Before you begin:

This research summary is a work in progress. This document is being researched, updated and written as long as this document has the red "Draft" watermark. Reference section will be reformatted as time permits.

In the interest of research time and document space many of the references are limited to 1-2 per statement. Not all cancers are listed.

Cancer is caused by several issues coming together including food, lifestyle, hormones, toxins and genetics.

The following information has not been evaluated by the FDA. The following information should not be used a medical advice. You should consult with your health care provider prior to making changes in your health care program.

Beta-carotene

High intake of beta-carotene increases the risk of

- ➢ Bladder cancer¹
- Breast cancer². Low levels may increase breast cancer risk.³
- Breast cancer in men⁴
- ➤ Lung cancer⁵
- Lung cancer in smokers⁶
- Prostate cancer⁷
- Stomach cancer⁸

Beta-carotene increases the risk of cancers in people that smoke. Other carotenoids, including beta-cryptoxanthin, alpha-carotene and lutein-zeaxanthin, do not appear to increase the risk of cancer. 10

Beta-Carotene supplementing increases the risk of

Lung cancer in people that smoke and are exposed to asbestos¹¹

Calcium

Calcium supplementation is associated with increase risk of

- ➢ Breast Cancer in men¹²
- Cancer death (high dose)¹³
- Lung cancer¹⁴
- Prostate cancer¹⁵
- High dose calcium decreases the risk of
- Colorectal cancer in normal weight people¹⁶

Copper

Copper is an essential trace element required for many functions in the body.

Most water is acidic and causes ionic copper to be released into the water. This ionic copper is readily absorbed into the body from the digestive system and the skin where it is available for many functions, good and bad, in the body.

Copper damage is also associated with other health conditions including Alzheimer's disease, Parkinson's disease, and many cancers (see references on the below).

I'm focusing on cancer in this research summary.

Copper encourages angiogenesis, the development of new blood vessels to all parts of the body including cancer cells and tumors.¹⁷ ¹⁸ ¹⁹

The development of new blood vessels to tumors is not desired as it allows essential nutrients into the cancer tumors and encourages metastasis. The focus of several chemotherapy drugs is antiangiogenesis or stopping new blood vessel growth.

Researchers at the Swiss Institute for Experimental Cancer Research found long term exposure to elevated copper levels in drinking water, at the same level allowed in public water supplies, stimulated proliferation of cancer cells and new pancreatic cancer tumor growth in mice.

Researchers then gave the mice a chelation drug to reduce the copper levels inside the body. The reduced

copper levels impaired the proliferation of cancer cells and pancreatic cancer cells.

The antiproliferative effect of the copper chelation was enhanced when combined with products that inhibited the body's ability to use glucose (sugar) for energy. Both copper and glucose helped tumors to develop and grow.²⁰

These mice didn't even take a daily shower or bath in the water with copper! They just drank the water!

Copper is associated with or increases the risk and/or growth of:

- ➢ Bladder Cancer^{21 22 23}
- Breast Cancer^{24 25 26 27}
 - o Triple Negative Breast Cancer²⁸
- ➤ Cervical Cancer^{29 30 31 32}
- ➤ Colon Cancer³³
- ➤ Gastrointestinal Cancer^{34 35}
- Esophageal Cancer
- ➤ Glioblastoma^{36 37 38}
- ➤ Leukemia³⁹
- Liver Cancer
- ► Lung Cancer^{40 41}
- Non-Hodgkin's Lymphoma
- Oral Squamous Cell Carcinoma⁴²
- Ovarian Cancer⁴³ 44 45 46 47
- Pancreatic Cancer⁴⁸ 49 50 51
- Prostate Cancer^{52 53 54 55}
- Thyroid Cancer
- Uterine Cancer

Researchers and drug companies are researching the combination of copper chelation lowering products with chemotherapy drug treatment. Lowering copper levels in the body increase chemotherapy effectiveness by allowing metal-based drugs access into cancer cells⁵⁶ 57

58 and decrease tumor resistance to chemotherapy. 59 60 61

Taking chelation products to lower copper levels should be done under supervision of a qualified health care practitioner. Chelation products do not know the difference between copper, zinc, iron, calcium magnesium and many other necessary minerals. Improper use of chelation products may lead to very serious health issues, heart problems, hospitalization and perhaps death. 62 63

Copper Sources:

- Some drinking and bathing water
 - Copper pipes
 - Faucets
 - o KDF (brass) in some but not all water filters
- Some Cosmetics⁶⁴
- ☐ Most Vitamin and mineral supplements
 - Check the ingredient label to see if yours has copper

Folic Acid (FA)

High dose FA helps cancer cells to grow in laboratory cancer cell studies.⁶⁵

MTHFR C677T is significantly associated with thyroid and breast cancer risks. ⁶⁶ MTHFR SNPs contribute to alcohol increasing the risk of breast cancer. ⁶⁷ Decreased conversion of folic acid to methylfolate increases the development of cancer. ⁶⁸

Higher blood levels of folate reduce the risk of lung cancer.⁶⁹

Methylfolate may not be an issue. Check out the Homocysteine section below.

Glutamine

L-Glutamine is used in the production of proteins in your body. It is made by the body and available as supplements and in many protein powders. Glutamine is required for cancer cell growth. Limiting glutamine intake slows cancer cell growth.⁷⁰

Glutamine food sources include:

beef, chicken, fish, dairy products, eggs, vegetables like beans, beets, cabbage, spinach, carrots, parsley, vegetable juices, wheat, papaya, Brussels sprouts, celery, kale and fermented foods like miso.

Iron

Iron intake increase the risk of

- ➤ breast cancer in those with low antioxidant levels⁷¹
- ➤ Lung cancer⁷²

Selenium

Higher intake of selenium is associated with increased risk of

- ➤ Digestive cancers in people that drink alcohol⁷³
- Gastric cancer and lung cancer in those with existing higher levels of selenium⁷⁴
- ➤ Prostate cancer⁷⁵
- Selenium supplementation in individuals with low selenium may decrease the risk of cancers. 76 77
- Vitamin A
- Higher doses may increase the risk of
- ➤ Lung cancer⁷⁸
- prostate cancer⁷⁹
- Lung cancer and Prostate cancer in men exposed to asbestos or tobacco smoking. 80 81

Vitamin B's

High intakes of vitamins B2, B6 and folate are associated with reduced odds of BrCa in overall and all ER, PR and HER2 subtypes. Also, high intakes of vitamin B12 reduced the odds of all subtypes of BrCa except ERsubtype. 82

High levels of Vitamin B12 and supplemented Folate are associated with higher risk and invasiveness respectively of breast cancer.⁸³

Vitamin B12, Folate and homocysteine are not associated with breast cancer risk.⁸⁴

Higher vitamin B6 and B2 levels are associated with reduced risk of breast cancer.⁸⁵

Homocysteine

Elevated levels of homocysteine are associated with

- Breast cancer⁸⁶
- Gastric cancer⁸⁷
- Liver cancer⁸⁸
- Multiple myeloma⁸⁹
- Ovarian cancer⁹⁰
- Rectal cancer⁹¹

Manganese (Mn)

Higher levels of manganese may decrease the effectiveness of radiation treatment. 92 Check you multiple vitamin to see if it has manganese.

Vitamin E

Higher intake or doses of vitamin E are associated with increase risk of

- Breast cancer in men⁹³
- ➤ Colorectal cancer⁶⁸
- Digestive cancer in those that smoke tobacco⁹⁴
- ➤ Head and neck cancer in those that drink alcohol⁹⁵
- ➢ Prostate cancer⁹⁶

Are you toxic in Copper?

Assess, Don't Guess!

If you are passing copper into your urine you are getting too much and are toxic in copper.

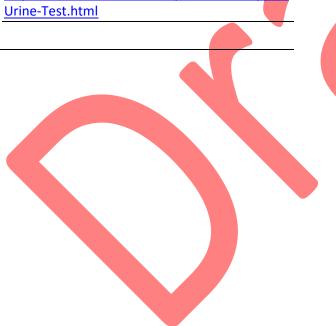
You can test your urine in two different ways:

- Great Plains Laboratory Metal & Mineral Urine Test for copper, lead, mercury, other toxic metals and good minerals. https://flourishrx.com/shop
- 2. Heavy Metal Screening Test

You can do an inexpensive, simple water and urine Heavy Metal Screening Test at home.

Additional water and urine Copper and Heavy Metal Screening Test information is available at:

http://www.naturalcancerreports.com/Copper-Urine-Test.html



References

¹ J Korean Med Sci. 2017 Apr;32(4):628-635. doi: 10.3346/ikms.2017.32.4.628.

Effects of Vitamin and Antioxidant Supplements in Prevention of Bladder Cancer: a Meta-Analysis of Randomized Controlled

Park SJ1,2, Myung SK

² Tayyem RF, Mahmoud RI, et al. Nutrient intake patterns and breast cancer risk among Jordanian women: a case-control study. Epidemiol Health. 2019;41:e2019010.

³ Int J Cancer. 2015 May 1;136(9):2178-86. doi:

10.1002/ijc.29249. Epub 2014 Oct 18.

Total dietary antioxidant capacity, individual antioxidant intake and breast cancer risk: the Rotterdam Study. Pantavos A1, Ruiter R,

⁴ Eur J Cancer Prev. 2002 Jun;11(3):253-63. Risk factors for male breast cancer in Canada, 1994-1998. Johnson KC1, Pan S,

⁵ Maturitas. 2015 Jan;80(1):63-8. doi:

10.1016/j.maturitas.2014.10.012. Epub 2014 Oct 31.

Carotenoids and health in older people.

Woodside JV1, McGrath AJ2

⁶ Nicotine Tob Res. 2018 Jun 8. doi: 10.1093/ntr/nty115. [Epub ahead of print]

β-carotene Supplementation and Lung Cancer Incidence in the ATBC Study: the Role of Tar and Nicotine.

Middha P1, Weinstein SJ2,

⁷ Urol Clin North Am. 2003 May;30(2):209-17.

The epidemiology of prostate cancer.

Boyle P1, Severi G, Giles GG.

⁸ Am Soc Clin Oncol Educ Book. 2014:e478-86. doi:

10.14694/EdBook AM.2014.34.e478.

Nutritional supplements and cancer: potential benefits and proven harms.

Harvie M1.

⁹ Am J Epidemiol. 1991 Apr 1;133(7):661-71.

Serum beta-carotene in persons with cancer and their immediate families.

Smith AH1, Waller KD.

¹⁰ Am J Clin Nutr. 2008 Aug;88(2):372-83.

Carotenoids and the risk of developing lung cancer: a systematic review.

Gallicchio L1, Boyd K,

¹¹ Vitamin, Mineral, and Multivitamin Supplements for the Primary Prevention of Cardiovascular Disease and Cancer: A Systematic Evidence Review for the U.S. Preventive Services Task Force. Fortmann SP, Burda BU, et al. Rockville (MD): Agency for Healthcare Research and Quality (US); 2013 Nov. Report No.: 14 05199-EF-1. U.S. Preventive Services Task Force Evidence Syntheses, formerly Systematic Evidence Reviews.

¹² Eur J Cancer Prev. 2002 Jun;11(3):253-63.

Risk factors for male breast cancer in Canada, 1994-1998.

Johnson KC1, Pan S,

¹³ Ann Intern Med. 2019 Apr 9. doi: 10.7326/M18-2478. [Epub ahead of print]

Association Among Dietary Supplement Use, Nutrient Intake, and Mortality Among U.S. Adults: A Cohort Study. Chen F1, Du M2,

¹⁴ Epidemiology. 2005 Nov;16(6):772-9.

Dietary iron, zinc, and calcium and the risk of lung cancer.

Zhou W1. Park S

¹⁵ Asian Pac J Cancer Prev. 2018 Jun 25;19(6):1449-1456. Total Calcium (Dietary and Supplementary) Intake and Prostate Cancer: a Systematic Review and Meta-Analysis

Rahmati S1, Azami M,

¹⁶ Int J Cancer. 2019 Feb 1;144(3):448-458. doi:

10.1002/ijc.31803. Epub 2018 Oct 30.

Body mass index, calcium supplementation and risk of colorectal adenomas.

Barry EL1, Lund JL2

¹⁷ J Nutr Biochem. 2014 Jan; 25(1):44-9. Copper promotion of angiogenesis in isolated rat aortic ring: role of vascular endothelial growth factor.Li QF, Ding XQ,

PLoS One. 2013 Sep 9;8(9):e71982. CTR1 silencing inhibits angiogenesis by limiting copper entry into endothelial cells. Narayanan G, R BS, ¹⁹ Am J Pathol. 2013 Oct;183(4):1293-305. Role of collagen matrix in tumor

angiogenesis and glioblastoma multiforme progression. Mammoto T, Jiang A, Proc Natl Acad Sci U S A. 2013 Nov 26;110(48):19507-12. Bioavailable copper modulates oxidative phosphorylation and growth of tumors. Ishida S, Andreux P,

²¹ Biological Trace Element Research. 2013 Jun;153(1-3):5-10. Zinc and copper levels in bladder cancer: a systematic review and meta-analysis. Mao S1, Huang S. Department of Nephrology, Nanjing Children's Hospital, Affiliated to Nanjing Medical University, 72 Guangzhou road, Nanjing, Jiangsu Province 210008, China. ²² Urologia Internalis. 2012;89(3):342-7. Copper, zinc, and Cu/Zn ratio in transitional cell carcinoma of the bladder. Golabek T1, Darewicz B, et al. Department of Urology, Medical University of Bialystok, Bialystok, Poland.

23 International Urology Nephrology, 2010 Mar; 42(1):89-93. The comparative study of serum iron, copper, and zinc levels between bladder cancer patients and a control group. Mazdak H1, Yazdekhasti F, et al. Isfahan University of Medical Sciences, Hezar Jarib Street, Isfahan, Iran.

24 Free Radical Biology Medicine 2007 Nov 1;43(9):1271-8. Copper chelation by D-

penicillamine generates reactive oxygen species that are cytotoxic to human

leukemia and breast cancer cells. Gupte A, Mumper RJ. ²⁵ Journal Inorganic Biochemistry. 2012 Nov;116:172-9. Cu(GlyGlyHis) effects on MCF7 cells: copper uptake, reactive oxygen species generation and membrane topography changes. Matias AC, Villa dos Santos, et al. Center for Natural Sciences and Humanities, Federal University of ABC - UFABC, Avenida dos Estados, 5001, Bloco B, 09210-170, Santo André, SP, Brazil.

26 BMC Res Notes, 2012 Jul 6:5:194. Trace elements as tumor biomarkers and

prognostic factors in breast cancer: a study through energy dispersive x-ray fluorescence. Silva MP, Soave DF, et al. Departamento de Física, Universidade de

São Paulo, FFCLRP, 14040-901 Ribeirão Preto, SP, Brazil.

²⁷ European Journal of Gynaecolgical Oncology. 2011;32(3):307-8. Copper and zinc concentrations in Nigerian women with breast cancer. Ajayi GO. Department of Obstetrics & Gynaecology, Prenatal Diagnosis and Therapy Centre, College of Medicine, University of Lagos, Lagos, Nigeria.

Redicine, University of Lagos, Lagos, Nigeria.

Redicine, University of Lagos, Lagos, Nigeria.

Redicine, University of Lagos, Lagos, Nigeria.

copper depletion decreases circulating endothelial progenitor cells in women with breast cancer at high risk of relapse. Jain S, Cohen J, et al. Department of Medicine, Weill Cornell Medical College, New York, NY 10065, USA.

29 Indian Journal of Physiology and Pharmacology. 2002 Apr;46(2):159-66. Serum

copper levels in carcinoma of ovary and cervix. Saxena P, Yadav S, et al. 30 Indian Journal of Clinical Biochemistry. 2007 Sep;22(2):140-4 Oxidative stress and antioxidant status in cervical cancer patients. Naidu MS1, Suryakar AN, et al. Department of Biochemistry, Aditya Institute of Medical Sciences, Beed, (Maharashtra).

31 Biolical Trace Element Research. 2003 Aug;94(2):113-22.

Serum and tissue levels of six trace elements and copper/zinc ratio in patients with cervical cancer and uterine myoma.

Cunzhi H1, Jiexian J, et al. Department of Etiology, Shanxi Cancer Institute, Taiyuan 030013, People's Republic of China.

- ³² European Journal of Gynaecological Oncology. 1995;16(4):278-81. Copper, zinc, and magnesium tissue and serum levels in patients with cervical carcinoma. Altintas A1, Vardar MA, et al. Cukurova University, Medical Faculty, Department of Obstetrics and Gynecology, Adana, Turkey.
 ³³ Journal of Bioscience and Bioengineering. 2013 Apr;115(4):400-4. Enhancing
- ³³ Journal of Bioscience and Bioengineering. 2013 Apr;115(4):400-4. Enhancing the antitumor cell proliferation and Cu(2+)-chelating effects of black soybeans through fermentation with Aspergillus awamori. Chen YF1, Chiang ML, et al. Graduate Institute of Food Science and Technology, National Taiwan University, Taipei, Taiwan.
- 34 Zhonghua Yu Fang Yi Xue Za Zhi. 1991 Jul;25(4):205-7. [Analysis of serum levels of selenium, zinc, and copper in 132 patients with malignant tumors]. Jia ZG.
- ³⁶ Free Radic Biol Med. 2007 Nov 1;43(9):1271-8. Copper chelation by D-penicillamine generates reactive oxygen species that are cytotoxic to human leukemia and breast cancer cells. Gupte A, Mumper RJ. ³⁶ Am J Pathol. 2013 Oct;183(4):1293-305. Role of collagen matrix in tumor
- ³⁶ Am J Pathol. 2013 Oct;183(4):1293-305. Role of collagen matrix in tumor angiogenesis and glioblastoma multiforme progression. Mammoto T, Jiang A, ³⁷ Oncology Reports. 2013 May;29(5):1805-10. Copper induces cellular senescence in human glioblastoma multiforme cells through downregulation of Bmi-1. Li Y1, Hu J, et al. Department of Neurosurgery, The First Affiliated Hospital of Zhengzhou University, Zhengzhou, Henan 450052, PR China.
 ³⁸ Neuro-Oncology. 2005 Jul;7(3):246-53. Phase 2 trial of copper depletion and
- ³⁸ Neuro-Oncology. 2005 Jul; 7(3):246-53. Phase 2 trial of copper depletion and penicillamine as antiangiogenesis therapy of glioblastoma. Brem S1, Grossman SA, et al. New Approaches to Brain Tumor Therapy CNS Consortium. Department of Interdisciplinary Oncology and Neurosurgery, University of South Florida College of Medicine and Neuro-Oncology Program, H. Lee Moffitt Cancer Center, Tampa, FL 33620, USA.
- ³⁹ Free Radic Biol Med. 2007 Nov 1;43(9):1271-8. Copper chelation by D-penicillamine generates reactive oxygen species that are cytotoxic to human leukemia and breast cancer cells. Gupte A, Mumper RJ.
- Free Radic Biol Med. 2007 Nov 1;43(9):1271-8. Copper chelation by D-penicillamine generates reactive oxygen species that are cytotoxic to human leukemia and breast cancer cells. Gupte A, Mumper RJ.
 Oncology Reports. 2013 Jul;30(1):269-75. Knockdown of copper chaperone
- ⁴¹ Oncology Reports. 2013 Jul;30(1):269-75. Knockdown of copper chaperone antioxidant-1 by RNA interference inhibits copper-stimulated proliferation of non-small cell lung carcinoma cells. Cai H, Peng F. Department of Radiology, University of Texas Southwestern Medical Center. Dallas. TX 75390-8542. USA.
- of Texas Southwestern Medical Center, Dallas, TX 75390-8542, USA.

 42 Head Neck. 2013 Feb;35(2):250-6 Lysyl oxidase and enhancement of cell proliferation and angiogenesis in oral squamous cell carcinoma. Shih YH, Chang KW, et al Institute of Oral Biology, School of Dentistry, National Yang-Ming Injugersity, Taipei, Taiwan
- University, Taipei, Taiwan.

 43 BMC Cancer. 2010 Feb 25;10:72. Lipophilic aroylhydrazone chelator HNTMB and its multiple effects on ovarian cancer cells. Et al
- Free Radic Biol Med. 2007 Nov 1;43(9):1271-8. Copper chelation by D-penicillamine generates reactive oxygen species that are cytotoxic to human leukemia and breast cancer cells. Gupte A. Mumper RJ.
 Int J Gynecol Cancer, 2007 Jan-Feb;17(1):220-8. Comparison of trace element
- ⁴⁵ Int J Gynecol Cancer. 2007 Jan-Feb;17(1):220-8. Comparison of trace element concentrations in cancerous and noncancerous human endometrial and ovary tissues. Yaman M, Kaya G, Simsek M.
- tissues. Yaman M, Kaya G, Simsek M.

 46 Indian Journal of Physiology and Pharmacology. 2004 Oct;48(4):486-8. Serum copper, ceruloplasmin and thiobarbituric acid reactive substance status in patients with ovarian cancer. Nayak SB, Bhat VR, Mayya SS.

 47 Indian Journal of Physiology and Pharmacology. 2002 Apr;46(2):159-66. Serum
- ⁴⁷ Indian Journal of Physiology and Pharmacology. 2002 Apr;46(2):159-66. Serun copper levels in carcinoma of ovary and cervix. Saxena P, Yadav S, et al ⁴⁸ Proc Natl Acad Sci U S A. 2013 Nov 26;110(48):19507-12. Bioavailable copper modulates oxidative phosphorylation and growth of tumors. Ishida S, Andreux P, et al
- et al
 ⁴⁹ Prog Clin Biol Res. 1988;259:161-75. The status of zinc, copper, and metallothionein in cancer patients. Ebadi M, Swanson S.
- metallothionein in cancer patients. Ebadi M, Swanson S.

 50 Clin Biochem. 1985 Dec;18(6):373-5. Copper, zinc and copper/zinc ratio in chronic pancreatitis and pancreatic cancer. Fabris C, Farini R, et al
- chronic pancreatitis and pancreatic cancer, Fabris C, Farini R, et al ⁵¹ Cancer Detect Prev. 1981;4(1-4):439-42. Epidemiologic characteristics and trace elements in pancreatic cancer in Greece. Manousos O, Trichopoulos D, et al ⁵² Asian Pac J Cancer Prev. 2012;13(9):4249-53. Association between trace element and heavy metal levels in hair and nail with prostate cancer. Karimi G, Shahar S, et al. Department of Nutrition and Dietetics, Universiti Kebangsaan Malaysia, Jalan Raja Muda A Aziz, Kuala Lumpur, Malaysia. ⁵³ Mol Cancer Res. 2012 Oct;10(10):1282-93 Copper modulates zinc
- metalloproteinase-dependent ectodomain shedding of key signaling and adhesion proteins and promotes the invasion of prostate cancer epithelial cells. Parr-Sturgess CA, Tinker CL, et al. Division of Biomedical and Life Sciences, Lancaster University, Lancaster, UK.
- ⁵⁴ Biol Trace Elem Res. 2012 Oct;149(1):5-9. Association of metals and proteasome activity in erythrocytes of prostate cancer patients and controls.
 Neslund-Dudas C, Mitra B, et al. Department of Public Health Sciences, Henry Ford Health System, Detroit, MI, USA.
 ⁵⁵ Afr Health Sci. 2010 Mar;10(1):2-8. Trace elements and vitamin E status in
- ⁵⁵ Afr Health Sci. 2010 Mar;10(1):2-8. Trace elements and vitamin E status in Nigerian patients with prostate cancer. Adaramoye OA, Akinloye O, Olatunji IK. Department of Biochemistry, University of Ibadan, Nigeria.
 ⁵⁶ Invest New Drugs. 2013 Dec 5. Exploratory study of carboplatin plus the
- Thest New Drugs. 2013 Dec 5. Exploratory study or carbopiatin plus the copper-lowering agent trientine in patients with advanced malignancies.Fu S, Hou MM, et al

- ⁵⁷ Cancer Cell. 2010 Jun 15;17(6):574-83. Enhancing tumor-specific uptake of the anticancer drug cisplatin with a copper chelator. Ishida S, McCormick F, et al
 ⁵⁸ Mol Pharmacol. 2010 Jun;77(6):887-94. Copper transporters and the cellular pharmacology of the platinum-containing cancer drugs. Howell SB, Safaei R, et al
 ⁵⁹ Anticancer Res. 2013 Oct;33(10):4157-61. Overcoming platinum drug resistance with copper-lowering agents. Chen HH, Kuo MT.
- 60 Mol Cancer Ther. 2012 Nov;11(11):2483-94. Mechanistic basis for overcoming platinum resistance using copper chelating agents. Liang ZD, Long Y, et al 61 BMC Cancer. 2012 Apr 13;12:147. Tetrathiomolybdate sensitizes ovarian cancer cells to anticancer drugs doxorubicin, fenretinide, 5-fluorouracil and mitomycin C. Kim KK, Lange TS, et al
- **Cancer Lett. 2013 Aug 28;337(1):8-21. D-penicillamine and other low molecular weight thiols: review of anticancer effects and related mechanisms. Wadhwa S, Mumper RJ.
- Gardiovasc Toxicol. 2013 Mar;13(1):1-8Ischemia-induced copper loss and suppression of angiogenesis in the pathogenesis of myocardial infarction. He W, James Kang Y. Regenerative Medicine Research Center, West China Hospital, Sichuan University, Chengdu, 610041 Sichuan, People's Republic of China. Connect Tissue Res. 2012;53(5):373-8. Beneficial regulation of fibrillar collagens, heat shock protein-47, elastin fiber components, transforming growth factor-β1, vascular endothelial growth factor and oxidative stress effects by copper in dermal fibroblasts. Philips N, Samuel P, et al School of Natural Sciences, Pairleigh Dickinson University, Teaneck, NJ 07666, USA.
- ⁶⁵ Curr Dev Nutr. 2019 Jun 13;3(Suppl 1). pii: nzz030.P05-001-19. doi: 10.1093/cdn/nzz030.P05-001-19. eCollection 2019 Jun.

High Folic Acid Supplementation Reprograms Glycolytic and Lactate-generating Metabolism to Promote Anchorage-independent Tumor Spheroid Formation in NSCLC Cells (P05-001-19).

Chen YW1, Huang RS1.

⁶⁶ Genet Mol Res. 2016 May 9;15(2). doi:

10.4238/gmr.15028222.

Role of MTHFR C677T and MTR A2756G polymorphisms in

thyroid and breast cancer development.

Zara-Lopes T1, Gimenez-Martins AP1

⁶⁷ Alcohol. 2005 Apr;35(3):213-25.

The etiology of alcohol-induced breast cancer.

Dumitrescu RG1, Shields PG.

68 Proc Nutr Soc. 2004 Feb;63(1):65-71.

Alcohol and cancer: genetic and nutritional aspects.

Pöschl G1, Stickel F,

⁶⁹ PLoS One. 2017 May 11;12(5):e0177441. doi:

10.1371/journal.pone.0177441. eCollection 2017.

Serum folate concentration and the incidence of lung cancer. Durda K1, Kąklewski K1,

⁷⁰ EMBO J. 2017 May 15;36(10):1302-1315. doi:

10.15252/embj.201696151. Epub 2017 Apr 18.

Cancer cell metabolism: the essential role of the nonessential amino acid, glutamine.

Zhang J1, Pavlova NN1, Thompson CB2.

⁷¹ Oncotarget. 2016 Nov 29;7(48):79008-79016. doi:

10.18632/oncotarget.12592.

Dietary iron intake and breast cancer risk: modulation by an antioxidant supplementation.

Diallo A1,2,3, Deschasaux M1,3

⁷² Epidemiology. 2005 Nov;16(6):772-9.

Dietary iron, zinc, and calcium and the risk of lung cancer.

Zhou W1, Park S

⁷³ Br J Nutr. 2017 Oct;118(7):541-549. doi:

10.1017/S0007114517002392. Epub 2017 Sep 20.

Antioxidant intake from diet and supplements and risk of digestive cancers in middle-aged adults: results from the prospective NutriNet-Santé cohort.

Egnell M1, Fassier P1,

⁷⁴ Am Soc Clin Oncol Educ Book. 2014:e478-86. doi: 10.14694/EdBook AM.2014.34.e478.

Nutritional supplements and cancer: potential benefits and proven harms.

Harvie M1.

⁷⁵ J Altern Complement Med. 2018 Sep/Oct;24(9-10):872-880. doi: 10.1089/acm.2018.0169.

An Integrative Approach to Prostate Cancer.

Abrams DI1.

⁷⁶ Expert Rev Gastroenterol Hepatol. 2017 Aug;11(8):707-709. doi: 10.1080/17474124.2017.1320219. Epub 2017 Apr 21. The missing link? The potential role of selenium in the development of liver cancer and significance for the general population.

Schomburg L1, Hughes DJ2.

⁷⁷ J Nutr. 2017 Apr;147(4):621-627. doi:

10.3945/jn.116.243279. Epub 2017 Feb 15.

Supplemental Selenium May Decrease Ovarian Cancer Risk in African-American Women.

Terry PD1, Qin B2,

⁷⁸ Nutrients. 2015 Nov 11;7(11):9309-24. doi:

10.3390/nu7115463.

Association of Dietary Vitamin A and β -Carotene Intake with the Risk of Lung Cancer: A Meta-Analysis of 19 Publications. Yu N1, Su X2,

⁷⁹ Am J Clin Nutr. 2015 Nov;102(5):1142-57. doi:

10.3945/ajcn.115.114306. Epub 2015 Oct 7.

Carotenoids, retinol, tocopherols, and prostate cancer risk: pooled analysis of 15 studies.

Key TJ1, Appleby PN2,

⁸⁰ Eur J Nutr. 2012 Oct;51(7):769-81. Epub 2012 Jun 9. Antioxidant vitamins and mineral supplementation, life span expansion and cancer incidence: a critical commentary. Dolara P1, Bigagli E, Collins A.

⁸¹ Eur J Cancer Prev. 2007 Jun;16(3):184-91.

Chemoprevention of lung cancers: lessons from CARET, the beta-carotene and retinol efficacy trial, and prospects for the future.

Omenn GS1.

⁸² Int J Vitam Nutr Res. 2019 Feb 13:1-10. doi: 10.1024/0300-9831/a000501. [Epub ahead of print]

The Vitamins Involved in One-Carbon Metabolisms are Associated with Reduced Risk of Breast Cancer in Overall and Subtypes.

Hatami M1,2, Vahid F

83 Breast Cancer Res Treat. 2019 Jul;176(1):191-203. doi: 10.1007/s10549-019-05223-x. Epub 2019 Apr 6.

Plasma B-vitamins and one-carbon metabolites and the risk of breast cancer in younger women.

Houghton SC1, Eliassen AH2,3,

84 Int J Cancer. 2019 Apr 15;144(8):1929-1940. doi: 10.1002/ijc.31934. Epub 2019 Jan 3.

Plasma B-vitamin and one-carbon metabolites and risk of breast cancer before and after folic acid fortification in the United States.

Houghton SC1, Eliassen AH2,3,

85 J Nutr. 2016 Jun;146(6):1227-34. doi:

10.3945/jn.115.225433. Epub 2016 Apr 27.

Plasma Riboflavin and Vitamin B-6, but Not Homocysteine, Folate, or Vitamin B-12, Are Inversely Associated with Breast Cancer Risk in the European Prospective Investigation into Cancer and Nutrition-Varese Cohort.

Agnoli C1, Grioni S1,

86 Exp Oncol. 2018 Jun;40(2):114-118.

Increased homocysteine plasma levels in breast cancer patients of a Mexican population.

Varela Almanza KM1, Puebla-Pérez AM2

⁸⁷ Medicine (Baltimore). 2016 May;95(20):e3700. doi: 10.1097/MD.00000000000003700.

Evaluation of an Association of Blood Homocysteine Levels With Gastric Cancer Risk From 27 Case-Control Studies. Xu W1, Cheng Y, Zhu H.

⁸⁸ Hyperhomocysteinemia results from and promotes hepatocellular carcinoma via CYP450 metabolism by CYP2J2 DNA methylation.

Zhang D, Lou J, Zhang X, Zhang L, Wang F, Xu D, Niu N, Wang Y, Wu Y, Cui W.

Oncotarget. 2017 Feb 28;8(9):15377-15392.

⁸⁹ Sci Rep. 2016 Apr 29;6:25204. doi: 10.1038/srep25204. A Mendelian Randomization Study of Plasma Homocysteine

and Multiple Myeloma.

Xuan Y1, Li XH2, ⁹⁰ Turk J Med Sci. 2016 Apr 19;46(3):583-9. doi: 10.3906/sag-1406-17.

Oxidative stress-induced DNA damage and homocysteine accumulation may be involved in ovarian cancer progression in both young and old patients.

Bukhari SA1, Zafar K2,

⁹¹ Med Sci Monit. 2018 Mar 27;24:1776-1783. doi: 10.12659/MSM.909217.

Plasma Levels of Homocysteine and the Occurrence and Progression of Rectal Cancer.

Liu Z1, Cui C2

⁹² Doble PA, Miklos GLG. Distributions of manganese in diverse human cancers provide insights into tumour radioresistance. Metallomics. 2018;10(9):1191-1210. doi:10.1039/c8mt00110c

93 Eur J Cancer Prev. 2002 Jun;11(3):253-63.

Risk factors for male breast cancer in Canada, 1994-1998. Johnson KC1, Pan S,

⁹⁴ Br J Nutr. 2017 Oct;118(7):541-549. doi: 10.1017/S0007114517002392. Epub 2017 Sep 20. Antioxidant intake from diet and supplements and risk of digestive cancers in middle-aged adults: results from the prospective NutriNet-Santé cohort. Egnell M1, Fassier P1,

95 Am J Clin Nutr. 2015 Aug;102(2):420-32. doi:
 10.3945/ajcn.114.106096. Epub 2015 Jul 8.

Vitamin and carotenoid intake and risk of head-neck cancer subtypes in the Netherlands Cohort Study.

de Munter L1, Maasland DH

96 Am Soc Clin Oncol Educ Book. 2014:e478-86. doi: 10.14694/EdBook_AM.2014.34.e478.

Nutritional supplements and cancer: potential benefits and proven harms.

Harvie M1.

