

Integrative Krebstherapie: facettenreich, innovativ und fachübergreifend denken – im Netzwerk sind wir stark

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Literatur

- [1] Islami F, Marlow EC et al. Proportion and number of cancer cases and deaths attributable to potentially modifiable risk factors in the United States, 2019 *CA Cancer J Clin.* 2024 74:405-432
- [2] Robert Koch-Institut / Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V. Dr. Peter Kaatsch, Dr. Claudia Spix, Prof. Dr. Alexander Katalinic, Dr. Stefan Hentschel, Dr. Sabine Luttmann, Christa Stegmaier: Krebs in Deutschland 2011/2012
- [3] Calle E. E., Kaaks R. Overweight, obesity and cancer: epidemiological evidence and proposed mechanisms. *Nature reviews. Cancer* 2004 4:579–591
- [4] Romaguera D., Vergnaud A.C. et al. Is concordance with World Cancer Research Fund/American Institute for Cancer Research guidelines for cancer prevention related to subsequent risk of cancer? Results from the EPIC study. *The American journal of clinical nutrition*, 2012 96:150–163.
- [5] WHO Consultation on Obesity (1999: Geneva, Switzerland) & World Health Organization. 2000 Obesity: preventing and managing the global epidemic: report of a WHO consultation. World Health Organization. <https://iris.who.int/handle/10665/42330>
- [6] Jährliche Krebsneuerkrankungen und Todesfälle aufgrund von Krebs nach Geschlecht 2022. Veröffentlicht von Rainer Radtke, 06.11.2024. <https://de.statista.com>
- [7] Islami F, Goding Sauer A et al. Proportion and number of cancer cases and deaths attributable to potentially modifiable risk factors in the United States. *CA: a cancer journal for clinicians*, 2018 68:31–54.
- [8] Yang L., Li A. et al. Intratumoral microbiota: roles in cancer initiation, development and therapeutic efficacy. *Signal transduction and targeted therapy* 2023 8:35
- [9] Kong C., Liang, L. et al. Integrated metagenomic and metabolomic analysis reveals distinct gut-microbiome-derived phenotypes in early-onset colorectal cancer. *Gut* 2023 72:1129–1142
- [10] Waghela B. N., Vaidya F. U. et al.. AGE-RAGE synergy influences programmed cell death signaling to promote cancer. *Molecular and cellular biochemistry* 2021 476(2): 585–598.
- [11] Belachew E. B., Sewasew D. T. Molecular Mechanisms of Endocrine Resistance in Estrogen-Positive Breast Cancer. *Frontiers in endocrinology* 2021 12:599586.
- [12] Scalia P., Giordano A. et al. Isoform- and Paralog-Switching in IR-Signaling: When Diabetes Opens the Gates to Cancer. *Biomolecules* 2020 10:1617.
- [13] Sohrab S. S., Raj R. et al. Chronic Inflammation's Transformation to Cancer: A Nanotherapeutic Paradigm. *Molecules (Basel, Switzerland)* 2023 28:4413
- [14] Liu Y., Sun Y. et al. An Overview: The Diversified Role of Mitochondria in Cancer Metabolism. *International journal of biological sciences* 2023 19(3):897–915
- [15] Jelic M. D., Mandic A. D. et al. Oxidative stress and its role in cancer. *Journal of cancer research and therapeutics* 2021 17(1):22–28
- [16] Dai S., Mo, Y. Chronic Stress Promotes Cancer Development. *Frontiers in oncology* 2020 10:1492
- [17] Cordova M. J., Riba M. B., Spiegel, D. Post-traumatic stress disorder and cancer. *The lancet. Psychiatry* 2017 4(4):330–338
- [18] Rusin, A., Seymour, C. et al. Commonalities in the Features of Cancer and Chronic Fatigue Syndrome (CFS): Evidence for Stress-Induced Phenotype Instability?. *International journal of molecular sciences* 2022 23(2):691
- [19] Shang, Q., Yu X. et al. Polysaccharides regulate Th1/Th2 balance: A new strategy for tumor immunotherapy. *Biomedicine & pharmacotherapy* 2024 170:115976

- [20] Lee, N. W. et al. Air-polluted environmental heavy metal exposure increase lung cancer incidence and mortality: A population-based longitudinal cohort study. *The Science of the total environment* 2022 810:152186
- [21] Kerr J., Anderson C., Lippman S. M. Physical activity, sedentary behaviour, diet, and cancer: an update and emerging new evidence. *The Lancet. Oncology* 2017 18(8):e457–e471
- [22] Wei L., Wu Z., Chen Y. Q. Multi-targeted therapy of cancer by omega-3 fatty acids-an update. *Cancer letters* 2022 526:193–204
- [23] Vega O. M., Abkenari S. et al. Omega-3 Polyunsaturated Fatty Acids and Lung Cancer: nutrition or Pharmacology? *Nutrition and cancer* 2021 73(4):541–561
- [24] Jiang B., Zhang J. et al. Filamentous GLS1 promotes ROS-induced apoptosis upon glutamine deprivation via insufficient asparagine synthesis. *Molecular cell* 2022 82(10):1821–1835.e.
- [25] Sheeley M. P., Andolino, C. et al. Vitamin D regulation of energy metabolism in cancer. *British journal of pharmacology* 2022 179(12):2890–2905
- [26] Yang C. S., Luo P. et al.. Vitamin E and cancer prevention: Studies with different forms of tocopherols and tocotrienols. *Molecular carcinogenesis* 2020 59(4):365–389
- [27] Schöttker B., Holleczer B. et al. Strong associations of serum selenoprotein P with all-cause mortality and mortality due to cancer, cardiovascular, respiratory and gastrointestinal diseases in older German adults. *European journal of epidemiology* 2024 39(2):121–136
- [28] Peng F., Lu J. et al. Oncogenic fatty acid oxidation senses circadian disruption in sleep-deficiency-enhanced tumorigenesis. *Cell metabolism* 2024 36(7):1598–1618.e11
- [29] Reiter R. J., De Almeida Chuffa L. G. et al. Melatonin and vitamin D as potential synergistic adjuvants for cancer therapy (Review). *International journal of oncology* 2024 65(6):114
- [30] Wong-Rolle A., Wei H. K. et al. Unexpected guests in the tumor microenvironment: microbiome in cancer. *Protein & cell* 2021 12(5):426–435
- [31] Seyfried T. N., Flores R. E. et al. Cancer as a metabolic disease: implications for novel therapeutics. *Carcinogenesis* 2014 35(3):515–527
- [32] Pavlova N. N., Zhu J., Thompson C. B. The hallmarks of cancer metabolism: Still emerging. *Cell metabolism* 2022 34(3):355–377
- [33] Zhang A. M. Y., Wellberg E. A. et al. Hyperinsulinemia in Obesity, Inflammation, and Cancer. *Diabetes & metabolism journal* 2021 45(3):285–311
- [34] Muthyalalah Y. S., Jonnalagadda B. et al.. Impact of Advanced Glycation End products (AGEs) and its receptor (RAGE) on cancer metabolic signaling pathways and its progression. *Glycoconjugate journal* 2021 38(6):717–734
- [35] Ortmayr K., Dubuis S., Zampieri M. Metabolic profiling of cancer cells reveals genome-wide crosstalk between transcriptional regulators and metabolism. *Nature communications* 2019 10(1):1841
- [36] Sharma A. K., Sharma V. R. et al. Advanced Glycation End Products (AGEs), Glutathione and Breast Cancer: Factors, Mechanism and Therapeutic Interventions. *Current drug metabolism* 2019 20(1):65–71
- [37] Pan D., Guo J. et al. Association of the controlling nutritional status score with all-cause mortality and cancer mortality risk in patients with type 2 diabetes: NHANES 1999-2018. *Diabetology & metabolic syndrome* 2023 15(1):175
- [38] Silbernagel G., Grammer T. B. et al. Glycated hemoglobin predicts all-cause, cardiovascular, and cancer mortality in people without a history of diabetes undergoing coronary angiography. *Diabetes care* 2011 34(6):1355–1361.
- [39] Peila R., Roha T. E. Diabetes, Glycated Hemoglobin, and Risk of Cancer in the UK Biobank Study. *Cancer epidemiology, biomarkers & prevention : a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology* 2020 29(6):1107–1119
- [40] Hart G. W. Nutrient regulation of signaling and transcription. *The Journal of biological chemistry* 2019 294(7):2211–2231
- [41] Krisanits B. A., Woods P. et al. Non-enzymatic glycoxidation linked with nutrition enhances the tumorigenic capacity of prostate cancer epithelia through AGE mediated activation of RAGE in cancer associated fibroblasts. *Translational oncology* 2022 17:101350
- [42] Scott E., Hodgson K. et al. Upregulation of GALNT7 in prostate cancer modifies O-glycosylation and promotes tumour growth. *Oncogene* 2023 42(12):926–937
- [43] Stanczak M. A., Rodrigues Mantuano N. et al. Targeting cancer glycosylation repolarizes tumor-associated macrophages allowing effective immune checkpoint blockade. *Science translational medicine* 2022 14(669):eabj1270
- [44] Goyette M. A., Stevens L. E. et al. Cancer-stromal cell interactions in breast cancer brain metastases induce glyocalyx-mediated resistance to HER2-targeting therapies. *Proceedings of the National Academy of Sciences of the United States of America* 2024 121(20):e2322688121.
- [45] Stewart N., Daly J. et al. The glycoimmune checkpoint receptor Siglec-7 interacts with T-cell ligands and regulates T-cell activation. *The Journal of biological chemistry* 2024 300(2):105579
- [46] White J. Sucrose, HFCS, and Fructose: History, Manufacture, Composition, Applications, and Production 2014 pp. 13–33. Humana Press, New York, NY.
- [47] Jung S, Bae H et al. Dietary fructose and fructose-induced pathologies. *Annu Rev Nutr* 2022 42:45–66
- [48] Bode J, Empie M., Brenner K. Evolution of high fructose corn syrup within the sweeteners industry. In *Fructose, High Fructose Corn Syrup, Sucrose and Health* (JM Rippe, ed.), 2014 pp. 137–148. Springer, New York, NY.
- [49] Parker K, Salas M & Nwosu V High fructose corn syrup: production, uses and public health concerns. *Biotechnol Mol Biol Rev* (2011) 5, 71–78

- [50] Elliott SS, Keim NL et al. Fructose, weight gain, and the insulin resistance syndrome. *Am J Clin Nutr.* (2002) 76:911–22.
- [51] Bray GA, Nielsen SJ, Popkin BM. Consumption of high-fructose corn syrup in beverages may play a role in the epidemic of obesity. *Am J Clin Nutr.* 2004 79:537–43
- [52] Lustig RH, Schmidt LA, Brindis CD. The toxic truth about sugar. *Nature.* 2012 482:27–9.
- [53] Ting KKY. Fructose overconsumption-induced reprogramming of microglia metabolism and function. *Front Immunol* 2024 15:1375453
- [54] Goodman BE Insights into digestion and absorption of major nutrients in humans. *Adv Physiol Educ* 2010 34:44–53
- [55] Holmes R. Carbohydrate digestion and absorption. *J Clin Pathol* 1971 s3-5:10–13
- [56] Koepsell H. Glucose transporters in the small intestine in health and disease. *Pflügers Arch* 2020 472:1207–1248
- [57] Chen L, Tuo B et al. Regulation of intestinal glucose absorption by ion channels and transporters. *Nutrients* 2016 8:43.
- [58] Wright EM, Loo DDF, Hirayama BA Biology of human sodium glucose transporters. *Physiol Rev* 2011 91:733–794.
- [59] Hediger MA, Rhoads DB Molecular physiology of sodium-glucose cotransporters. *Physiol Rev* 1994 74:993–1026
- [60] Kellett GL, Brot-Laroche E et al. Sugar absorption in the intestine: the role of GLUT2. *Annu Rev Nutr* 2008 28:35–54
- [61] Mueckler M, Thorens B The SLC2 (GLUT) family of membrane transporters. *Mol Asp Med* 2013 34:121–138
- [62] Uldry M, Ibberson M et al. GLUT2 is a high affinity glucosamine transporter. *FEBS Lett* 2002 524:199–203
- [63] Kellett GL, Brot-Laroche E Apical GLUT2: a major pathway of intestinal sugar absorption. *Diabetes* 2005 54:3056–3062
- [64] Kellett GL The facilitated component of intestinal glucose absorption. *J Physiol* 2001 531:585–595
- [65] Burant CF, Takeda J et al. Fructose transporter in human spermatozoa and small intestine is GLUT5. *J Biol Chem* 1992 267:14523–14526
- [66] Kane S, Seatter MJ et al. Functional studies of human GLUT5: effect of pH on substrate selection and an analysis of substrate interactions. *Biochem Biophys Res Commun* 1997 238:503–505
- [67] Blakemore SJ, Aledo JC et al. The GLUT5 hexose transporter is also localized to the basolateral membrane of the human jejunum. *Biochem J* 1995 309:7–12
- [68] Alam YH, Kim R, Jang C Metabolism and health impacts of dietary sugars. *J Lipid Atheroscler* 2022 11:20–38
- [69] Dashty MA a quick look at biochemistry: carbohydrate metabolism. *Clin Biochem* 2013 46:1339–1352
- [70] Frey PA The Leloir pathway: a mechanistic imperative for three enzymes to change the stereochemical configuration of a single carbon in galactose. *FASEB J* 1996 10:461–470
- [71] Heinz F, Lamprecht W, Kirsch J Enzymes of fructose metabolism in human liver. *J Clin Invest* 1968 47:1826–1832
- [72] Tappy L., Lê K-A. Metabolic effects of fructose and the worldwide increase in obesity. *Physiol Rev* 2010 90:23–46
- [73] Lim JS, Mietus-Snyder M. The role of fructose in the pathogenesis of NAFLD and the metabolic syndrome. *Nat Rev Gastroenterol Hepatol* 2010 7: 251–264
- [74] van den Berghe G, Bronfman M et al. The mechanism of adenosine triphosphate depletion in the liver after a load of fructose. A kinetic study of liver adenylate deaminase. *Biochem J* 1977 162:601–609
- [75] Johnson RJ, Nakagawa T. et al. Sugar, uric acid, and the etiology of diabetes and obesity. *Diabetes* 2013 62:3307–3315
- [76] Lanasa MA, Sanchez-Lozada LG et al. Uric acid induces hepatic steatosis by generation of mitochondrial oxidative stress: potential role in fructose-dependent and -independent fatty liver. *J Biol Chem* 2012 287:40732–40744
- [77] Zhao S, Jang C et al. Dietary fructose feeds hepatic lipogenesis via microbiota-derived acetate. *Nature* 2020 579:586–591
- [78] Bizeau ME, Pagliassotti MJ Hepatic adaptations to sucrose and fructose. *Metabolism* 2005 54:1189–1201
- [79] Jang C, Hui S et al. The small intestine converts dietary fructose into glucose and organic acids. *Cell Metab* 2018 27:351–361.e3
- [80] Rajas F, Bruni N et al. The glucose-6 phosphatase gene is expressed in human and rat small intestine: regulation of expression in fasted and diabetic rats. *Gastroenterology* 1999 117:132–139
- [81] Ter Horst KW, Serlie MJ. Fructose consumption, lipogenesis, and non-alcoholic fatty liver disease. *Nutrients* 2017 8:43
- [82] Jang C, Wada S et al The small intestine shields the liver from fructose-induced steatosis. *Nat Metab* 2020 2:586–593
- [83] Zhang C, Li L et al. Recent advances in fructose intake and risk of hyperuricemia. *Biomed Pharmacother* 2020 131:10795
- [84] Warburg O. The metabolism of carcinoma cells1. *J Cancer Res.* 1925 9:148–63
- [85] Warburg O, Wind F, Negelein E. Über den Stoffwechsel von Tumoren im Körper. *Klinische Wochenschrift* 1926 5:829–32
- [86] Nam M, Xia W et al. Glucose limitation protects cancer cells from apoptosis induced by pyrimidine restriction and replication inhibition. *Nat Metab* 2024 16:2338-2353
- [87] Warburg O. On the origin of cancer cells. *Science* 1956 123:309–14
- [88] Vander Heiden MG, Cantley LC et al. Understanding the Warburg effect: the metabolic requirements of cell proliferation. *Science* 2009 324:1029-33
- [89] Gonzalez JT, Betts JA. Dietary Fructose Metabolism by Splanchnic Organs: Size Matters. *Cell Metab* 2018 27:483-485
- [90] Bian Z, Zhang J. et al. LncRNA-FEZF1-AS1 promotes tumor proliferation and metastasis in colorectal cancer by regulating PKM2 signaling. *Clin Cancer Res.* 2018 24:4808–19.
- [91] Kuo CC, Ling HH et al. Metastatic colorectal cancer rewrites metabolic program through a glut3-YAP-dependent signaling circuit. *Theranostics* 2019 9:2526–40

- [92] Shen C, Xuan B et al. m6A-dependent glycolysis enhances colorectal cancer progression. *Mol Cancer* 2020 19:72
- [93] Ji Y, Yang C et al. Adenylate kinase hCINAP determines self-renewal of colorectal cancer stem cells by facilitating LDHA phosphorylation. *Nat Commun*. 2017 8:15308
- [94] Shen Z, Li Z et al. GLUT5-KHK axis-mediated fructose metabolism drives proliferation and chemotherapy resistance of colorectal cancer. *Cancer Lett*. 2022 534:215617.
- [95] Włodarczyk J, Włodarczyk M et al. Blockade of fructose transporter protein GLUT5 inhibits proliferation of colon cancer cells: proof of concept for a new class of anti-tumor therapeutics. *Pharmacol Rep*. 2021 73:939–45
- [96] Pan R, Liu J et al. Causal links of human serum metabolites on the risk of prostate cancer: insights from genome-wide Mendelian randomization, single-cell RNA sequencing, and metabolic pathway analysis. *Front. Endocrinol*. 2024 15:1443330
- [97] Chen WL, Jin X et al. GLUT5-mediated fructose utilization drives lung cancer growth by stimulating fatty acid synthesis and AMPK/mTORC1 signaling. *JCI Insight*. 2020 5
- [98] Weng Y, Fan X et al. SLC2A5 promotes lung adenocarcinoma cell growth and metastasis by enhancing fructose utilization. *Cell Death Discovery* 2018 4:38
- [99] Zhang Y, Yu X et al. Dietary fructose-mediated adipocyte metabolism drives antitumor CD8(+) T cell responses. *Cell Metab*. 2023 35:2107–18.e6.
- [100] Jiang Y, Pan Y et al. Asucrose-enriched diet promotes tumorigenesis in mammary gland in part through the 12-lipoxygenase pathway. *Cancer Res*. 2016 76:24–9
- [101] Zamora-Leon SP, Golde DW et al. Expression of the fructose transporter GLUT5 in human breast cancer. *Proc Natl Acad Sci U.S.A.* 1996 93:1847–52.
- [102] Fan X, Liu H et al. Increased utilization of fructose has a positive effect on the development of breast cancer. *PeerJ*. 2017 5:e3804.
- [103] Chan KK, Chan JYW et al. Inhibition of cell proliferation in human breast tumor cells by antisense oligonucleotides against facilitative glucose transporter 5. *J Cell Biochem*. 2004 93:1134–42
- [104] Monzavi-Karbassi B, Hine RJ et al. Fructose as a carbon source induces an aggressive phenotype in MDA-MB-468 breast tumor cells. *Int J Oncol*. 2010 37:615–22
- [105] Kim J, Kang J et al. Kethexokinase-A acts as a nuclear protein kinase that mediates fructose-induced metastasis in breast cancer. *Nat Commun*. 2020 11:5436
- [106] Chen W-L, Wang Y-Y et al. Enhanced fructose utilization mediated by SLC2A5 is a unique metabolic feature of acute myeloid leukemia with therapeutic potential. *Cancer Cell*. 2016 30:779–91
- [107] Jeong S, Savino AM et al. High fructose drives the serine synthesis pathway in acute myeloid leukemic cells. *Cell Metab*. 2021 33:145–59.e6.
- [108] Carreño DV, Corro NB et al. Dietary fructose promotes prostate cancer growth. *Cancer Res*. 2021 81:2824–32
- [109] Liu H, Huang D et al. Fructose induces transketolase flux to promote pancreatic cancer growth. *Cancer Res*. 2010 70:6368–76
- [110] Su C, Li H, Gao W. GLUT5 increases fructose utilization and promotes tumor progression in glioma. *Biochem Biophys Res Commun*. 2018 500:462–9.
- [111] Gao W, Li N et al. Kethexokinase is involved in fructose utilization and promotes tumor progression in glioma. *Biochem Biophys Res Commun*. 2018 503:1298–306
- [112] Li X, Qian X. et al. A splicing switch from kethexokinase-C to kethexokinase-A drives hepatocellular carcinoma formation. *Nat Cell Biol*. 2016 18:561–71
- [113] Tee SS, Kim N et al. Kethexokinase-mediated fructose metabolism is lost in hepatocellular carcinoma and can be leveraged for metabolic imaging. *Sci Adv*. 2022 8:eabm7985
- [114] Ishimoto T, Lanasp MA et al. Opposing effects of fructokinase C and A isoforms on fructose-induced metabolic syndrome in mice. *Proc Natl Acad Sci*. 2012 109:4320–5.
- [115] Syamprasad NP, Jain S et al. AKR1B1 drives hyperglycemia-induced metabolic reprogramming in MASLD associated hepatocellular carcinoma. *JHEP Rep*. 2024 6:100974
- [116] Zhou P, Chang WY et al. High dietary fructose promotes hepatocellular carcinoma progression by enhancing O GlcNAcylation via microbiota-derived acetate. *Cell Metab*. 2023 35:1961–75.e6
- [117] Vázquez Martínez IP, Pérez-Campos E et al. O-GlcNAcylation: Crosstalk between Hemostasis, Inflammation, and Cancer. *Int J Mol Sci*. 2024 25:9896
- [118] Huang X, Fang J et al. IL-6/STAT3 axis activates glut5 to regulate fructose metabolism and tumorigenesis. *Int J Biol Sci*. 2022 18:3668-75.
- [119] Singh N, Baby D et al. Inflammation and cancer. *Ann Afr Med*. (2019) 18:121–6
- [120] Fowle-Grider R, Rowles JL et al. Dietary fructose enhances tumour growth indirectly via interorgan lipid transfer. *Nature*. 2024 636:737-744
- [121] Seyfried, T. N., Flores, R. E. et al. Cancer as a metabolic disease: implications for novel therapeutics. *Carcinogenesis*, 2014 35(3):515–527
- [122] Pavlova N. N., Zhu J. et al. The hallmarks of cancer metabolism: Still emerging. *Cell metabolism* 2022 34(3):355–377
- [123] Klement R. J., Pазienza, V. Impact of Different Types of Diet on Gut Microbiota Profiles and Cancer Prevention and Treatment. *Medicina (Kaunas, Lithuania)* 2019 55(4):84
- [124] Zhu H., Bi D. et al. Ketogenic diet for human diseases: the underlying mechanisms and potential for clinical implementations. *Signal transduction and targeted therapy* 2022 7(1):11
- [125] Ngo B., Van Riper J. M. et al. Targeting cancer vulnerabilities with high-dose vitamin C. *Nature reviews. Cancer* 2019 19(5):271–282.
- [126] Ninomiya S., Nakamura N. et al. Low Levels of Serum Tryptophan Underlie Skeletal Muscle Atrophy. *Nutrients* 2020 12(4):978.

- [127] Yadav M. K., Kumari I. et al. Probiotics, prebiotics and synbiotics: Safe options for next-generation therapeutics. *Applied microbiology and biotechnology*, (2022)106(2), 505–521
- [128] Homolak J., Babic Perhoc, A. et al. The Effect of Acute Oral Galactose Administration on the Redox System of the Rat Small Intestine. *Antioxidants (Basel, Switzerland)* 2021 11(1):37
- [129] Homolak J., Babic Perhoc, A. et al. D-galactose might mediate some of the skeletal muscle hypertrophy-promoting effects of milk-A nutrient to consider for sarcopenia?. *BioEssays : news and reviews in molecular, cellular and developmental biology* 2024 46(2):e2300061
- [130] Isenberg J., Stoffel B. et al. Liver lectin blocking with D-galactose to prevent hepatic metastases in colorectal carcinoma patients. *Anticancer research* 1997 17(5B):3767–3772
- [131] Razaghi A., Poorebrahim M. et al. Selenium stimulates the antitumour immunity: Insights to future research. *European journal of cancer (Oxford, England:1990)* 2021 155:256–267
- [132] Missiroli S., Perrone M. et al. Cancer metabolism and mitochondria: Finding novel mechanisms to fight tumours. *EBioMedicine* 2020 59:102943
- [133] Beltrà M., Pöllänen N. et al. NAD⁺ repletion with niacin counteracts cancer cachexia. *Nature communications* 202314(1):1849
- [134] Choi D. NADH-Reductive Stress in Cancer Cell Proliferation. *Molecules and cells* 2023 46(8):473–475
- [135] Kraft M., Kraft K. et al. L-Carnitine-supplementation in advanced pancreatic cancer (CARPAN)—a randomized multicentre trial. *Nutrition journal* 2012 11:52
- [136] Xiong Y., Yong Z. et al. Hyperbaric Oxygen Activates Enzyme-Driven Cascade Reactions for Cooperative Cancer Therapy and Cancer Stem Cells elimination. *Advanced science (Weinheim, Baden-Württemberg, Germany)* 2023 10(21):e2301278
- [137] Yanchu L., Rong P et al. Ozone therapy for high-grade glioma: an overview. *Front Oncol.* 2023 13:1161206
- [138] Schönsteiner S. S., Bauder Mißbach H. A randomized exploratory phase 2 study in patients with chemotherapy-related peripheral neuropathy evaluating whole-body vibration training as adjunct to an integrated program including massage, passive mobilization and physical exercises. *Experimental hematology & oncology* 2017 6:5
- [139] Huang Q., Wu M. et al. Muscle-to-tumor crosstalk: The effect of exercise-induced myokine on cancer progression. *Biochimica et biophysica acta. Reviews on cancer* 2022 1877(5):188761
- [140] Roy P., Chowdhury S., Roy H. K. Exercise-induced myokines as emerging therapeutic agents in colorectal cancer prevention and treatment. *Future oncology (London, England)* 2018 14(4):309–312
- [141] Poff A., Koutnik A. P., et al. Targeting the Warburg effect for cancer treatment: Ketogenic diets for management of glioma. *Seminars in cancer biology* 2019 56, 135–148
- [142] Kraft M., Mosetter K. Melatonin, das Mikrobiom und die Ernährung – eine „Star Alliance“? *OM & E* 2024 189: F36-39
- [143] Li Y., Li S. et al. Melatonin for the prevention and treatment of cancer. *Oncotarget*, 2017 8(24):39896–39921.
- [144] Kraft M. Sekundäre Pflanzenstoffe in der Prävention von Krebserkrankungen - von der Zelle zum Organismus *OM&E* 2020, 173
- [145] Kraft M. L-Carnitin – Therapeutische Optionen in der Medizin mit besonderem Fokus auf Tumorerkrankungen *OM&E* 2021 SH 120
- [146] Kraft M., Pfeifer B. Metformin in der Krebstherapie. *Der Onkologe*, 2021 *Forum Onkologie*
- [147] Kraft M. Stellenwert der hochdosierten intravenösen Vitamin-C-Gabe in der Tumorthherapie. *OM&E* 2023, SH 130
- [148] Kraft M., Mosetter K. Stellenwert von Cordycepin in der Tumorthherapie und bei SARS-CoV-2. *OM&E* 2023, 184
- [149] Kraft M., Pfeifer B. Indol-3-Carbinol – ein Blockbuster in der Prävention und Behandlung von Brustkrebs? *Onkologe*, 5/2023, 25-32
- [150] Kraft M., Pfeifer B. Vertiefende Betrachtungen zur Entstehung, Ausbreitung und Metastasierung von Krebs. *Onkologe*, 5/2023, Suppl. 1
- [151] Kraft M., Pfeifer B. Langzeitüberleben mit metastasiertem und kastrationsresistentem Prostatakarzinom. *Onkologie heute* 8/2023, 1-7
- [152] Kraft M. Hyperthermie – was ist relevant bei der Tumorthherapie? *Gynäkologie & Geburtshilfe*, 2023; 28(4), 48-50
- [153] Kraft M., Mosetter K. Melatonin – nur ein Schlafhormon, oder doch mehr? *OM&E* 2024, 186
- [154] Kraft M., Mosetter K., Pfeifer B. Melatonin in der Tumorthherapie – eine Option? *OM&E* 2024, 187
- [155] Kraft M. Artemisinin und dessen Derivate in der Krebstherapie: nur Ferroptose oder doch mehr? *OM&E* 2022, 181
- [156] Kraft M. Veränderung der Tumormikroumgebung (TME) im Rahmen einer Hyperthermie. *OM&E* 2023, 183
- [157] Bocci V. Mistletoe (*viscum album*) lectins as cytokine inducers and immunoadjuvant in tumor therapy. A review. *Biol Regul Homeost Agents* 1993 7(1):1
- [158] Ganguly C., Das S. Plant lectins as inhibitors of tumour growth and modulations of host immune response. *Chemotherapy* 1994 40: 272-278
- [159] Boneberg E. M., Hartung TMistletoe Lectin-1 Increases Tumor Necrosis Factor- α Release in Lipopolysaccharide-Stimulated Whole Blood via Inhibition of Interleukin-10 Production. *Journal of Pharmacology and Experimental Therapeutics* 2001 298(3): 996-999
- [160] Beuth J, Stoffel B et al. Mistlektin-1 Neue therapeutische Perspektiven in der Onkologie. *Onkologie* 1995 18 (suppl 1):36-40
- [161] Knezovic A., Osmanovic Barilar J. Glucagon-like peptide-1 mediates effects of oral galactose in streptozotocin-induced rat model of sporadic Alzheimer's disease. *Neuropharmacology* 2018 135:48-62

- [162] Homolak J., Babic Perhoc A. Is Galactose a Hormetic Sugar? An Exploratory Study of the Rat Hippocampal Redox Regulatory Network. *Molecular nutrition & food research*, 2021 65(21):e2100400.
- [163] Banik S. M., Pedram K. et al. Lysosome-targeting chimaeras for degradation of extracellular proteins. *Nature*, 2020 584(7820), 291–297.
- [164] Skolik R. A., Solocinski, J. et al. Global changes to HepG2 cell metabolism in response to galactose treatment. *American journal of physiology. Cell physiology*, 2021 320(5): C778–C793.
- [165] Sharif Swallah M., Bondzie-Quaye P. et al. Potentialities of *Ganoderma lucidum* extracts as functional ingredients in food formulation. *Food research international (Ottawa, Ont.)* 2023 172:113161.
- [166] Zhang J., Tang Q. et al. Activation of B lymphocytes by GLIS, a bioactive proteoglycan from *Ganoderma lucidum*. *Life sciences* 2002 71(6):623–638.
- [167] Swallah M. S., Bondzie-Quaye P. Therapeutic potential and nutritional significance of *Ganoderma lucidum* - a comprehensive review from 2010 to 2022. *Food & function* 2023 14(4):1812–1838.
- [168] Batra P, Sharma AK et al. Probing Lingzhi or Reishi medicinal mushroom *Ganoderma lucidum* (higher Basidiomycetes): a bitter mushroom with amazing health benefits. *Int J Med Mushrooms*. 2013 15(2):127-43.
- [169] Popović V, Živković J. et al. Mycotherapy of cancer: an update on cytotoxic and antitumor activities of mushrooms, bioactive principles and molecular mechanisms of their action. *Curr Top Med Chem*. 2013 13 (21):2791-806.
- [170] Sun L. X., Li W. D. et al. Protection against lung cancer patient plasma-induced lymphocyte suppression by *Ganoderma lucidum* polysaccharides. *Cellular physiology and biochemistry : international journal of experimental cellular physiology, biochemistry, and pharmacology*, 2014 33(2):289–299.
- [171] Wu, G. S., Guo, J. J. et al. Anti-cancer properties of triterpenoids isolated from *Ganoderma lucidum* - a review. *Expert opinion on investigational drugs*, 2013 22(8): 981–992.
- [172] Suarez-Arroyo I. J., Rosario-Acevedo R. et al. Anti-tumor effects of *Ganoderma lucidum* (reishi) in inflammatory breast cancer in in vivo and in vitro models. *PLoS one* 2013 8(2):e57431.
- [173] Loganathan J., Jiang, J. et al. The mushroom *Ganoderma lucidum* suppresses breast-to-lung cancer metastasis through the inhibition of pro-invasive genes. *International journal of oncology* 2014 44(6):2009–2015.
- [174] Acevedo-Díaz A., Ortiz-Soto G. et al. *Ganoderma lucidum* Extract Reduces the Motility of Breast Cancer Cells Mediated by the RAC Lamellipodin Axis. *Nutrients* 2019 11(5): 1116.
- [175] Swallah M. S., Bondzie-Quaye P. et al. Therapeutic potential and nutritional significance of *Ganoderma lucidum* - a comprehensive review from 2010 to 2022. *Food & function* 2023 14(4):1812–1838.
- [176] Ratovitski E. A. Anticancer Natural Compounds as Epigenetic Modulators of Gene Expression. *Current genomics* 2017 18(2):175–205.
- [177] Lai G., Guo Y. et al. Alcohol Extracts From *Ganoderma lucidum* Delay the Progress of Alzheimer's Disease by Regulating DNA Methylation in Rodents. *Frontiers in pharmacology* 2019 10:272.
- [178] Seweryn E., Ziśła, A. & Gamian A.. Health-Promoting of Polysaccharides Extracted from *Ganoderma lucidum*. *Nutrients* 2021 13(8):2725.
- [179] Bouchardat, Apollinaire De la Glykosurie ou Diabète sucré. Paris 1875. Kūlz: Beitr. Diabetes, Marburg 1874
- [180] Bouchardat Apollinaire (1883). de la Glycosurie Ou Diabète Sucre, Son Traitement Hygiénique, Avec Notes Et Documents: Sur La Nature Et Le Traitement de la Goutte
- [181] Brünings W. Beiträge zum Krebsproblem. 1. Mitteilung: Über eine diätetisch-hormonale Beeinflussung des Krebses. *Münchener Medizinische Wochenschrift* 1941 88:117–23.
- [182] Mohammad M. A., Suneag A. L. et al. Galactose promotes fat mobilization in obese lactating and nonlactating women. *The American journal of clinical nutrition*, 2011 93(2), 374–381.
- [183] Warburg O., Posener K., Negelein E. Über den Stoffwechsel der Carcinomzelle. *Biochem Z*. 1924 152:309-344
- [184] Warburg O. On the Origin of Cancer Cells. *Science* 1956 123 (3191):309ff.
- [185] Warburg O., Geissler A. W., & Lorenz S. Über Wachstum von Krebszellen in Medien, deren Glucose durch Galaktose ersetzt ist [On growth of cancer cells in media in which glucose is replaced by galactose]. *Hoppe-Seyler's Zeitschrift für physiologische Chemie* 1967 348(12):1686–1687.
- [186] Beuth J., Ko H.L. et al.: Inhibition of liver tumor cell colonization in two animal tumor models by lectin blocking with D-galactose or arabinogalactan. *Clin Exp Metastasis* 1988 6(2):115-120
- [187] Isenberg J., Stoffel B. et al.: Liver lectin blocking with D-galactose to prevent hepatic metastases in colorectal carcinoma patients. *Anticancer Res*. 1997 17:3767-3772.
- [188] Roseman J. M., Miller E. et al. The effect of L-fucose on rat mammary tumor growth. II. In vitro studies. *J Surg Oncol* 1971 3:79-88.
- [189] Pulverer G., Ko H. L. et al. Combined immunomodulation (*Propionibacterium avidum* KP-40) and lectin blocking (D-galactose) prevents liver tumor colonization in BALB/c-mice. *Int J Med Microbiol Virol Parasitol. Infect Dis* 1994 281:491-494.
- [190] Beuth J., Ko, H.L. et al. Inhibition of liver metastasis in mice by blocking hepatocyte lectins with arabinogalactan infusions and D-galactose. *J Cancer Res Clin Oncol*. 1987 113(1):51-55
- [191] Pulverer G, Ko H.L. et al. Blockade der Leberlektine durch Galaktoseinfusionen: therapeutisches Konzept zur Metastasenprophylaxe. *Onkologie* 1995 18(suppl 1):51-54

- [192] Isenberg J., Stoffel B. et al. Liver lectin blocking with D-galactose to prevent hepatic metastases in colorectal carcinoma patients. *Anticancer research* 1997 17:3767–3772
- [193] Warczynski P, Gil J. et al. Prevention of hepatic metastases by liver lectin blocking with D-galactose in colon cancer patients. A prospectively randomized clinical trial. *Anticancer Res.* 1997 17:1223-6.
- [194] Kosik J., Gil J., et al. Prevention of hepatic metastases by liver lectin blocking with D-galactose in stomach cancer patients. A prospectively randomized clinical trial. *Anticancer research* 1997 17:1411–1415.
- [195] Foell D, Kucharzik T, Kraft M et al. Neutrophil derived human S100A12 (EN-RAGE) is strongly expressed during chronic active inflammatory bowel disease. *Gut* 2003 52(6):847-53
- [196] Stanczak M. A., Rodrigues Mantuano, N. et al. Targeting cancer glycosylation repolarizes tumor-associated macrophages allowing effective immune checkpoint blockade. *Science translational medicine* 2022 14(669):eabj1270
- [197] Conte F., van Buuringen N. et al. Galactose in human metabolism, glycosylation and congenital metabolic diseases: Time for a closer look. *Biochimica et biophysica acta. General subjects* 2021 1865(8):129898.
- [198] Sosicka P, Ng B. G., & Freeze H. H. Therapeutic Monosaccharides: Looking Back, Moving Forward. *Biochemistry* 2020 59(34):3064–3077.
- [199] Park J. H. 2023 SLC39A8-CDG. In M. P. Adam (Eds.) et. al., *GeneReviews®*. University of Washington, Seattle.
- [200] Homolak J., Babic Perhoc A. et al. D-galactose might protect against ionizing radiation by stimulating oxidative metabolism and modulating redox homeostasis. *Journal of radiation research*, 2023 64(4):743–745.
- [201] Zhu T., Wang Z. et al. D-galactose protects the intestine from ionizing radiation-induced injury by altering the gut microbiome. *Journal of radiation research* 2022 63(6):805–816.
- [202] Klein A, Wrulich OA, Uberall F. Pathway-focused bioassays and transcriptome analysis contribute to a better activity monitoring of complex herbal remedies. *BMC Genomics*. 2013 14:133
- [203] Hanahan D, Weinberg RA. The hallmarks of cancer. *Cell*. 2000 100(1):57-70
- [204] Hanahan D, Weinberg RA. Hallmarks of cancer: the next generation. *Cell*. 2011 144(5):646-74
- [205] Anderson NM, Simon MC. The tumor microenvironment. *Curr Biol*. 2020 30(16):R921-R925
- [206] Jenny M, Schwaiger W, Ueberall F. Apoptosis induced by the Tibetan herbal remedy PADMA 28 in the T cell-derived lymphocytic leukaemia cell line CEM-C7H2. *J Carcinog*. 2005 4:15
- [207] Wang R, Wang C et al. Baicalin and baicalein in modulating tumor microenvironment for cancer treatment: A comprehensive review with future perspectives. *Pharmacol Res.* 2024 199:107032
- [208] Wu H, Long X et al. Combined use of phospholipid complexes and self-emulsifying microemulsions for improving the oral absorption of a BCS class IV compound, baicalin. *Acta Pharm Sin B*. 2014 4(3):217-26
- [209] Akao T, Kawabata K, et al. Baicalin, the predominant flavone glucuronide of scutellariae radix, is absorbed from the rat gastrointestinal tract as the aglycone and restored to its original form. *J Pharm Pharmacol*. 2000 52(12):1563-8
- [210] Rahmani AH, Almatroudi A et al. The Multifaceted Role of Baicalein in Cancer Management through Modulation of Cell Signalling Pathways. *Molecules* 2022 27(22):8023
- [211] Kim D.H., Hossain M.A. et al. Baicalein, an active component of *Scutellaria baicalensis* Georgi, induces apoptosis in human colon cancer cells and prevents AOM/DSS-induced colon cancer in mice. *Int. J. Oncol*. 2013 43:1652–1658
- [212] Takahashi H, Chen MC et al. Baicalein, a component of *Scutellaria baicalensis*, induces apoptosis by Mcl-1 down-regulation in human pancreatic cancer cells. *Biochim Biophys Acta*. 2011 1813(8):1465-74
- [213] Chen F, Zhuang M et al. Baicalein inhibits migration and invasion of gastric cancer cells through suppression of the TGF- β signaling pathway. *Mol Med Rep*. 2014 10(4):1999-2003.
- [214] Liu J, Qi X et al. Baicalin Induces Gastric Cancer Cell Pyroptosis through the NF- κ B-NLRP3 Signaling Axis. *J Cancer*. 2024 15(2):494-507
- [215] Zhu Y, Fang J. et al. Baicalin suppresses proliferation, migration, and invasion in human glioblastoma cells via Ca²⁺-dependent pathway. *Drug Des Devel Ther*. 2018 12:3247-3261
- [216] Choi EO, Cho EJ et al. Baicalein Inhibits the Migration and Invasion of B16F10 Mouse Melanoma Cells through Inactivation of the PI3K/Akt Signaling Pathway. *Biomol Ther (Seoul)*. 2017 25(2):213-221
- [217] Susmitha GD, Miyazato K et al. Anti-metastatic Effects of Baicalein by Targeting STAT3 Activity in Breast Cancer Cells. *Biol Pharm Bull*. 2020 43(12):1899-1905
- [218] Nagarsheth N, Wicha MS, Zou W. Chemokines in the cancer microenvironment and their relevance in cancer immunotherapy. *Nat Rev Immunol*. 2017 17(9):559-572.
- [219] de Visser KE, Joyce JA. The evolving tumor microenvironment: From cancer initiation to metastatic outgrowth. *Cancer Cell*. 2023 41(3):374-403
- [220] Kitamura T, Qian BZ, Pollard JW. Immune cell promotion of metastasis. *Nat Rev Immunol*. 2015 15(2):73-86
- [221] Qian BZ. Inflammation fires up cancer metastasis. *Semin Cancer Biol*. 2017 Dec;47:170-176
- [222] Ke M, Zhang Z, Xu B, Zhao S, Ding Y, Wu X, Wu R, Lv Y, Dong J. Baicalein and baicalin promote antitumor immunity by suppressing PD-L1 expression in hepatocellular carcinoma cells. *Int Immunopharmacol*. 2019 Oct;75:105824
- [223] Schroecksnadel S, Jenny M, Kurz K, Klein A, Ledochowski M, Uberall F, Fuchs D. LPS-induced NF- κ B expression in THP-1 Blue cells correlates with neopterin production and activity of indoleamine 2,3-dioxygenase. *Biochem Biophys Res Commun*. 2010 Sep 3;399(4):642-6

- [224] Prendergast GC. Cancer: Why tumours eat tryptophan. *Nature*. 2011 478(7368):192-4
- [225] Opitz CA, Litztenburger UM et al. An endogenous tumour-promoting ligand of the human aryl hydrocarbon receptor. *Nature*. 2011 478(7368):197-203
- [226] Chen S, Corteling R et al. Natural inhibitors of indoleamine 3,5-dioxygenase induced by interferon-gamma in human neural stem cells. *Biochem Biophys Res Commun*. 2012 429(1-2):117-23
- [227] Becker K, Geisler S, Ueberall F et al. Immunomodulatory properties of cacao extracts - potential consequences for medical applications. *Front Pharmacol*. 2013 4:154
- [228] Gostner JM, Becker K, Ueberall F, Fuchs D. The good and bad of antioxidant foods: An immunological perspective. *Food Chem Toxicol*. 2015 80:72-79
- [229] Saleem A, Husheem M et al. Inhibition of cancer cell growth by crude extract and the phenolics of *Terminalia chebula* retz. fruit. *J Ethnopharmacol*. 2002 81(3):327-36
- [230] Jenny M, Schwaiger W, Ueberall F. Apoptosis induced by the Tibetan herbal remedy PADMA 28 in the T cell-derived lymphocytic leukaemia cell line CEM-C7H2. *J Carcinog*. 2005 4:15
- [231] Saller R, Melzer J. Multimorbidität und multi-target-therapie in der phytotherapie [Multimorbidity and multi-target therapy in phytotherapy]. *Forsch Komplementmed*. 2013 20 Suppl 2:1. German
- [232] Peterson CT, Denniston K, Chopra D. Therapeutic Uses of Triphala in Ayurvedic Medicine. *J Altern Complement Med*. 2017 23(8):607-614
- [233] Prasad S, Srivastava SK. Oxidative Stress and Cancer: Chemopreventive and Therapeutic Role of Triphala. *Antioxidants (Basel)*. 2020 9(1):72
- [234] Reddy P, Pradeep S et al. Cell cycle arrest and apoptotic studies of *Terminalia chebula* against MCF-7 breast cancer cell line: an in vitro and in silico approach. *Front Oncol*. 2023 13:1221275
- [235] Hu S, Li S et al. The antitumor effects of herbal medicine Triphala on oral cancer by inactivating PI3K/Akt signaling pathway: based on the network pharmacology, molecular docking, in vitro and in vivo experimental validation. *Phytomedicine*. 2024 128:155488
- [236] Lu G, Wang X et al. The multifaceted mechanisms of ellagic acid in the treatment of tumors: State-of-the-art. *Biomed Pharmacother*. 2023 165:115132.
- [237] Kumar G, Madka V et al. Molecular Mechanisms of Cancer Prevention by Gooseberry (*Phyllanthus emblica*). *Nutr Cancer*. 2022 74(7):2291-2302
- [238] Singai C, Pitchakam P et al. Chemopreventive Potential of *Phyllanthus emblica* Fruit Extract against Colon and Liver Cancer Using a Dual-Organ Rat Carcinogenesis Model. *Pharmaceuticals (Basel)*. 2024 17(7):818
- [239] Baliga MS, Dsouza JJ. Amla (*Embllica officinalis* Gaertn), a wonder berry in the treatment and prevention of cancer. *Eur J Cancer Prev*. 2011 20(3):225-39
- [240] Chang Z, Jian P et al. Tannins in *Terminalia bellirica* inhibit hepatocellular carcinoma growth by regulating EGFR-signaling and tumor immunity. *Food Funct*. 2021 12(8):3720-3739
- [241] Sales MS, Roy A et al. Octyl gallate and gallic acid isolated from *Terminalia bellarica* regulates normal cell cycle in human breast cancer cell lines. *Biomed Pharmacother*. 2018 103:1577-1584
- [242] Patra S, Panda PK et al. *Terminalia bellirica* extract induces anticancer activity through modulation of apoptosis and autophagy in oral squamous cell carcinoma. *Food Chem Toxicol*. 2020 136:111073
- [243] Jiang J, Yang Z et al. The potential mechanism of *Chebulae Fructus* in the treatment of hepatocellular carcinoma on the basis of network pharmacology. *Ann Hepatol*. 2022 27(4):100701
- [244] Kuo YC, Kuo PL et al. Ellipticine induces apoptosis through p53-dependent pathway in human hepatocellular carcinoma HepG2 cells. *Life Sci*. 2006 78(22):2550-7.
- [245] Kuo PL, Hsu YL et al. The mechanism of ellipticine-induced apoptosis and cell cycle arrest in human breast MCF-7 cancer cells. *Cancer Lett*. 2005 223(2):293-301.
- [246] Vadde R, Radhakrishnan S et al. Triphala Extract Suppresses Proliferation and Induces Apoptosis in Human Colon Cancer Stem Cells via Suppressing c-Myc/Cyclin D1 and Elevation of Bax/Bcl-2 Ratio. *Biomed Res Int*. 2015 2015:649263.
- [247] Russell LH Jr, Mazzio E et al. Differential cytotoxicity of triphala and its phenolic constituent gallic acid on human prostate cancer LNCap and normal cells. *Anticancer Res*. 2011 31(11):3739-45.
- [248] Sandhya T, Mishra KP. Cytotoxic response of breast cancer cell lines, MCF 7 and T 47 D to triphala and its modification by antioxidants. *Cancer Lett*. 2006 18;238(2):304-13
- [249] Zhang Z, Huang L et al. Annexin 1 induced by anti-inflammatory drugs binds to NF-kappaB and inhibits its activation: anticancer effects in vitro and in vivo. *Cancer Res*. 2010 70(6):2379-88
- [250] Zhao Y, Wang M et al. An Integrated Study on the Antitumor Effect and Mechanism of Triphala Against Gynecological Cancers Based on Network Pharmacological Prediction and In Vitro Experimental Validation. *Integr Cancer Ther*. 2018 17(3):894-901
- [251] Tsering J, Hu X. Triphala Suppresses Growth and Migration of Human Gastric Carcinoma Cells In Vitro and in a Zebrafish Xenograft Model. *Biomed Res Int*. 2018 2018:7046927
- [252] Cheriyaundath S, Mahaddalkar T et al. Aqueous extract of Triphala inhibits cancer cell proliferation through perturbation of microtubule assembly dynamics. *Biomed Pharmacother*. 2018 98:76-81
- [253] Shi Y, Sahu RP et al. Triphala inhibits both in vitro and in vivo xenograft growth of pancreatic tumor cells by inducing apoptosis. *BMC Cancer*. 2008 Oct 10;8:294
- [254] Gurjar S, Pal A, Kapur S. Triphala and its constituents ameliorate visceral adiposity from a high-fat diet in mice with diet-induced obesity. *Altern Ther Health Med*. 2012 Nov-Dec;18(6):38-45. PMID: 23251942.

- [255] Kalaiselvan S, Rasool M. *Triphala exhibits anti-arthritis effect by ameliorating bone and cartilage degradation in adjuvant-induced arthritic rats. Immunol Invest.* 2015 44(4):411-26
- [256] Čížmáriková M, Michalková R et al. *Ellagic Acid and Cancer Hallmarks: Insights from Experimental Evidence. Biomolecules.* 2023 13(11):1653
- [257] Wang M, Li Y et al. *Chebulinic acid derived from triphala is a promising antitumour agent in human colorectal carcinoma cell lines. BMC Complement Altern Med.* 2018 [18(1):342
- [258] Ghadimi M, Foroughi F et al. *Decreased insulin resistance in diabetic patients by influencing Sirtuin1 and Fetuin-A following supplementation with ellagic acid: a randomized controlled trial. Diabetol Metab Syndr.* 2021 13(1):16
- [259] Mirzaie Z, Bastani A et al. *Effects of Ellagic Acid on Oxidative Stress Index, Inflammatory Markers and Quality of Life in Patients With Irritable Bowel Syndrome: Randomized Double-blind Clinical Trial. Clin Nutr Res.* 2022 11(2):98-109
- [260] Dhingra D, Chhillar R. *Antidepressant-like activity of ellagic acid in unstressed and acute immobilization-induced stressed mice. Pharmacol Rep.* 2012 64(4):796-807
- [261] Liu Y, Yu S et al. *Chronic administration of ellagic acid improved the cognition in middle-aged overweight men. Appl Physiol Nutr Metab.* 2018 43(3):266-273
- [262] Mohanty S, Gupta AC et al. *Ameliorative Effects of Dietary Ellagic Acid Against Severe Malaria Pathogenesis by Reducing Cytokine Storms and Oxidative Stress. Front Pharmacol.* 2021 12:777400
- [263] Widner B, Ledochowski M, Fuchs D. *Interferon-gamma-induced tryptophan degradation: neuropsychiatric and immunological consequences. Curr Drug Metab.* 2000 1(2):193-204
- [264] Schröcksnadel K, Wirleitner B et al. *Monitoring tryptophan metabolism in chronic immune activation. Clin Chim Acta.* 2006 364(1-2):82-90
- [265] Gostner JM, Becker K et al. *Disturbed Amino Acid Metabolism in HIV: Association with Neuropsychiatric Symptoms. Front Psychiatry.* 2015 6:97
- [266] Gargaro M, Scalisi G et al. *Indoleamine 2,3-dioxygenase 1 activation in mature cDC1 promotes tolerogenic education of inflammatory cDC2 via metabolic communication. Immunity.* 2022 55(6):1032-1050.e14
- [267] Hajjiluan G, Karegar SJ et al. *The effects of Ellagic acid supplementation on neurotrophic, inflammation, and oxidative stress factors, and indoleamine 2,3-dioxygenase gene expression in multiple sclerosis patients with mild to moderate depressive symptoms: A randomized, triple-blind, placebo-controlled trial. Phytomedicine.* 2023 121:155094.
- [268] Oana Zanoaga et al. *Implications of dietary ω -3 and ω -6 polyunsaturated fatty acids in breast cancer (Review). Experimental and therapeutic medicine* 2018 15:1167-1176
- [269] Philippe Bounoux et al., *Fatty acids and breast cancer: sensitization to treatments and prevention of metastatic re-growth, Prog Lipid Res.* 2010 49(1):76-86
- [270] Simopoulos AP. *Essential fatty acids in health and chronic disease. Am J Clin Nutr.* 1999 70(3 Suppl):560S-569S
- [271] Uwe Gröber, *Orthomolekulare Medizin – Ein Leitfaden für Apotheker und Ärzte*, 4. Auflage. 2021, Wissenschaftliche Verlagsgesellschaft Stuttgart (WVG), ISBN 978-3-8047-2271-2
- [272] Chavarro JE, Stampfer MJ et al. *A prospective Study of polyunsaturated fatty acid levels in blood and prostate cancer. Cancer Epidemiol Biomarkers Prev* 2012 21(2):319-26
- [273] Jing K, Song KS. et al. *Docosahexaenoic acid induces autophagy through p53/AMPK/mTOR signaling and promotes apoptosis in human cancer cells harboring wild-type p53. Autophagy* 2011; 7:11, 1348-1358
- [274] Yang B, Ren XL et al. *Ratio of n-3/n-6 PUFAs and risk of breast cancer: a meta-analysis of 274135 adult females from 11 independent prospective studies, BMC Cancer.* 2014 14:105
- [275] Kang JX, Liu A. *The role of the tissue omega-6/omega-3 fatty acid ratio in regulating tumor angiogenesis Cancer Metastasis Rev.* 2013 32(1-2):201-10
- [276] Gago-Dominguez M, Yuan JM et al., *Opposing effects of dietary n-3 and n-6 fatty acids on mammary carcinogenesis: The Singapore Chinese Health Study, Br J Cancer.* 2003 89(9):1686-92
- [277] Aglago EK, Huybrechts I. et al. *Consumption of Fish and Long-chain n-3 Polyunsaturated Fatty Acids Is Associated With Reduced Risk of Colorectal Cancer in a Large European Cohort. Clin Gastroenterol Hepatol.* 2020 18(3):654-666.e6
- [278] Chajès V, Torres-Mejía G et al. *ω -3 and ω -6 Polyunsaturated fatty acid intakes and the risk of breast cancer in Mexican women: impact of obesity status. Cancer Epidemiol Biomarkers Prev.* 2012 21(2):319-26
- [279] Terry PD, Rohan TE, Wolk A. *Intakes of fish and marine fatty acids and the risks of cancers of the breast and prostate and of other hormone-related cancers: a review of the epidemiologic evidence, Am J Clin Nutr.* 2003 77(3):532-43
- [280] Newell M, Mazurak V. et al., *N-3 Long-Chain Polyunsaturated Fatty Acids, Eicosapentaenoic and Docosahexaenoic Acid, and the Role of Supplementation during Cancer Treatment: A Scoping Review of Current Clinical Evidence, Cancers (Basel).* 2021 13(6):1206
- [281] Hatfield DL, Berry MJ, Gladyshev VN, editors. *Selenium: Its Molecular Biology and Role in Human Health. Springer Science + Business Media, LLC;* 2012.
- [282] Schwarz K, Foltz CM. *Faktor-3-Aktivität von Selenverbindungen. J. Biol. Chem.* 1958;233:245–251
- [283] Zhang Y, Gladyshev VN. *Comparative genomics of trace element dependence in biology. J. Biol. Chem.* 2011;286:23623–23629. doi: 10.1074/jbc.R110.172833
- [284] Gerrad D Jones, Boris Droz, Peter Greve, Pia Gottschalk, Deyan Poffetd, Steve P McGrath, Sonia I Seneviratne, Pete Smith, Lenny H E Winkel: *Selenium deficiency risk predicted to increase under future climate change*, 2017 Feb 21;114(11):2848–2853. doi: 10.1073/pnas.1611576114, Proc Natl Acad Sci USA

- [285] Winkel LHE, et al. Selenium cycling across soil-plant-atmosphere interfaces: A critical review. *Nutrients*. 2015;7(6):4199–4239. doi: 10.3390/nu7064199
- [286] Hatfield DL, Tsuji PA, Carlson BA, Gladyshev VN Selen und Selenocystein: Rollen bei Krebs, Gesundheit und Entwicklung. *Trends Biochem. Sci.* 2014;39:112–120. doi: 10.1016/j.tibs.2013.12.007.
- [287] Flohé L, Brigelius-Flohé R. Selenoproteins of the glutathione peroxidase family. In: Hatfield DL, Berry MJ, Gladyshev VN, editors. *Selenium: Its molecular biology and role in human health*. 3rd edn. Springer Science+Business Media, LLC; 2012. pp. 167–180.
- [288] Banning A, et al. Glutathione peroxidase 2 and its role in cancer. In: Hatfield DL, Berry MJ, Gladyshev VN, editors. *Selenium: Its molecular biology and role in human health*. 3rd edn. Springer Science+Business Media, LLC; 2012. pp. 271–282
- [289] Brigelius-Flohe R, et al. The yin and yang of nrf2-regulated selenoproteins in carcinogenesis. *Int. J. Cell Biol.* 2012;2012:486147. doi: 10.1155/2012/486147
- [290] Dewa Y, et al. Molecular expression analysis of beta-naphthoflavone-induced hepatocellular tumors in rats. *Toxicol. Pathol.* 2009;37(4):446–455. doi: 10.1177/019262330933506
- [291] Kamil Demircan, Ylva Bengtsson, Thilo Samson Chillon, Johan Vallon-Christersson, Qian Sun, Christer Larsson, Martin Malmberg, Lao H Saal, Lisa Rydén, Åke Borg, Jonas Manjer, Lutz Schomburg: Matched analysis of circulating selenium with the breast cancer selenotranscriptome: a multicentre prospective study; *J Transl Med.* 2023 Sep 23;21:658. doi: 10.1186/s12967-023-04502-y
- [292] Demircan K, Bengtsson Y, Sun Q, Brange A, Vallon-Christersson J, Rijntjes E, et al. Serumselen, Selenoprotein P und Glutathionperoxidase 3 als Prädiktoren für Mortalität und Rezidiv nach Brustkrebsdiagnose: eine multizentrische Kohortenstudie. *Redox Biol.* 2021;47:102145. doi: 10.1016/j.redox.2021.102145.
- [293] Hoffmann PR, Höge SC, Li PA, Hoffmann FW, Hashimoto AC, Berry MJ. The selenoproteome exhibits widely varying, tissue-specific dependence on selenoprotein P for selenium supply. *Nucleic Acids Res.* 2007;35(12):3963–3973. doi: 10.1093/nar/gkm355
- [294] Demircan K, Sun Q, Bengtsson Y, Seemann P, Vallon-Christersson J, Malmberg M, et al. Autoimmunity to selenoprotein P predicts breast cancer recurrence. *Redox Biol.* 2022;53:102346. doi: 10.1016/j.redox.2022.102346
- [295] Kamil Demircan, Ylva Bengtsson, Qian Sun, Annie Brange, Johan Vallon-Christersson, Eddy Rijntjes, Martin Malmberg, Lao H Saal, Lisa Rydén, Åke Borg, Jonas Manjer, Lutz Schomburg: Serum selenium, selenoprotein P and glutathione peroxidase 3 as predictors of mortality and recurrence following breast cancer diagnosis: A multicentre cohort study; *Redox Biol.* 2021 Sep 21;47:102145. doi: 10.1016/j.redox.2021.102145
- [296] Ralph Muecke, M.D., Lutz Schomburg, Ph.D.†, Michael Glatzel, M.D., Norman Willich, M.D., Oliver Micke, M.D.: CLINICAL INVESTIGATION Volume 78, Issue 3P828-835 November 01, 2010; Download Full Issue Multicenter, Phase 3 Trial Comparing Selenium Supplementation With Observation in Gynecologic Radiation Oncology
- [297] Susan J Knox, Priya Jayachandran, Christine A Keeling †, Kathryn J Stevens †, Navjot Sandhu, Stacy Leanne Stamps-DeAnda, Rada Savic ‡, Lei Shura, Mark K Buyyounouski, Kevin Grimes: Results from a Phase 1 Study of Sodium Selenite in Combination with Palliative Radiation Therapy in Patients with Metastatic Cancer; *Transl Oncol.* 2019 Aug 24;12(11):1525–1531. doi: 10.1016/j.tranon.2019.08.006