

DAFTAR PUSTAKA

- Absalome MA, Massara CC, Alexandre AA, Gervais K, Chantal GGA, Ferdinand D, Rhedoor AJ, Coulibaly I, George TG, Brigitte T, Marion M, Jean-Paul C, 2020. Biochemical properties, nutritional values, health benefits and sustainability of palm oil. *Biochimie*, 178, 81–95. doi: 10.1016/j.biochi.2020.09.019.
- Adewale OF, Isaac O, Tunmise MT, Omoniyi O, 2016. Palm oil and ground nut oil supplementation effects on blood glucose and antioxidant status in alloxan-induced diabetic rats. *Pak J Pharm Sci*. 29(1):83–7. PMID: 26826842.
- Ahmadi K, Oktafa H, Estiasih T, 2018. The effect of phytosterol-rich fraction from palm fatty acid distillate on blood serum lipid profile of dyslipidemia rats. *J Diet Suppl*. 15(5):728–739. doi: 10.1080/19390211.2017.1406025.
- Al-Hayder MN, Al-Mayyahi RS, Abdul-Razak AS, 2020. Effects of sunflower oils and beef tallow on serum parameters and liver histopathology in experimental rats. *Obesity Medicine* 18: 100232, doi: 10.1016/j.obmed.2020.100232.
- Alrawi SJ, Schiff M, Carroll RE, Dayton M, Gibbs JF, Kulavlat M, Tan D, Berman K, Stoler DL, Anderson GR, 2006. Aberrant crypt foci. *Anticancer Res*. 26(1A):10719. PMID: 16475686.
- Alvarez N, Sarmiento ME, Mohd-Nor N, Acosta A, 2014. Uses of immunoglobulin A in the control of the infectious diseases. *Biotechnologia Aplicada* 31: 1–6.
- Anonim, 2012. *Tempe : Persembahan Indonesia untuk Dunia*. PUSINDO Badan Standardisasi Nasional: Jakarta.
- Anonim, 2018. Laporan Gabungan Pengusaha Kelapa Sawit Indonesia. <https://gapki.id/news/4127/gapki-memperkirakan-produksi-cpo-tahun-2018-tetap-naik-10>
- Araujo JR, Tomas J, Brenner C, Sansonetti PJ, 2017. Impact of high-fat diet on the intestinal microbiota and small intestinal physiology before and after the onset of obesity. *Biochimie* 141: 97–106. doi: 10.1016/j.biochi.2017.05.019.
- Assche GV, 2011. Fecal biomarkers for the diagnosis and management of inflammatory bowel disease. *Gastroenterology & Hepatology* 7(6): 396–398. doi: 10.2147/JIR.S342846.
- Astrup A. A changing view on saturated fatty acids and dairy: from enemy to friend. *Am J Clin Nutr*. 2014 Dec;100(6):1407–8. doi: 10.3945/ajcn.114.099986.

- Aune D, Norat T, Romundstad P, Vatten LJ, 2013. Dairy products and the risk of type 2 diabetes: a systematic review and dose-response meta-analysis of cohort studies. *Am J Clin Nutr.* 98(4): 1066–83. doi: 10.3945/ajcn.113.059030.
- Bahreyni A, Rezaei M, Bahrami A, Khazaei M, Fiuji H, Ryzhikov M, Ferns GA, Avan A, Hassanian SM, 2019. Diagnostic, prognostic, and therapeutic potency of microRNA 21 in the pathogenesis of colon cancer, current status and prospective. *J Cell Physiol.* 234(6):8075–8081. doi: 10.1002/jcp.27580.
- Barham D, Trinder P, 1972. An improved color reagent for the determination of blood glucose by the oxidase system. *Analyst*, 97(151):142–145. doi: 10.1039/an9729700142.
- Basson AR, Chen C, Sagl F, Trotter A, Bederman I, Gomez-Nguyen A, Sundrud MS, Ilic S, Cominelli F, Rodriguez-Palacios A, 2021. Regulation of intestinal inflammation by dietary fats. *Front Immunol.* 11:604989. doi: 10.3389/fimmu.2020.604989.
- Benham V, Bernard JJ, 2018. Why does a high-fat diet increase cancer risk? *Future Oncology* doi: 10.2217/fon-2017-0610.
- Bird RP, 1987. Observation and quantification of aberrant crypts in the murine colon treated with a colon carcinogen: preliminary findings. *Cancer Lett.* 37(2):147–51. doi: 10.1016/0304-3835(87)90157-1.
- Bird RP, 1995. Role of aberrant crypt foci in understanding the pathogenesis of colon cancer. *Cancer Lett.* 93(1):55–71. doi: 10.1016/0304-3835(95)03788-X.
- Bird RP, Good CK, 2000. The significance of aberrant crypt foci in understanding the pathogenesis of colon cancer. *Toxicol Lett.* 112-113:395–402. doi: 10.1016/s0378-4274(99)00261-1.
- Boateng J, Verghese M, Chawan CB, Shackelford L, Walker LT, Khatiwada J, Williams DS, 2006. Red palm oil suppresses the formation of azoxymethane (AOM) induced aberrant crypt foci (ACF) in Fisher 344 male rats. *Food Chem Toxicol.* 44(10):1667–73. doi: 10.1016/j.fct.2006.05.002.
- BPS, 2024. Luas panen, produksi, dan produktivitas jagung menurut provinsi 2022-2023. Badan Pusat Statistik, Jakarta, Indonesia, <https://www.bps.go.id/id/statistics-table/2/MjIwNCMy/luas-panen--produksi--dan-produktivitas-jagung-menurut-provinsi.html>
- Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A, 2018. Global Cancer Statistics 2018: GLOBOCON Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *Canc J Clinicians* 68: 394–424.

- Bray GA, Popkin BM, 1998. Dietary fat intake does affect obesity! *Am J Clin Nutr* 68(6): 1157–73. doi: 10.1093/ajcn/68.6.1157.
- Bridgman SL, Konya T, Azad MB, Guttman DS, Sears MR, Becker AB, Turvey SE, Mandhane PJ, Subbarao P, Scott JA, Field CJ, Kozyrskyj AL, 2016. High fecal IgA is associated with reduced *Clostridium difficile* colonization in infants. *Microbes and Infection* 18: 543–549.
- Brown WR, Kloppel TM, 1989. The liver and IgA: immunological, cell biological and clinical implications. *Hepatology*. 9(5):763–84. doi: 10.1002/hep.1840090518.
- Bruce WR, Giacca A, Medline A, 2000. Possible mechanisms relating diet and risk of colon cancer. *Cancer Epidemiology, Biomarkers & Prevention* 9: 1271–1279.
- Budin SB, Othman F, Louis SR, Bakar MA, Das S, Mohamed J, 2009. The effects of palm oil tocotrienol-rich fraction supplementation on biochemical parameters, oxidative stress and the vascular wall of streptozotocin-induced diabetic rats. *Clinics (Sao Paulo)*. 64(3):235–44. doi: 10.1590/s1807-59322009000300015.
- Buettner R, Parhofer KG, Woenckhaus M, Wrede CE, Kunz-Schughart LA, Scholmerich J, Bollheimer LC, 2006. Defining high-fat-diet rat models: metabolic and molecular effects of different fat types. *Journal of Molecular Endocrinology* 36: 485–501.
- Buettner R, Scholmerich J, Bollheimer LC, 2007. High-fat diets: modeling the metabolic disorders of human obesity in rodents. *Obesity* 15(4): 798–808.
- Cani PD, Bibiloni R, Knauf C, Waget A, Neyrinck AM, Delzenne NM, Burcelin R., 2008. Changes in gut microbiota control metabolic endotoxemia induced inflammation in high fat diet-induced obesity and diabetes in mice. *Diabetes* 57, 1470–1481.
- Carini F, Mazzola M, Rappa F, Jurjus A, Geagea AG, Kattar SA, Bou-Assi T, Jurjus R, Damiani P, Leone A, Tomasello G, 2017. Colorectal carcinogenesis: role of oxidative stress and antioxidants. *Anticancer Research* 37: 4759–4766.
- Carrillo W, Carpio C, Morales D, Vilcacundo E, Alvarez M, Silva M, 2017. Content of fatty acids in corn (*Zea mays* L.) oil from Ecuador. *Asian J Pharm Clin Res.*, 10(8), 150–153. doi: 10.22159/ajpcr.2017.v10i8.18786.
- Center MM, Jemal A, Smith RA, Ward E, 2009. Worldwide variations in colorectal cancer. *Cancer Journal for Clinicians* 59(6): 366–378.
- Cerutti A and Rescigno M, 2008. The biology of intestinal Immunoglobulin A responses. *Immunity* 28: 740–750.

- Chalova P, Tazky A, Skultety L, Minichova L, Chovanec M, Ciernikova S, Mikus P, Piestansky J, 2023. Determination of short-chain fatty acids as putative biomarkers of cancer diseases by modern analytical strategies and tools: a review. *Front Oncol*. 13:1110235. doi: 10.3389/fonc.2023.1110235.
- Chalkias A, Nikotian G, Koutsovasilis A, Bramis J, Manouras A, Mystrioti D, Katergiannakis V, 2011. Patients with colorectal cancer are characterized by increased concentration of fecal hb-hp complex, myeloperoxidase, and secretory IgA. *American Journal of Clinical Oncology* 34: 561–566.
- Chen J, Huang XF, 2009. The signal pathways in azoxymethane-induced colon cancer and preventive implications. *Cancer Biol Ther*. 8(14):1313–7. doi: 10.4161/cbt.8.14.8983.
- Chen Z, Wang PP, Woodrow J, Zhu Y, Roebbothan B, Mclaughlin JR, Parfrey PS, 2015. Dietary patterns and colorectal cancer: results from a Canadian population-based study. *Nutrition Journal* 14:8.
- Cheng J, Balbuena E, Miller B, Eroglu A, 2021. The role of β -carotene in colonic inflammation and intestinal barrier integrity. *Front Nutr*. 8:723480. doi: 10.3389/fnut.2021.723480.
- Chi MS, Ray RL, Williams DC, Tuig MV, Galbreath K, 1999. Effects of dietary fat on blood pressure and plasma lipids in spontaneously hypertensive rats. *Nutrition Research*, 19(6):917–925, doi: 10.1016/S0271-5317(99)00052-4.
- Chiesa G, Rigamonti E, Lovati MR, Disconzi E, Soldati S, Sacco MG, Cato EM, Patton V, Scanziani E, Vezzoni, P, Arnoldi A, Locati D, Sirtori CR. 2008. Reduced mammary tumor progression in a transgenic mouse model fed an isoflavone-poor soy protein concentrate. *Mol Nutr Food Res*. 52:1121–1129.
- Chiu MC, Coutinho CM, Goncalves LAG, 2009. Carotenoids concentration of palm oil using membrane technology. *Desalination* 245: 783–786.
- Clapper ML, Cooper HS, Chang WC, 2007. Dextran sulfate sodium-induced colitis-associated neoplasia: a promising model for the development of chemopreventive interventions. *Acta Pharmacol Sin* 28(9): 1450–1459.
- Clarkson TB. 2002. Soy, soy phytoestrogens and cardiovascular disease. *Journal of Nutrition* 132: S566–569.
- Colditz GA, Manson JE, Stampfer MJ, Rosner B, Willett WC, Speizer FE, 1992. Diet and risk of clinical diabetes in women. *Am J Clin Nutr*. 55(5):1018–23. doi: 10.1093/ajcn/55.5.1018.
- Conlon MA, Sambanthamurthi R, Tan YA, Sundram K, Fairus S, Abeywardena MY, 2020. Consumption of an oil palm fruit extract promotes large bowel health in rats. *Nutrients*. 12(3):644. doi: 10.3390/nu12030644.

- Corpet DE, Tache S, 2002. Most effective colon cancer chemopreventive agents in rats: a systematic review of aberrant crypt foci and tumor data, ranked by potency. *Nutrition and Cancer* 43(1): 1–21.
- Cottet V, Vaysse C, Scherrer ML, Ortega-Deballon P, Lakkis Z, Delhorme JB, Deguelte-Lardière S, Combe N, Bonithon-Kopp C, 2015. Fatty acid composition of adipose tissue and colorectal cancer: a case-control study. *Am J Clin Nutr.* 101(1):192–201. doi: 10.3945/ajcn.114.088948.
- Coussens LM, Werb Z, 2002. Inflammation and cancer. *Nature.* 420(6917):860–7. doi: 10.1038/nature01322.
- Cross AJ, Sinha R, 2004. Meat-related mutagens/carcinogens in the etiology of colorectal cancer. *Environmental and Molecular Mutagenesis* 44(1): 44–55. doi: 10.1002/em.20030.
- Deeg R, Ziegenhorn J, 1983. Kinetic enzymic method for automated determination of total cholesterol in serum. *Clin Chem.* 29(10):1798-802. PMID: 6577981.
- Dehghan M, Mente A, Zhang X, Swaminathan S, Li W, Mohan V, Iqbal R, Kumar R, Wentzel-Viljoen E, Rosengren A, Amma LI, Avezum A, Chifamba J, Diaz R, Khatib R, Lear S, Lopez-Jaramillo P, Liu X, Gupta R, Mohammadifard N, Gao N, Oguz A, Ramli AS, Seron P, Sun Y, Szuba A, Tsolekile L, Wielgosz A, Yusuf R, Hussein Yusufali A, Teo KK, Rangarajan S, Dagenais G, Bangdiwala SI, Islam S, Anand SS, Yusuf S; Prospective Urban Rural Epidemiology (PURE) study investigators, 2017. Associations of fats and carbohydrate intake with cardiovascular disease and mortality in 18 countries from five continents (PURE): a prospective cohort study. *Lancet.* 390(10107):2050–2062. doi: 10.1016/S0140-6736(17)32252-3.
- Ding S, Chi MM, Scull BP, Rigby R, Schwerbrock NMJ, Magness S, Jobin C, Lund PK, 2010. High fat diet: bacteria interactions promote intestinal inflammation which precedes and correlates with obesity and insulin resistance in mice. *Plos One* 5 (8): e12191 doi: 10.1371/journal.pone.0012191.
- Doaci S, Hajiesmaeil M, Aminifard A, Mosavi-Jarrahi SA, Akbari ME, Gholamalizadeh M, 2018. Effects of gene polymorphisms of metabolic enzymes on the association between red and processed meat consumption and the development of colon cancer; a literature review. *J of Nutritional Science* vol 7(e26) doi: 10.1017/jns.2018.17.
- Dupont J, White PJ, Carpenter MP, Schaefer EJ, Meydani SN, Elson CE, Woods M, Gorbach SL, 1990. Food uses and health effects of corn oil. *Journal of the American College of Nutrition,* 9:5, 438-470, doi: 10.1080/07315724.1990.10720403.

- Edem DO, 2002. Palm oil: Biochemical, physiological, nutritional, hematological, and toxicological aspects: A review. *Plant Foods for Human Nutrition*, 57(3–4), 319–341. doi: 10.1023/A:1021828132707.
- Elias ED, Uhanova J, Minuk GY, 2020. Serum immunoglobulin A levels and alcohol-induced liver disease. *Can Liver J.* 3(2):177–187. doi: 10.3138/canlivj.2019-0006.
- Enos RT, Velazquez KT, McClellan JL, Cranford TL, Nagarkatti M, Nagarkatti PS, Davis JM, Murphy EA, 2016. High-fat diets rich in saturated fat protect against azoxymethane/dextran sulfate sodium-induced colon cancer. *Am J Physiol Gastrointest Liver Physiol* 310: G906–G919.
- Evans JP, Sutton PA, Winiarski BK, Fenwick SW, Malik HZ, Vimalachandran D, Tweedle EM, Costello E, Palmer DH, Park BK, Kitteringham NR, 2016. From mice to men: Murine models of colorectal cancer for use in translational research. *Crit Rev Oncol Hematol.* 98:94–105. doi: 10.1016/j.critrevonc.2015.10.009.
- Everitt JI and Gross EA, 2006. *Euthanasia and Necropsy in The Laboratory Rat*, 2nd ed. Elsevier Academic Press, Burlington MA, USA.
- Fang F, Kang Z, Wong C, 2010. Vitamin E tocotrienols improve insulin sensitivity through activating peroxisome proliferator-activated receptors. *Mol Nutr Food Res.* 54(3):345–52. doi: 10.1002/mnfr.200900119.
- Fang Z, He M, Song M, 2021. Serum lipid profiles and risk of colorectal cancer: a prospective cohort study in the UK Biobank. *Br J Cancer.* 124(3):663–670. doi: 10.1038/s41416-020-01143-6.
- FAO, 2010. Fats and fatty acid in human nutrition. Report of an expert consultation. http://www.who.int/nutrition/publications/nutrientrequirements/fatsandfattyacids_humannutrition/en/
- Femia AM, Caderni G, 2008. Rodent models of colon carcinogenesis for the study of chemopreventive activity of natural products. *Planta Medica* 74(13): 1602–1607.
- Ferlay J, Ervik M, Lam F, Laversanne M, Colombet M, Mery L, Piñeros M, Znaor A, Soerjomataram I, Bray F, 2024. *Global Cancer Observatory: Cancer Today*. Lyon, France: International Agency for Research on Cancer. Available from: <https://gco.iarc.who.int/today>, accessed [27 05 2024].

- Fujise T, Iwakiri R, Kakimoto T, Shiraishi R, Sakata Y, Wu B, Tsunada S, Ootani A, Fujimoto K, 2007. Long-term feeding of various fat diets modulates azoxymethane-induced colon carcinogenesis through Wnt/beta-catenin signaling in rats. *Am J Physiol Gastrointest Liver Physiol*. 292(4):G1150–6. doi: 10.1152/ajpgi.00269.2006.
- Fung TT and Brown LS, 2013. Dietary patterns and the risk of colorectal cancer. *Curr Nutr Rep*. 2(1): 48–55.
- Gallaher DD, Chen CL, 1995. Beef tallow, but not corn bran or soybean polysaccharide, reduces large intestinal and fecal bile acid concentrations in rats. *Nutr Cancer*. 23(1):63–75. doi: 10.1080/01635589509514362.
- Galli C, Calder PC, 2009. Effects of fat and fatty acid intake on inflammatory and immune responses: a critical review. *Ann Nutr Metab*. 55(1-3):123–39. doi: 10.1159/000228999.
- Gallo D, Zannoni GF, De Stefano I, Mosca M, Ferlini C, Mantuano E, Scambia G. 2008. Soy phytochemicals decrease nonsmall cell lung cancer growth in female athymic mice. *J Nutr*. 138:1360–4.
- Genda T, Sasaki Y, Kondo T, Hino S, Nishimura N, Tsukahara T, Sonoyama K, Morita T, 2017. Fructo-oligosaccharide-induced transient increases in cecal immunoglobulin A concentrations in rats are associated with mucosal inflammation in response to increased gut permeability. *J Nutr* 147:1900–1908.
- Gheorghe AS, Negru ȘM, Preda M, Mihăilă RI, Komporaly IA, Dumitrescu EA, Lungulescu CV, Kajanto LA, Georgescu B, Radu EA, Stănculeanu DL, 2022. Biochemical and metabolic pathways associated with microbiota-derived butyrate in colorectal cancer and omega-3 fatty acids implications: a narrative review. *Nutrients*. 14(6):1152. doi: 10.3390/nu14061152.
- Gordon DJ, Probstfield JL, Garrison RJ, Neaton JD, Castelli WP, Knoke JD, Jacobs DR Jr, Bangdiwala S, Tyroler HA, 1989. High-density lipoprotein cholesterol and cardiovascular disease. Four prospective American studies. *Circulation*. 79(1):8–15. doi: 10.1161/01.cir.79.1.8.
- Guda K, Claffey KP, Dong M, Nambiar PR, Rosenberg DW, 2003. Defective processing of the transforming growth factor-beta1 in azoxymethane-induced mouse colon tumors. *Mol Carcinog*. 37(1):51–9. doi: 10.1002/mc.10120.
- Habig, WH, Pabst MJ, Jakoby WB, 1974. Glutathione S-transferases. The first enzymatic step in mercapturic acid formation. *J. Biol. Chem*. 249(22): 7130–7139. PMID: 4436300.

- Hadi RF, Sudiyono, Wati AK, Rahmawati D, 2021. The effect of various vegetable oils in diets on the percentage of internal organ weights in local male ducks. *IOP Conference Series Earth and Environmental Science* 828(1):012015. doi:10.1088/1755-1315/828/1/012015.
- Haque S, Morris JC, 2017. Transforming growth factor- β : A therapeutic target for cancer. *Hum Vaccin Immunother.* 13(8):1741–1750. doi: 10.1080/21645515.2017.1327107.
- Hardman WE, Cameron IL, Heitman DW, Contreras E, 1991. Demonstration of the need for end point validation of putative biomarkers: failure of aberrant crypt foci to predict colon cancer incidence. *Cancer Res.* 51(23 Pt 1): 6388–92. PMID: 1933903.
- Hasibuan HA, 2012. Kajian mutu dan karakteristik minyak sawit Indonesia serta produk fraksinasinya. *Jurnal Standardisasi* 14(1), 13–21.
- Hill JO, Lin D, Yakubu F, Peters JC, 1992. Development of dietary obesity in rats: influence of amount and composition of dietary fat. *Int J Obes Relat Metab Disord* 16(5):321–33. PMID: 1319966.
- Hodge AM, Williamson EJ, Bassett JK, MacInnis RJ, Giles GG, English DR, 2015. Dietary and biomarker estimates of fatty acids and risk of colorectal cancer. *Int J Cancer.* 137(5):1224–34. doi: 10.1002/ijc.29479.
- Hokanson JE, Austin MA, 1996. Plasma triglyceride level is a risk factor for cardiovascular disease independent of high-density lipoprotein cholesterol level: a meta-analysis of population-based prospective studies. *J Cardiovasc Risk.* 3(2):213–9. PMID: 8836866.
- Hooper L, Martin N, Jimoh OF, Kirk C, Foster E, Abdelhamid AS, 2020. Reduction in saturated fat intake for cardiovascular disease. *Cochrane Database Syst Rev.* 2020 May 19;5(5):CD011737. doi: 10.1002/14651858.CD011737.pub2. Update in: *Cochrane Database Syst Rev.* 2020 Aug 21;8:CD011737. doi: 10.1002/14651858.CD011737.pub3.
- Hoover WH, Heitmann RN, 1972. Effects of dietary fiber levels on weight gain, cecal volume and volatile fatty acid production in rabbits. *J Nutr.* 102(3):375–379. doi: 10.1093/jn/102.3.375.
- Hosomi K, Kiyono H, Kunisawa J, 2020. Fatty acid metabolism in the host and commensal bacteria for the control of intestinal immune responses and diseases. *Gut Microbes.* 11(3):276–284. doi: 10.1080/19490976.2019.1612662.

- Hsu SH, Syu DK, Chen YC, Liu CK, Sun CA, Chen M, 2022. The association between hypertriglyceridemia and colorectal cancer: a long-term community cohort study in Taiwan. *Int J Environ Res Public Health*. 19(13):7804. doi: 10.3390/ijerph19137804.
- Huang XJ, Choi YK, Im HS, Yarimaga O, Yoon E, Kim HS, 2006. Aspartate aminotransferase (AST/GOT) and alanine aminotransferase (ALT/GPT) detection techniques. *Sensors* (Basel). 6(7):756–82. PMCID: PMC3894536.
- Huxley RR, Ansary-Moghaddam A, Clifton P, Czernichow S, Parr CL, Woodward M, 2009. The impact of dietary and lifestyle risk factors on risk of colorectal cancer: a quantitative overview of the epidemiological evidence. *Int J Cancer* 125: 171–180.
- Hwang J, 2009. Diets with corn oil and/or low protein increase acute acetaminophen hepatotoxicity compared to diets with beef tallow in a rat model. *Nutr Res Pract*, 3(2), 95–101. <https://doi.org/10.4162/nrp.2009.3.2.95>.
- Ibegbulem CO, Chikezie PC, 2012. Serum lipid profile of rats (*Rattus norvegicus*) fed with palm oil and palm kernel oil-containing diets. *Asian Journal of Biochemistry*, 7: 46-53. doi: 10.3923/ajb.2012.46.53.
- Ijssennagger N, Belzer C, Hooiveld GJ, Dekker J, van Mil SW, Müller M, Kleerebezem M, van der Meer R, 2015. Gut microbiota facilitates dietary heme-induced epithelial hyperproliferation by opening the mucus barrier in colon. *Proc Natl Acad Sci USA*. 112(32): 10038–43. doi: 10.1073/pnas.1507645112.
- Inamine T, Schnabl B, 2018. Immunoglobulin A and liver diseases. *J Gastroenterol*. 53(6):691–700. doi: 10.1007/s00535-017-1400-8.
- Istomin N, Härma MA, Akhi R, Nissinen AE, Savolainen MJ, Adeshara K, Lehto M, Groop PH, Koivukangas V, Hukkanen J, Hörkkö S, 2022. Total fecal IgA levels increase and natural IgM antibodies decrease after gastric bypass surgery. *APMIS*. 130(11): 637–646. doi: 10.1111/apm.13268.
- Ito H, Wada T, Ohguchi M, Sugiyama K, Kiriya S, Morita T, 2008. The degree of polymerization of inulin-like fructans affects cecal mucin and immunoglobulin A in rats. *J Food Sci*. 73: H36–41.
- Ito H, Takemura N, Sonoyama K, Kawagishi H, Topping DL, Conlon MA, Morita T, 2011. Degree of polymerization of inulin-type fructans differentially affects number of lactic acid bacteria, intestinal immune functions, and immunoglobulin A secretion in the rat cecum. *J. Agric. Food. Chem.* 59: 5771–5778.

- Jang IS, Hwang DY, Chae KR, Lee JE, Kim YK, Kang TS, Hwang JH, Lim CH, Huh YB, Cho JS, 2003. Role of dietary fat type in the development of adiposity from dietary obesity-susceptible Sprague-Dawley rats. *Br J Nutr.* 89(3):429–38. doi: 10.1079/BJN2002801.
- Jiang Q, Jiang Z, Hall YJ, Jang Y, Snyder PW, Bain C, Huang J, Jannasch A, Cooper B, Wang Y, Moreland M, 2013. Gamma-tocopherol attenuates moderate but not severe colitis and suppresses moderate colitis-promoted colon tumorigenesis in mice. *Free Radic Biol Med.* 65:1069-1077. doi: 10.1016/j.freeradbiomed.2013.08.187.
- Juca MJ, Bandeira BC, Carvalho DS, Leal AT, 2014. Comparative study of 1,2-dimethylhydrazine and azoxymethane on the induction of colorectal cancer in rats. *Journal of Coloproctology* 34(3): 167–173. doi:10.1016/j.jcol.2014.06.003.
- Kanehara K, Ohnuma S, Kanazawa Y, Sato K, Kokubo S, Suzuki H, Karasawa H, Suzuki T, Suzuki C, Naitoh T, Unno M, Abe T, 2019. The indole compound MA-35 attenuates tumorigenesis in an inflammation-induced colon cancer model. *Sci Rep.* 9(1):12739. doi: 10.1038/s41598-019-48974-9.
- Karaji-Bani M, Montazeri F, Hashemi M, 2006. Effect of palm oil on serum lipid profile in rats. *Pakistan Journal of Nutrition* 5(3): 234–236.
- Karunanithi S, Levi L, 2018. High-fat diet and colorectal cancer: myths and facts. *Future Oncology* 14(6): 493–495.
- Katengua-Thamahane E, Bacova BS, Bernatova I, Sykora M, Knezl V, Rooyen JV, Tribulova N, 2017. Effects of red palm oil on myocardial antioxidant enzymes, nitric oxide synthase and heart function in spontaneously hypertensive rats. *International Journal of Molecular Sciences* 18: 2476; doi:10.3390/ijms18112476.
- Kaźmierczak-Siedlecka K, Marano L, Merola E, Roviello F, Połom K, 2022. Sodium butyrate in both prevention and supportive treatment of colorectal cancer. *Front Cell Infect Microbiol.* 12: 1023806. doi: 10.3389/fcimb.2022.1023806.
- Kementerian Kesehatan RI, 2017. *Kanker Kolorektal : Pedoman Nasional Pelayanan Kedokteran*. Komite Penanggulangan Kanker Nasional, Kementerian Kesehatan Republik Indonesia.
- Kementerian Pertanian RI, 2018. *Buletin Konsumsi Pangan Volume 9 Nomor 2*. Pusat Data dan Sistem Informasi Pertanian, Sekretarian Jenderal Kementerian Pertanian, Jakarta.

- Khil J, Gallaher DD, 2004. Beef tallow increases apoptosis and decreases aberrant crypt foci formation relative to soybean oil in rat colon. *Nutr Cancer*. 50(1):55–62. doi: 10.1207/s15327914nc5001_8.
- Kim YS, Milner JA, 2007. Dietary modulation of colon cancer risk. *J Nutr*. 137(11 Suppl):2576S–2579S. doi: 10.1093/jn/137.11.2576S.
- Kim S, Trudo SP, Gallaher DD, 2019. Apiaceous and cruciferous vegetables fed during the post-initiation stage reduce colon cancer risk markers in rats. *Journal of Nutrition* doi:10.1093/jn/nxy257.
- Knight HB, Jordan EF Jr, Swern D, 1946. Identification of linoleic and linolenic acids of beef tallow. *J Biol Chem*. 164:477–82. PMID: 20989506.
- Ko YJ, Lii CK, Ou CC, Liu JY, Lin WL, Chen HW, 2000. Comparison of the effect of fish oil and corn oil on chemical-induced hepatic enzyme-altered foci in rats. *J Agric Food Chem.*, 48(9):4144–50. doi: 10.1021/jf0000631.
- Kohno H, Suzuki R, Sugie S, Tanaka T, 2005. Beta-Catenin mutations in a mouse model of inflammation-related colon carcinogenesis induced by 1,2-dimethylhydrazine and dextran sodium sulfate. *Cancer Sci*. 96(2):69–76. doi: 10.1111/j.1349-7006.2005.00020.x.
- Komura M, Fukuta T, Genda T, Hino S, Aoe S, Kawagishi H, Morita T., 2014. A short-term ingestion of fructo-oligosaccharides increases immunoglobulin A and mucin concentrations in the rat cecum, but the effects are attenuated with the prolonged ingestion. *Biosci Biotechnol Biochem*. 78(9):1592–602. doi: 10.1080/09168451.2014.925782.
- Kosmas CE, Martinez I, Sourlas A, Bouza KV, Campos FN, Torres V, Montan PD, Guzman E, 2018. High-density lipoprotein (HDL) functionality and its relevance to atherosclerotic cardiovascular disease. *Drugs Context*. 7:212525. doi: 10.7573/dic.212525.
- Kritchevsky D, Tepper SA, Chen SC, Meijer GW, Krauss RM, 2000. Cholesterol vehicle in experimental atherosclerosis. 23. Effects of specific synthetic triglycerides. *Lipids*. 35(6):621–5. doi: 10.1007/s11745-000-0565-3.
- Kruger C, Zhou Y., 2018. Red meat and colon cancer: A review of mechanistic evidence for heme in the context of risk assessment methodology. *Food Chem Toxicol*. 118:131–153. doi: 10.1016/j.fct.2018.04.048.
- Kubeck R, Bonet-Ripoll C, Hoffmann C, Walker A, Muller VM, Schuppel VL, Lagkouvardos I, Scholz B, Engel KH, Daniel H, Schmitt-Kopplin P, Haller D, Clavel T, Klingenspor M, 2016. Dietary fat and gut microbiota interactions determine diet-induced obesity in mice. *Molecular Metabolism* 5: 1162–1174. doi: 10.1016/j.molmet.2016.10.001.

- Kuda T, Enomoto T, Yano T, Fujii T, 2000. Cecal environment and TBARS level in mice fed corn oil, beef tallow and menhaden fish oil. *J Nutr Sci Vitaminol*. 46(2):65–70. doi: 10.3177/jnsv.46.65.
- Kunisawa J, Hashimoto E, Inoue A, Nagasawa R, Suzuki Y, Ishikawa I, Shikata S, Arita M, Aoki J, Kiyono H, 2014. Regulation of intestinal IgA responses by dietary palmitic acid and its metabolism. *J Immunol*. 193(4):1666–71. doi: 10.4049/jimmunol.1302944.
- Lahouar L, Ghrairi F, El Felah M, Salem HB, Miled AH, Hammami M, Achour L, 2011. Effect of dietary fiber of "Rihane" barley grains and azoxymethane on serum and liver lipid variables in Wistar rats. *J Physiol Biochem*. 67(1):27–34. doi: 10.1007/s13105-010-0045-3.
- Lala G, Malik M, Zhao C, He J, Kwon Y, Giusti MM, Magnuson BA, 2006. Anthocyanin-rich extracts inhibit multiple biomarkers of colon cancer in rats. *Nutrition and Cancer* 54(1): 84–93.
- Langlois MR, Blaton VH, 2006. Historical milestones in measurement of HDL-cholesterol: impact on clinical and laboratory practice. *Clin Chim Acta*. 369(2):168–78. doi: 10.1016/j.cca.2006.01.031.
- Lasko CM, Bird RP, 1995. Modulation of aberrant crypt foci by dietary fat and caloric restriction: the effects of delayed intervention. *Cancer Epidemiology Biomarkers & Prevention* 4: 49–55.
- Lee SM, Kim N, Yoon H, Nam RH, Lee DH, 2018. Microbial changes and host response in F344 rat colon depending on sex and age following a high-fat diet. *Frontiers in Microbiology* 9, DOI: 10.3389/fmicb.2018.02236.
- Leon K, Mery D, Pedreschi F, Leon J, 2006. Color measurement in L*a*b* units from RGB digital images. *Food Research International* 39: 1084–1091. doi: 10.1016/j.foodres.2006.03.006.
- Li H, Zhu Y, Zhao F, Song S, Li Y, Xu X, Zhou G, Li C, 2017. Fish oil, lard and soybean oil differentially shape gut microbiota of middle-aged rats. *Nature Scientific Reports* 7:826 DOI:10.1038/s41598-017-00969-0.
- Li N, Yue H, Jia M, Liu W, Qiu B, Hou H, Huang F, Xu T, 2019. Effect of low-ratio n-6/n-3 PUFA on blood glucose: a meta-analysis. *Food Funct*. 10(8):4557–4565. doi: 10.1039/c9fo00323a.
- Li Y, Hruby A, Bernstein AM, Ley SH, Wang DD, Chiuve SE, Sampson L, Rexrode KM, Rimm EB, Willett WC, Hu FB, 2015. Saturated fats compared with unsaturated fats and sources of carbohydrates in relation to risk of coronary heart disease: a prospective cohort study. *J Am Coll Cardiol*. 66(14):1538–1548. doi: 10.1016/j.jacc.2015.07.055.

- Liu H, Bian Z, Zhang Q, Xiao Z, Cao Y, Sun X, Qin Y, Mao L, Chu X, Liao W, Zha L, Sun S, 2021. Sodium butyrate inhibits colitis-associated colorectal cancer through preventing the gut microbiota dysbiosis and reducing the expression of NLRP3 and IL-1 β , *Journal of Functional Foods*, 87:104862, doi: 10.1016/j.jff.2021.104862.
- Liu KY, Nakatsu CH, Jones-Hall Y, Kozik A, Jiang Q, 2020. Vitamin E alpha- and gamma-tocopherol mitigate colitis, protect intestinal barrier function and modulate the gut microbiota in mice. *Free Radic Biol Med*. 163:180–189. doi: 10.1016/j.freeradbiomed.2020.12.017.
- Liu X, Yin L, Shen S, Hou Y, 2021. Inflammation and cancer: paradoxical roles in tumorigenesis and implications in immunotherapies. *Genes Dis*. 10(1):151-164. doi: 10.1016/j.gendis.2021.09.006.
- Loganathan R, Subramaniam KM, Radhakrishnan AK, Choo YM, Teng KT, 2017. Health-promoting effects of red palm oil: evidence from animal and human studies. *Nutrition Reviews* 75(2): 98–113.
- Lopez-Beceiro J, Artiaga R, Gracia C, Tarrio-Saavedra J, Naya S, Mier JL, 2011. Comparison of olive, corn, soybean and sunflower oils by PDSC. *Journal of Thermal Analysis and Calorimetry* 104:169–175.
- Lu MS, Fang YJ, Chen YM, Luo WP, Pan ZZ, Zhong X, Zhang CX, 2014. Higher intake of carotenoid is associated with a lower risk of colorectal cancer in Chinese adults: a case–control study. *Eur J Nutr* 54: 619–628.
- Luck H, Khan S, Kim JH, Copeland JK, Revelo XS, Tsai S, Chakraborty M, Cheng K, Tao Chan Y, Nøhr MK, Clemente-Casares X, Perry MC, Ghazarian M, Lei H, Lin YH, Coburn B, Okrainec A, Jackson T, Poutanen S, Gaisano H, Allard JP, Guttman DS, Conner ME, Winer S, Winer DA, 2019. Gut-associated IgA⁺ immune cells regulate obesity-related insulin resistance. *Nat Commun*. 10(1):3650. doi: 10.1038/s41467-019-11370-y.
- Ludvigsson JF, Neovius M, Ye W, Hammarstrom L, 2015. IgA Deficiency and Risk of Cancer: A Population-Based Matched Cohort Study. *J Clin Immunol* 35:182–188.
- Maki KC, Lawless AL, Kelley KM, Kaden VN, Geiger CJ, Dicklin MR, 2015. Corn oil improves the plasma lipoprotein lipid profile compared with extra-virgin olive oil consumption in men and women with elevated cholesterol: results from a randomized controlled feeding trial. *J Clin Lipidol*. 9(1):49–57. doi: 10.1016/j.jacl.2014.10.006.

- Maki KC, Lawless AL, Kelley KM, Kaden VN, Geiger CJ, Palacios OM, Dicklin MR, 2017. Corn oil intake favorably impacts lipoprotein cholesterol, apolipoprotein and lipoprotein particle levels compared with extra-virgin olive oil. *Eur J Clin Nutr.* 71(1):33–38. doi: 10.1038/ejcn.2016.169.
- Maki KC, Hasse W, Dicklin MR, Bell M, Buggia MA, Cassens ME, Eren F, 2018. Corn oil lowers plasma cholesterol compared with coconut oil in adults with above-desirable levels of cholesterol in a randomized crossover trial. *J Nutr.* 148(10):1556–1563. doi: 10.1093/jn/nxy156.
- Manca CS, Cordeiro Simões-Ambrosio LM, Ovídio PP, Ramalho LZ, Jordao AA, 2023. Effects of different vegetable oils on the nonalcoholic fatty liver disease in C57/BL mice. *Evid Based Complement Alternat Med.*, 14:4197955. doi: 10.1155/2023/4197955.
- Mancini A, Imperlini E, Nigro E, Montagnese C, Daniele A, Orru S, Buono P, 2015. Biological and nutritional properties of palm oil and palmitic acid: effects on health. *Molecules* 20(9): 17339–61. doi: 10.3390/molecules200917339.
- Manorama R, Rukmini C, 1991. Nutritional evaluation of crude palm oil in rats. *Am J Clin Nutr.* 53(4): 1031S–1033S. doi:10.1093/ajcn/53.4.1031S
- Manorama R, Brahmam GN, Rukmini C, 1996. Red palm oil as a source of beta-carotene for combating vitamin A deficiency. *Plant Foods Hum Nutr* 49(1):75–82. doi: 10.1007/BF01092524. PMID: 9139306.
- Masek J, Fabry P, 1959. High-fat diet and the development of obesity in albino rats. *Experientia* 15(11): 444–445, doi: 10.1007/BF02157708.
- Matsui T, Zhu Xiao-Lin, Shiraishi K, Ueki T, Noda Y, Matsumoto K. 2010. Antihypertensive effect of salt-free soy sauce, a new fermented seasoning, in spontaneously hypertensive rats. *J Food Sci.* 75(4): H129–134. doi: 10.1111/j.1750-3841.2010.01599.x.
- Matsunaga H, Hokari R, Kurihara C, Okada Y, Takebayashi K, Okudaira K, Watanabe C, Komoto S, Nakamura M, Tsuzuki Y, Kawaguchi A, Nagao S, Miura S, 2009. Omega-3 polyunsaturated fatty acids ameliorate the severity of ileitis in the senescence accelerate mice (SAM)P1/Yit mice model. *Clin Exp Immunol.* 158(3): 325–333. doi: 10.1111/j.1365-2249.2009.04020.x.
- Matsuo K, Hiraki A, Ito H, Kosaka T, Suzuki T, Hirose K, Wakai K, Yatabe Y, Mitsudomi T, Tajima K. 2008. Soy consumption reduces the risk of non-small-cell lung cancers with epidermal growth factor receptor mutations among Japanese. *Cancer Sci.* 99(6):1202–08. doi: 10.1111/j.1349-7006.2008.00812.x.

- Matsuo T, Takeuchi H, Suzuki H, Suzuki M, 2002. Body fat accumulation is greater in rats fed a beef tallow diet than in rats fed a safflower or soybean oil diet. *Asia Pac J Clin Nutr.* 11(4):302–8. doi: 10.1046/j.1440-6047.2002.00299.x.
- May-Wilson S, Sud A, Law PJ, Palin K, Tuupanen S, Gylfe A, Hänninen UA, Cajuso T, Tanskanen T, Kondelin J, Kaasinen E, Sarin AP, Eriksson JG, Rissanen H, Knekt P, Pukkala E, Jousilahti P, Salomaa V, Ripatti S, Palotie A, Renkonen-Sinisalo L, Lepistö A, Böhm J, Mecklin JP, Al-Tassan NA, Palles C, Farrington SM, Timofeeva MN, Meyer BF, Wakil SM, Campbell H, Smith CG, Idziaszczyk S, Maughan TS, Fisher D, Kerr R, Kerr D, Passarelli MN, Figueiredo JC, Buchanan DD, Win AK, Hopper JL, Jenkins MA, Lindor NM, Newcomb PA, Gallinger S, Conti D, Schumacher F, Casey G, Aaltonen LA, Cheadle JP, Tomlinson IP, Dunlop MG, Houlston RS, 2017. Pro-inflammatory fatty acid profile and colorectal cancer risk: A Mendelian randomisation analysis. *Eur J Cancer.* 84:228–238. doi: 10.1016/j.ejca.2017.07.034.
- McNabney SM, Henagan TM, 2017. Short chain fatty acids in the colon and peripheral tissues: a focus on butyrate, colon cancer, obesity and insulin resistance. *Nutrients* 9: 1348; doi:10.3390/nu9121348
- Messina M, Watanabe S, Setchell KDR. 2009. Report on the 8th international symposium on the role of soy in health promotion and chronic disease prevention and treatment. *J Nutr.* 139(4):796S–802S. doi: 10.3945/jn.108.104182.
- Messina M. 2010. A brief historical overview of the past two decades of soy and isoflavone research. *J Nutr.* doi: 10.3945/jn.109.118315.
- Messina MJ, Wood CE. 2008. Soy isoflavones, estrogen therapy, and breast cancer risk: analysis and commentary. *Nutr J.* 7:17. doi: 10.1186/1475-2891-7-17.
- Miida T, Nishimura K, Okamura T, Hirayama S, Ohmura H, Yoshida H, Miyashita Y, Ai M, Tanaka A, Sumino H, Murakami M, Inoue I, Kayamori Y, Nakamura M, Nobori T, Miyazawa Y, Teramoto T, Yokoyama S, 2014. Validation of homogeneous assays for HDL-cholesterol using fresh samples from healthy and diseased subjects. *Atherosclerosis.* 233(1):253–9. doi: 10.1016/j.atherosclerosis.2013.12.033.
- Monk JM, Lepp D, Wu W, Pauls KP, Robinson LE, Power KA, 2017a. Navy and black bean supplementation primes the colonic mucosal microenvironment to improve gut health. *Journal of Nutritional Biochemistry* 49: 89–100. doi: 10.1016/j.jnutbio.2017.08.002.

- Monk JM, Lepp D, Wu W, Graf D, McGillis LH, Hussain A, Carey C, Robinson LE, Liu R, Tsao R, Brummer Y, Tosh SM, Power KA, 2017b. Chickpea-supplemented diet alters the gut microbiome and enhances gut barrier integrity in C57Bl/6 male mice. *Journal of Functional Foods* 38: 663–674. doi: 10.1016/j.jff.2017.02.002.
- Mori T, Imaida K, Tamano S, Sano M, Takahashi S, Asamoto M, Takeshita M, Ueda H, Shirai T, 2001. Beef tallow, but not perilla or corn oil, promotion of rat prostate and intestinal carcinogenesis by 3,2'-dimethyl-4-aminobiphenyl. *Jpn J Cancer Res.* 92(10):1026–33. doi: 10.1111/j.1349-7006.2001.tb01056.x.
- Morishita Y, Shiromizu K, 1996. Effect of dietary corn oil, butter and beef tallow on the cecal microflora and short-chain fatty acids in rats. *Bioscience and Microflora*, 15(1): 27–30, doi: 10.12938/bifidus1996.15.27.
- Morio B, Fardet A, LeGrand P, Lecerf JM, 2016. Involvement of dietary saturated fats, from all sources or of dairy origin only, in insulin resistance and type 2 diabetes. *Nutr. Rev.* 74(1): 33–47. doi: 10.1093/nutrit/nuv043.
- Muesing RA, Griffin P, Mitchell P, 1995. Corn oil and beef tallow elicit different postprandial responses in triglycerides and cholesterol, but similar changes in constituents of high-density lipoprotein. *J Am Coll Nutr.* 14(1): 53–60. doi: 10.1080/07315724.1995.10718473.
- Muhomah TA, Nishino N, Katsumata E, Haoming W, Tsuruta T, 2019. High-fat diet reduces the level of secretory immunoglobulin A coating of commensal gut microbiota. *Biosci Microbiota Food Health.* 38(2): 55–64. doi: 10.12938/bmfh.18-027.
- Mukhopadhyay S, Rajaratnam V, Mukherjee S, Das SK, 2008. Control of peripheral benzodiazepine receptor-mediated breast cancer in rats by soy protein. *Mol Carcinog.* 47(4): 310–319. doi: 10.1002/mc.20387.
- Nagarajan S, Burris RL, Stewart BW, Wilkerson JE, Badger TM, 2008. Dietary soy protein isolate ameliorates atherosclerotic lesions in apolipoprotein E-deficient mice potentially by inhibiting monocyte chemoattractant protein-1 expression. *J Nutr.* 138(2): 332–337. doi: 10.1093/jn/138.2.332.
- Nagendran B, Unnithan U, Choo Y, Sundram K, 2000. Characteristics of red palm oil, a carotene- and vitamin E-rich refined oil for food uses. *Food and Nutrition Bulletin* 21:189–194. doi: 10.1177/1564826500021002.

- Nakajima A, Vozelgang A, Maruya M, Miyajima M, Murata M, Son A, Kuwahara T, Tsuruyama T, Yamada S, Matsuura M, Nakase H, Peterson DA, Fagarasan S, Suzuki K, 2018. IgA regulates the composition and metabolic function of gut microbiota by promoting symbiosis between bacteria. *Journal of Experimental Medicine* 215(8): 2019–2034. doi: 10.1084/jem.20180427.
- Narayan KA, McMullen JJ, Butler DP, Wakefield T, Calhoun WK, 1976. The influence of a high level of corn oil on rat serum lipoproteins. *Atherosclerosis*. 23(1):1–17. doi: 10.1016/0021-9150(76)90115-5.
- Nascimento RC, Mabel H, Queiroz BN, Paresque R, 2013. Gastrointestinal morphological alterations in obese rats kept under hypercaloric diets. *Int J Gen Med*. 6:479–88. doi: 10.2147/IJGM.S35482.
- National Research Council, 1995. *Nutrient requirements of laboratory animals, fourth revised edition*. National Academy Press, Washington DC.
- Nauck M, Warnick GR, Rifai N, 2002. Methods for measurement of LDL-cholesterol: a critical assessment of direct measurement by homogeneous assays versus calculation. *Clin Chem*. 48(2):236–54. PMID: 11805004.
- Ng TK, Hassan K, Lim JB, Lye MS, Ishak R, 1991. Nonhypercholesterolemic effects of a palm-oil diet in Malaysian volunteers. *Am J Clin Nutr*. 53(4 Suppl): 1015S-1020S. doi: 10.1093/ajcn/53.4.1015S.
- Ngala RA, Ampong I, Sakyi SA, Anto EO, 2016. Effect of dietary vegetable oil consumption on blood glucose levels, lipid profile and weight in diabetic mice: an experimental case—control study. *BMC Nutr.*, 2:28 doi: 10.1186/s40795-016-0053-y.
- Nguyen XT, Ho YL, Li Y, Song RJ, Leung KH, Rahman SU, Orkaby AR, Vassy JL, Gagnon DR, Cho K, Gaziano JM, Wilson PWF, 2023. Serum cholesterol and impact of age on coronary heart disease death in more than 4 million veterans. *J Am Heart Assoc*. 12(21): e030496. doi: 10.1161/JAHA.123.030496.
- Noroozi M, Zavoshy R, Hashemi HJ, Asefzadeh S. 2008. The effect of soy protein with low calorie diet on blood lipids in hyperlipidemic type 2 diabetic patients. *J Food Lipids*. 15:398–406. doi: 10.1111/j.1745-4522.2008.00127.x
- Ockerman HW, Basu L, 2014. *Inedible*, in *Encyclopedia of Meat Sciences 2nd ed. vol. 1*. Elsevier, London, UK.
- Ohashi Y, Hiraguchi M, Ushida K, 2006. The composition of intestinal bacteria affects the level of luminal IgA. *Biosci Biotechnol Biochem* 70(12): 3031–3035. doi: 10.1271/bbb.60164.

- Ohigashi S, Sudo K, Kobayashi D, Takahashi O, Takahashi T, Asahara T, Nomoto K, Onodera H, 2013. Changes of the intestinal microbiota, short chain fatty acids, and fecal pH in patients with colorectal cancer. *Dig Dis Sci* 58:1717–1726. doi: 10.1007/s10620-012-2526-4.
- Okazaki Y, Tomotake H, Tsujimoto K, Sasaki M, Kato N, 2011. Consumption of a resistant protein, sericin, elevates fecal immunoglobulin A, mucins, and cecal organic acids in rats fed a high-fat diet. *J Nutr.* 141(11): 1975–1981. doi: 10.3945/jn.111.144246.
- Okazaki Y, Katayama T, 2018. Consumption of non-digestible oligosaccharides elevates colonic alkaline phosphatase activity by up-regulating the expression of IAP-I, with increased mucins and microbial fermentation in rats fed a high-fat diet. *British Journal of Nutrition*, doi: 10.1017/S0007114518003082.
- Okazaki Y, Katayama T, 2021. The effects of different high-fat (lard, soybean oil, corn oil or olive oil) diets supplemented with fructo-oligosaccharides on colonic alkaline phosphatase activity in rats. *Eur J Nutr.* 2021 60(1):89–99. doi: 10.1007/s00394-020-02219-y.
- Okuyama H, Langsjoen PH, Ohara N, Hashimoto Y, Hamazaki T, Yoshida S, Kobayashi T, Langsjoen AM, 2016. Medicines and vegetable oils as hidden causes of cardiovascular disease and diabetes. *Pharmacology* 98 (3-4): 134–170. doi: 10.1159/000446704.
- Pabst O, 2012. New concepts in the generation and functions of IgA. *Nature Reviews Immunology* 12: 821–832.
- Papadakis SE, Malek SA, Kamdem RE, Yam KL, 2000. A versatile and inexpensive technique for measuring color of foods. *Food Technology*, 54(12): 48–51.
- Park JS, Choi J, Hwang SH, Kim JK, Kim EK, Lee SY, Lee BI, Park SH, Cho ML, 2019. Cottonseed oil protects against intestinal inflammation in dextran sodium sulfate-induced inflammatory bowel disease. *J Med Food.* 22(7):672–679. doi: 10.1089/jmf.2018.4323.
- Parker DR, Weiss ST, Troisi R, Cassano PA, Vokonas PS, Landsberg L, 1993. Relationship of dietary saturated fatty acids and body habitus to serum insulin concentrations: the Normative Aging Study. *Am J Clin Nutr.* 58(2):129–36. doi: 10.1093/ajcn/58.2.129.
- Paturi G, Butts C, Monro J, Nones K, Martell S, Butler R, Sutherland J, 2010. Cecal and colonic responses in rats fed 5 or 30% corn oil diets containing either 7.5% broccoli dietary fiber or microcrystalline cellulose. *J Agric Food Chem.* 58(10):6510–5. doi: 10.1021/jf100296m.

- Paturi G, Nyanhanda T, Butts CA, Herath TD, Monro JA, Ansell J, 2012. Effects of potato fiber and potato-resistant starch on biomarkers of colonic health in rats fed diets containing red meat. *J Food Science* 77(10): H216–223.
- Perdigón G, de Moreno de LeBlanc A, Valdez J, Rachid M, 2002. Role of yoghurt in the prevention of colon cancer. *Eur J Clin Nutr.* 56(3):S65–8. doi: 10.1038/sj.ejcn.1601490.
- Perse M, Cerar A, 2011. Morphological and molecular alterations in 1,2 dimethylhydrazine and azoxymethane induced colon carcinogenesis in rats. *Journal of Biomedicine and Biotechnology* doi:10.1155/2011/473964
- Phillips RW, Kikendall JW, Luk GD, Willis SM, Murphy JR, Maydonovitch CM, Bowen PE, Stacewicz-Sapuntzakis M, Wong RKH, 1993. β -carotene inhibits rectal mucosal ornithine decarboxylase activity in colon cancer patients. *Cancer Research* 53: 3723–3725.
- Piao Y, Liu Y, Xie X, 2013. Change trends of organ weight background data in Sprague Dawley rats in different ages. *J Toxicol Pathol.*, 26(1): 29–34. doi: 10.1293/tox.26.29
- Piegari G, Iovane V, Carletti V, Fico R, Costagliola A, De Biase D, Prisco F, Paciello O, 2018. Assessment of google glass for photographic documentation in veterinary forensic pathology: usability study. *JMIR Mhealth Uhealth* 6(9):e180. doi: 10.2196/mhealth.9975.
- Pipe EA, Gobert CP, Capes SE, Darlington GA, Lampe JW, Duncan AM. 2009. Soy protein reduces serum LDL cholesterol and the LDL cholesterol:HDL cholesterol and apolipoprotein B:apolipoprotein A-I ratios in adults with type 2 diabetes. *J Nutr.* 139:1700–1706.
- Purawisastra S, Slamet DS, Soetrisno USS. 1993. Perubahan kandungan protein dan komposisi asam amino kedelai pada waktu pembuatan tempe dan tahu. *Penelitian Gizi Makanan* 16:117–124.
- Raju J, Bielecki A, Caldwell D, Lok E, Taylor M, Kapal K, Curran I, Cooke GM, Bird RP, Mehta R. 2009. Soy Isoflavones modulate azoxymethane-induced rat colon carcinogenesis exposed pre- and postnatally and inhibit growth of DLD-1 human colon adenocarcinoma cells by increasing the expression of estrogen receptor- β . *J Nutr.* 139: 474–81.
- Rauchová H, Vokurková M, Pavelka S, Vaněčková I, Tribulová N, Soukup T, 2018. Red palm oil supplementation does not increase blood glucose or serum lipids levels in Wistar rats with different thyroid status. *Physiol Res.* 67(2):307–315. doi: 10.33549/physiolres.933834.

- Reddy BS, 2002. Types and amount of dietary fat and colon cancer risk: prevention by omega-3 fatty acid-rich diets. *Environmental Health and Preventive Medicine* 7: 95–102.
- Richardson AJ, Calder AG, Stewart CS, Smith A, 1989. Simultaneous determination of volatile and non-volatile acidic fermentation products of anaerobes by capillary gas chromatography. *Lett. App. Microbiol.* 9: 5–8.
- Rideout TC, Marinangeli CPF, Harding SV, 2015. Triglyceride-lowering response to plant sterol and stanol consumption. *J AOAC Int.* 98(3):707–715. doi: 10.5740/jaoacint.SGERideout.
- Romagnolo DF, Donovan MG, Doetschman TC, Selmin OI, 2019. n-6 Linoleic Acid induces epigenetics alterations associated with colonic inflammation and cancer. *Nutrients* 11: 171, doi:10.3390/nu11010171.
- Ryan-Borchers TA, Park JS, Chew BP, McGuire MK, Fournier LR, Beerman KA. 2006. Soy isoflavones modulate immune function in healthy postmenopausal women. *Am J Clin Nutr.* 83:1118–1125.
- Sales RC, Medeiros PC, Spreafico F, de Velasco PC, Gonçalves FKA, Martín-Hernández R, Mantilla-Escalante DC, Gil-Zamorano J, Peres WAF, de Souza SAL, Dávalos A, Tavares do Carmo MG, 2018. Olive oil, palm oil, and hybrid palm oil distinctly modulate liver transcriptome and induce NAFLD in mice fed a high-fat diet. *Int J Mol Sci.*, 20(1):8, doi: 10.3390/ijms20010008.
- Sambanthamurthi R, Tan Y, Sundram K, Abeywardena M, Sambandan TG, Rha C, Sinskey AJ, Subramaniam K, Leow SS, Hayes KC, Wahid MB, 2011. Oil palm vegetation liquor: a new source of phenolic bioactives. *Br J Nutr.* 106(11):1655–63. doi: 10.1017/S0007114511002121.
- Santos MFG, Alves RE, Roca M, 2015. Carotenoid composition in oils obtained from palm fruits from the Brazilian Amazon. *Grasas Aceites* 66(3): e806, doi: <http://dx.doi.org/10.3989/gya.1062142>
- Scheppach W, Bartram HP, Richter F, 1995. Role of short-chain fatty acids in the prevention of colorectal cancer. *Euro. J. Cancer* 31A: 1077–1080.
- Schwab U, Lauritzen L, Tholstrup T, Haldorssoni T, Riserus U, Uusitupa M, and Becker W, 2014. Effect of the amount and type of dietary fat on cardiometabolic risk factors and risk of developing type 2 diabetes, cardiovascular diseases, and cancer: a systematic review. *Food Nutr. Res.* 58, <https://doi.org/10.3402/fnr.v58.25145>.

- Shukla G, Verma A, Singh J, Yadav H, 2014. Prebiotic inulin alters the colonic mass, pH, microflora and short chain fatty acids in 1,2-dimethylhydrazine dihydrochloride induced early colon carcinogenesis in male Laca mice. *Journal of Probiotics & Health* 2: 121. doi: 10.4172/2329-8901.1000121
- Si H, Liu D. 2008. Genistein, a soy phytoestrogen, upregulates the expression of human endothelial nitric oxide synthase and lowers blood pressure in spontaneously hypertensive rats. *J Nutr.* 138:297–304.
- Si H, Zhang L, Liu S, LeRoith T, Virgous C, 2014. High corn oil dietary intake improves health and longevity of aging mice. *Exp Gerontol.* 58:244–9. doi: 10.1016/j.exger.2014.09.001.
- Siddiqui I, Majid H, Abid S, 2017. Update on clinical and research application of fecal biomarkers for gastrointestinal diseases. *World Journal of Gastrointestinal Pharmacology and Therapeutics* 8(1): 39–46.
- Sijabat ACG, Isdadiyanto S, Sitaswi AJ, 2023. Rat liver function induced by a high-fat diet after giving mahogany seeds ethanol extract. *Biosaintifika: Journal of Biology & Biology Education*, 15(2): 230–236.
- Sin Teh S, Ong ASH, Choo YM, Mah SH, 2018. sn-2 Hypothesis: a review of the effects of palm oil on blood lipid levels. *J Oleo Sci.* 67(6):697–706. doi: 10.5650/jos.ess18009.
- Singh N, Baby D, Rajguru JP, Patil PB, Thakkannavar SS, Pujari VB, 2019. Inflammation and cancer. *Ann Afr Med.* 18(3):121–126. doi: 10.4103/aam.aam_56_18.
- Slattery ML, Boucher KM, Caan BJ, Potter JD, Ma KN, 1998. Eating patterns and colon cancer. *American Journal of Epidemiology* 148: 4–16.
- Souganidis E, Laillou A, Leyvraz M, Moench-Pfanner R, 2013. A comparison of retinyl palmitate and red palm oil β -carotene as strategies to address vitamin A deficiency. *Nutrients* 5: 3257–3271, doi:10.3390/nu5083257.
- Sprecher DL, Watkins TR, Behar S, Brown WV, Rubins HB, Schaefer EJ, 2003. Importance of high-density lipoprotein cholesterol and triglyceride levels in coronary heart disease. *Am J Cardiol.* 91(5):575–80. doi: 10.1016/s0002-9149(02)03309-x.
- Sujadi, Hasibuan HA, Rahmadi HY, Purba AR, 2016. Composition of fatty acid and iod number from nine oil palm DxP commercial planting material in IOPRI. *J Pen Kelapa Sawit* 24(1), 1–12.

- Sun W, Guo Y, Zhang S, Chen Z, Wu K, Liu Q, Liu K, Wen L, Wei Y, Wang B, Chen D, 2018. Fecal microbiota transplantation can alleviate gastrointestinal transit in rats with high-fat diet-induced obesity via regulation of serotonin biosynthesis. *BioMed Research International* DOI: 10.1155/2018/8308671.
- Sundram K, Khor HT, Ong AS, Pathmanathan R, 1989. Effect of dietary palm oils on mammary carcinogenesis in female rats induced by 7,12-dimethylbenz(a)anthracene. *Cancer Res.* 49(6):1447-51. PMID: 2493981.
- Sundram K, Sambanthamurthi R, Tan YA, 2003. Palm fruit chemistry and nutrition. *Asia Pacific J Clin Nutr* 12(3): 355–362.
- Syarifah-Noratiqah SB, Fairus S, Zulfarina MS, Nasrullah Z, Qodriyah HMS, Naina-Mohamed I, 2020. The effects of palm oil on plasma and serum lipid parameters: a systematic review on animal intervention studies. *Front Vet Sci.* 7:303. doi: 10.3389/fvets.2020.00303.
- Szeiffova Bacova B, Vincenzova C, Zurmanova J, Kasparova D, Knezl V, Egan Benova T, Pavelka S, Soukup T, Tribulova N, 2017. Altered thyroid status affects myocardial expression of connexin-43 and susceptibility of rat heart to malignant arrhythmias that can be partially normalized by red palm oil intake. *Histochem Cell Biol* 147: 63–73.
- Szulcewska-Remi A, Nogala-Kalucka M, Nowak KW, 2019. Study on the influence of palm oil on blood and liver biochemical parameters, beta-carotene and tocochromanols content as well as antioxidant activity in rats. *J Food Biochem.* 43(2):e12707. doi: 10.1111/jfbc.12707.
- Takashima T, Sakata Y, Iwakiri R, Shiraishi R, Oda Y, Inoue N, Nakayama A, Toda S, Fujimoto K, 2014. Feeding with olive oil attenuates inflammation in dextran sulfate sodium-induced colitis in rat. *J Nutr Biochem.* 25(2):186–92. doi: 10.1016/j.jnutbio.2013.10.005.
- Takeuchi T, Ohno H, 2022. IgA in human health and diseases: Potential regulator of commensal microbiota. *Front Immunol.* 13:1024330. doi: 10.3389/fimmu.2022.1024330.
- Tanaka T, Kohno H, Suzuki R, Yamada Y, Sugie S, Mori H, 2003. A novel inflammation-related mouse colon carcinogenesis model induced by azoxymethane and dextran sodium sulfate. *Cancer Sci* 94: 965–973.
- Tang Y, Feng X, Lu Q, Cui C, Yu M, Wen Z, Luan Y, Dong L, Hu Z, Zhang R, Lu C, Liu J, Shinkura R, Hase K, Wang JY, 2023. MZB1-mediated IgA secretion suppresses the development and progression of colorectal cancer triggered by gut inflammation. *Mucosal Immunol.* 13:S1933–0219(23)00098–3. doi: 10.1016/j.mucimm.2023.12.002.

- Tao JH, Wang XT, Yuan W, Chen JN, Wang ZJ, Ma YB, Zhao FQ, Zhang LY, Ma J, Liu Q, 2022. Reduced serum high-density lipoprotein cholesterol levels and aberrantly expressed cholesterol metabolism genes in colorectal cancer. *World J Clin Cases*. 10(14):4446–4459. doi: 10.12998/wjcc.v10.i14.4446.
- Thangaraj K, Natesan K, Palani M, Vaiyapuri M, 2018. Orientin, a flavanoid, mitigates 1, 2 dimethylhydrazine-induced colorectal lesions in Wistar rats fed a high-fat diet. *Toxicology Reports* 5: 977–987.
- Theodoratou E, McNeill G, Cetnarskyj R, Farrington SM, Tenesa A, Barnettson R, Porteous M, Dunlop M, Campbell H, 2007. Dietary fatty acids and colorectal cancer: A case-control study. *American Journal of Epidemiology* 166: 181–195.
- Tian M, Bai Y, Tian H, Zhao X, 2023 The chemical composition and health-promoting benefits of vegetable oils-a review. *Molecules* 28(17):6393. doi: 10.3390/molecules28176393.
- Torre-Villalvazo I, Gonzales F, Aguilar-Salinas CA, Tovar AR, Torres N. 2009. Dietary soy protein reduces cardiac lipid accumulation and the ceramide concentration in high-fat diet-fed rats and ob/ob mice. *J Nutr*. 139:2237–43.
- Turizo-Smith AD, Córdoba-Hernandez S, Mejía-Guarnizo LV, Monroy-Camacho PS, Rodríguez-García JA, 2024. Inflammation and cancer: friend or foe? *Front. Pharmacol*. 15:1385479. doi: 10.3389/fphar.2024.1385479
- Turner ND, Lloyd SK, 2017. Association between red meat consumption and colon cancer: a systematic review of experimental results. *Experimental Biology Medicine* 242(8): 813–839.
- Urugo MM, Teka TA, Teshome PG, Tringo TT, 2021. Palm oil processing and controversies over its health effect: overview of positive and negative consequences. *J Oleo Sci*. 70(12), 1693–1706. doi: 10.5650/jos.ess21160.
- U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2015. *2015–2020 Dietary Guidelines for Americans*. 8th Edition. Available online at <http://health.gov/dietaryguidelines/2015/guidelines/>
- Utama Z, Okazaki Y, Tomotake H, Kato N, 2013. Tempe consumption modulates fecal secondary bile acids, mucins, immunoglobulin A, enzyme activities, and cecal microflora and organic acids in rats. *Plant Foods Hum Nutr*. 68(2):177–83. doi: 10.1007/s11130-013-0357-x.

- Virani SS, Aspary K, Dixon DL, Ferdinand KC, Heidenreich PA, Jackson EJ, Jacobson TA, McAlister JL, Neff DR, Gulati M, Ballantyne CM, 2023. The importance of low-density lipoprotein cholesterol measurement and control as performance measures: A joint clinical perspective from the National Lipid Association and the American Society for Preventive Cardiology. *Am J Prev Cardiol.* 13:100472. doi: 10.1016/j.ajpc.2023.100472.
- Wan Y, Wang F, Yuan J, Li J, Jiang D, Zhang J, Li H, Wang R, Tang J, Huang T, Zheng J, Sinclair AJ, mann J, Li D, 2019. Effects of dietary fat on gut microbiota and faecal metabolites, and their relationship with cardiometabolic risk factors: a 6-month randomised controlled-feeding trial. *Gut* 0: 1–13 doi:10.1136/gutjnl-2018-317609
- Wang D, Zhao R, Qu YY, Mei XY, Zhang X, Zhou Q, Li Y, Yang SB, Zuo ZG, Chen YM, Lin Y, Xu W, Chen C, Zhao SM, Zhao JY, 2018a. Colonic lysine homocysteinylation induced by high-fat diet suppresses DNA damage repair. *Cell Reports* 25: 398–412.
- Wang H, Guan L, Li J, Lai M, Wen X, 2018b. The effect of berberine on the gut microbiota in Apc^{min/+} mice fed with a high fat diet. *Molecules* 23: 2298.
- Wang Q, Afshin A, Yakoob MY, Singh GM, Rehm CD, Khatibzadeh S, Micha R, Shi P, Mozaffarian D, 2016. Global Burden of Diseases Nutrition and Chronic Diseases Expert Group (NutriCoDE). Impact of nonoptimal intakes of saturated, polyunsaturated, and trans fat on global burdens of coronary heart disease. *J Am Heart Assoc.* 5(1):e002891. doi: 10.1161/JAHA.115.002891. Erratum in: *J Am Heart Assoc.* 2016 Jan;5(1). pii: e002076. doi: 10.1161/JAHA.115.002076. Erratum in: *J Am Heart Assoc.* 2017 Nov 8;6(11): PMID: 26790695; PMCID: PMC4859401.
- Wargovich MJ, Brown VR, Morris J, 2010. Aberrant crypt foci: the case for inclusion as a biomarker for colon cancer. *Cancers* 2: 1705–1716.
- Webster SH, Liljegren EJ, Zimmer DJ, 1047. Organ; body weight ratios for liver, kidneys and spleen of laboratory animals; albino rat. *Am J Anat.*, 81(3): 477–513. doi: 10.1002/aja.1000810307.
- Wei Y, Li J, Li J, Liu C, Guo X, Liu Z, Zhang L, Bao S, Wu X, Su W, Wang X, Zhang J, Dong W, 2024. Dietary long-chain fatty acids promote colitis by regulating palmitoylation of STAT3 through CD36-mediated endocytosis. *Cell Death Dis* 15,60. doi: 10.1038/s41419-024-06456-5.
- Wijburg OL, Uren TK, Simpfendorfer K, Johansen FE, Brandtzaeg P, Strugnell RA, 2006. Innate secretory antibodies protect against natural *Salmonella typhimurium* infection. *J Exp Med.* 203(1):21–6. doi: 10.1084/jem.20052093.

- Willett WC, 1994. Dietary fat and risk of breast and colon cancer. *Proceeding of the Nutrition Society* 53: 25–26.
- Wilson TA, Nicolosi RJ, Kotyla T, Sundram K, Kritchevsky D, 2005. Different palm oil preparations reduce plasma cholesterol concentrations and aortic cholesterol accumulation compared to coconut oil in hypercholesterolemic hamsters. *J Nutr Biochem.* 16(10):633–40. doi: 10.1016/j.jnutbio.2005.03.007.
- Winkler-Moser JK, Breyer L, 2011. Composition and oxidative stability of crude oil extracts of corn germ and distillers grains. *Industrial Crops and Products* 33(3):572–578. doi:10.1016/j.indcrop.2010.12.013.
- Wong CK, Botta A, Pither J, Dai C, Gibson WT, Ghosh S, 2015. A high-fat diet rich in corn oil reduces spontaneous locomotor activity and induces insulin resistance in mice. *J Nutr Biochem.* 26(4):319–26. doi: 10.1016/j.jnutbio.2014.11.004.
- Wong WY, Ward LC, Fong CW, Yap WN, Brown L, 2017. Anti-inflammatory γ - and δ -tocotrienols improve cardiovascular, liver and metabolic function in diet-induced obese rats. *Eur J Nutr.* 56(1):133–150. doi: 10.1007/s00394-015-1064-1.
- Woof JM and Kerr MA, 2006. The function of immunoglobulin A in immunity. *Journal of Pathology* 208: 270–282.
- World Cancer Research Fund/American Institute for Cancer Research, 2018. *Diet, nutrition, physical activity and colorectal cancer*, Revised 2018. Available at dietandcancerreport.org
- Wu B, Iwakiri R, Ootani A, Tsunada S, Fujise T, Sakata Y, Sakata H, Toda S, Fujimoto K, 2004. Dietary corn oil promotes colon cancer by inhibiting mitochondria-dependent apoptosis in azoxymethane-treated rats. *Exp Biol Med* (Maywood). 229(10):1017–25. doi: 10.1177/153537020422901005.
- Wu Q, Luo Y, Lu H, Xie T, Hu Z, Chu Z, Luo F, 2024. The potential role of vitamin E and the mechanism in the prevention and treatment of inflammatory bowel disease. *Foods.* 13(6):898. doi: 10.3390/foods13060898.
- Wu WT, Chen HL, 2011. Effects of konjac glucomannan on putative risk factors for colon carcinogenesis in rats fed a high-fat diet. *J Agric Food Chem.* 59(3):989–94. doi: 10.1021/jf103532x.
- Xiao CW, 2008. Health effects of soy protein and isoflavones in humans. *J Nutr.* 138(6):1244S–9S. doi: 10.1093/jn/138.6.1244S.
- Yang MG, Manoharan K, Young AK, 1969. Influence and degradation of dietary cellulose in cecum of rats. *J Nutr.* 97(2):260–4. doi: 10.1093/jn/97.2.260.

- Yang R, Xue L, Zhang L, Wang X, Qi X, Jiang J, Yu L, Wang X, Zhang W, Zhang Q, Li P, 2019. Phytosterol contents of edible oils and their contributions to estimated phytosterol intake in the Chinese diet. *Foods*. 8(8):334. doi: 10.3390/foods8080334.
- Yang Y, Gallaher DD, 2005. Effect of dried plums on colon cancer risk factors in rats. *Nutr Cancer*. 53(1):117–25. doi: 10.1207/s15327914nc5301_14.
- Yang Z, Tang H, Lu S, Sun X, Rao B, 2022. Relationship between serum lipid level and colorectal cancer: a systemic review and meta-analysis. *BMJ Open*. 12(6):e052373. doi: 10.1136/bmjopen-2021-052373.
- Yasuda Y, Shimizu M, Shirakami Y, Sakai H, Kubota M, Hata K, Hirose Y, Tsurumi H, Tanaka T, Moriwaki H, 2010. Pitavastatin inhibits azoxymethane-induced colonic preneoplastic lesions in C57BL/KsJ-db/db obese mice. *Cancer Sci*. 101(7):1701–7. doi: 10.1111/j.1349-7006.2010.01579.x.
- Yoshioka M, Shimomura Y, Suzuki M, 1994. Dietary polydextrose affects the large intestine in rats. *J Nutr*. 124(4): 539–47. doi: 10.1093/jn/124.4.539.
- Youssef KM, Ezzo AM, El-Sayed MI, Hazzaa AA, El-Medany AH, Arafa M, 2015. Chemopreventive effects of curcumin analogs in DMH-Induced colon cancer in albino rats model. *Future Journal of Pharmaceutical Sciences* 1(2): 57–72.
- Zainal Z, Khaza'ai H, Kutty Radhakrishnan A, Chang SK, 2022. Therapeutic potential of palm oil vitamin E-derived tocotrienols in inflammation and chronic diseases: Evidence from preclinical and clinical studies. *Food Res Int*. 156:111175. doi: 10.1016/j.foodres.2022.111175.
- Zeba AN, Prevel YM, Some IT, Delisle HF, 2006. The positive impact of red palm oil in school meals on vitamin A status: dtudy in Burkina Faso. *Nutrition Journal* 5: 17. doi:10.1186/1475-2891-5-17.
- Zhai X, Lin D, Zhao Y, Li W, Yang X, 2018. Effects of dietary fiber supplementation on fatty acid metabolism and intestinal microbiota diversity in C57BL/6J mice fed with high fat diet. *J Agric Food Chem*. DOI: 10.1021/acs.jafc.8b05036
- Zhang C, Monk JM, Lu JT, Zarepoor L, Wu W, Liu R, Pauls KP, Wood GA, Robinson L, Tsao R, Power KA, 2014. Cooked navy and black bean diets improve biomarkers of colon health and reduce inflammation during colitis. *Br J Nutr*. 111(9):1549–63. doi: 10.1017/S0007114513004352.

- Zhang NN, Guo WH, Hu H, Zhou AR, Liu QP, Zheng BD, Zeng SX, 2018. Effect of a polyphenol-rich *Canarium album* extract on the composition of the gut microbiota of mice fed a high-fat diet. *Molecules*. 23(9):2188. doi: 10.3390/molecules23092188.
- Zhao H, Wu L, Yan G, Chen Y, Zhou M, Wu Y, Li Y, 2021. Inflammation and tumor progression: signaling pathways and targeted intervention. *Sig Transduct Target Ther* 6, 263 doi: 10.1038/s41392-021-00658-5.
- Zhu QC, Gao RY, Wu W, Guo BM, Peng JY, Qin HL, 2014. Effect of a high-fat diet in development of colonic adenoma in an animal model. *World J Gastroenterol*. 20(25):8119–29. doi: 10.3748/wjg.v20.i25.8119.
- Zulkipli SH, Balasubramaniam V, Abu Bakar NA, Abd Rashed A, Ismail SR, 2019. Effects of palm oil consumption on biomarkers of glucose metabolism: a systematic review. *PLoS One*. 14(8): e0220877. doi: 10.1371/journal.pone.0220877.