *Int. J. Obes. Relat. Metab. Disord. J. Int. Assoc. Study Obes.* 23 Suppl 1 : 29–36.
- Verderame, M., Migliaccio, V., & Scudiero, R. (2018). Comptes Rendus Biologies Role of estrogen receptors , P450 aromatase , PCNA and p53 in high-fat-induced impairment of spermatogenesis in rats. *Comptes rendus - Biol.*
- Voight, R. (1994). Pengantar Teknologi Farmasi. Yogyakarta : UGM Press.
- Wahner-Roedler, D.L., Bauer, B.A., Loehrer, L.L., Cha, S.S., Hoskin, T.L., & Olson, J.E. (2014). The effect of grape seed extract on estrogen levels of postmenopausal women: A pilot study. *J. Diet. Suppl.* 11 : 184–197.
- Wang, H., Li, R., & Hu, Y. (2009). The alternative noncoding exons 1 of aromatase (Cyp19) gene modulate gene expression in a posttranscriptional manner. *Endocrinology* 150 : 3301–3307.
- Wang, X., Docanto, M.M., Sasano, H., Foundation, K.C., Breast, F., Lo, C., *et al.* (2015). Prostaglandin E 2 Inhibits p53 in Human Breast Adipose Stromal Cells : A Novel Mechanism for the Regulation of Aromatase in Obesity and Breast Cancer 2 : 1–12.
- Wang, Z., Ge, S., Li, S., Lin, H., & Lin, S. (2020). Anti-obesity effect of trans-

cinnamic acid on HepG2 cells and HFD-fed mice. *Food Chem. Toxicol.* 137 : 111148.

Witting, C., Devareddy, A., & Rodriguez, F. (2022). Review of Lipid-Lowering Therapy in Women from Reproductive to Postmenopausal Years. *Rev. Cardiovasc. Med.* 23.

Wong, W.P.S., Tiano, J.P., Liu, S., Hewitt, S.C., Le May, C., Dalle, S., *et al.* (2010). Extranuclear estrogen receptor- α stimulates NeuroD1 binding to the insulin promoter and favors insulin synthesis. *Proc. Natl. Acad. Sci. U. S. A.* 107 : 13057–13062.

Woodard, G.A., Brooks, M.M., Barinas-Mitchell, E., MacKey, R.H., Matthews, K.A., & Sutton-Tyrrell, K. (2011). Lipids, menopause, and early atherosclerosis in Study of Women's Health Across the Nation Heart women. *Menopause* 18 : 376–384.

Wu, Y., Wang, M., Yang, T., Qin, L., Hu, Y., Zhao, D., *et al.* (2021). Cinnamic Acid Ameliorates Nonalcoholic Fatty Liver Disease by Suppressing Hepatic Lipogenesis and Promoting Fatty Acid Oxidation 2021.

Xiang, L., Wu, Q., Cheng, L., Sun, K., Li, J., Yoshida, M., *et al.* (2019). Leptin and Adiponectin Signaling Pathways Are Involved in the Antiobesity Effects of Peanut Skin Extract. *Oxid. Med. Cell. Longev.* 2019 : 2935315.

Xiao, H., & Kang, S. (2020). The Role of the Gut Microbiome in Energy Balance With a Focus on the Gut-Adipose Tissue Axis. *Front. Genet.* 11 : 1–12.

Xu, X., Sun, M., Ye, J., Luo, D., Su, X., Zheng, D., *et al.* (n.d.). The Effect of Aromatase on the Reproductive Function of Obese Males Aromatase Gene Characteristics and Expression Association Between Aromatase and Obesity.

Yue, X., Lu, M., Lancaster, T., Cao, P., Honda, S.I., Staufenbiel, M., *et al.* (2005). Brain estrogen deficiency accelerates A β plaque formation in an Alzheimer's disease animal model. *Proc. Natl. Acad. Sci. U. S. A.* 102 : 19198–19203.

Yuxin, L., Chen, L., Xiaoxia, L., Yue, L., Junjie, L., Youzhu, L., *et al.* (2021). Research Progress on the Relationship between Obesity-Inflammation-Aromatase Axis and Male Infertility. *Oxid. Med. Cell. Longev.* 2021.

Zagayko, A.L., Kravchenko, G.B., Krasilnikova, O.A., & Ogai, Y.O. (2013). Grape polyphenols increase the activity of HDL enzymes in old and obese rats. *Oxid. Med. Cell. Longev.* 2013 : 593761.

Zahid, H., Subbaramaiah, K., Iyengar, N.M., Zhou, X.K., Chen, I., Bhardwaj, P., *et al.* (2018). Leptin regulation of the p53-HIF1 α / PKM2-aromatase axis in breast adipose stromal cells : a novel mechanism for the obesity – breast cancer link. *Nat. Publ. Gr.* 42 : 711–720.

Zelnak, A.B., & Carthon, B.C. (2018). Hormonal Therapy for Cancer - istorical Background of Hormonal Therapy for Breast Cancer - General Therapeutic

Strategies for Metastatic Breast Cancer - Current Hormonal Therapies for Breast Cancer 236–243.

- Zhang, M., Xie, Z., Gao, W., Pu, L., Wei, J., & Guo, C. (2016). Quercetin regulates hepatic cholesterol metabolism by promoting cholesterol-to-bile acid conversion and cholesterol efflux in rats. *Nutr. Res.* 36 : 271–279.
- Zhao, Y., Agarwal, V.R., Mendelson, C.R., & Simpson, E.R. (1996). Estrogen biosynthesis proximal to a breast tumor is stimulated by PGE2 via cyclic AMP, leading to activation of promoter II of the CYP19 (aromatase) gene. *Endocrinology* 137 : 5739–5742.
- Zhao, Y., Nichols, J.E., Bulun, S.E., Mendelson, C.R., & Simpson, E.R. (1995). Aromatase P450 gene expression in human adipose tissue: Role of a Jak/STAT pathway in regulation of the adipose-specific promoter. *J. Biol. Chem.*
- Zhao, Y., Wang, Q.Y., Zeng, L.T., Wang, J.J., Liu, Z., Fan, G.Q., *et al.* (2022). Long-Term High-Fat High-Fructose Diet Induces Type 2 Diabetes in Rats through Oxidative Stress. *Nutrients* 14.
- Ziouzenkova, O., Orasanu, G., Sukhova, G., Lau, E., Berger, J.P., Tang, G., *et al.* (2015). Asymmetric Cleavage of β -Carotene Yields a Transcriptional Repressor of Retinoid X Receptor 21 : 77–88.
- Zivkovic, A.M., German, J.B., & Sanyal, A.J. (2007). Comparative review of diets for the metabolic syndrome: Implications for nonalcoholic fatty liver disease. *Am. J. Clin. Nutr.* 86 : 285–300.