



HEALTH BENEFITS OF TEA

-- Raise a Cup to Your Good Health --

Following is an overview comprised of general findings, scholarly research, articles, professional references and technical terms regarding the health benefits of tea. The articles, journals and reference material included here, as well as referrals to experts and medical professionals in the ever-expanding field of tea and health are available to members of the media, upon request from The Republic of Tea.

HEALTH BENEFITS OF TEA

The tea plant (*Camellia sinensis*) contains a large quantity of very specific organic compounds, which are thought to aid in the prevention of cellular damage. These compounds, known collectively as polyphenols, are present in all teas, but the most powerful forms may be more concentrated in green and white tea. Tea polyphenols are strong antioxidants and scientific evidence points to the role antioxidants play in well-being.

On-going research suggests components of the tea plant have been shown to:

- Prevention of some cancers.
- Reduce the risk of heart attack and stroke.
- Have roughly half the caffeine content of coffee.
- Be a good source of fluoride.

Source: HealthLink, Medical College of Wisconsin

HEALTH BENEFITS OF BLACK TEA

On-going research suggests components of black tea have been shown to:

- Decreases the risk for cardiovascular events and improve coronary vessel function.
- Combat fatigue with the stimulation of caffeine.
- Increase blood flow in the coronary arteries, which may boost circulation by improving the dilation of small blood vessels in men.
- Lower blood pressure, reduce LDL cholesterol and prevent stroke.

Source: Various sources including, The Medical Journal of Cardiology; Harvard Health Publications/Harvard's Women's Health Watch.

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HEALTH BENEFITS OF GREEN TEA

On-going research suggest components of green tea have been shown to:

- Guard against free radical damage that can bring about cancer, heart disease and diabetes.
- Lower the risk of stroke by inhibiting the gathering of blood platelets.
- Reduce high blood pressure by decreasing the formation of certain enzymes, which cause constriction of blood vessels.
- Slow the aging process by reducing free radical cell damage.
- Support oral health by combating bacteria and inhibiting plaque.
- Stimulate the immune system.
- Help suppress appetite.
- Help control cholesterol levels.
- Help control blood pressure.
- Reduces stress.

Source: Various sources including, University of Newcastle upon Tyne; Colorado State University.

HEALTH BENEFITS OF WHITE TEA

On-going research suggests components of white tea have been shown to:

- Contain many of the expected polyphenols, some of which are present at higher concentrations than in green tea.
- Inhibit mutagenicity (a result of unrepaired/misrepaired DNA damage; an early step in the process leading to cancer).
- Retain the highest level of powerful, health-promoting polyphenols and the highest antioxidant potency.
- Have plentiful levels of antioxidants that can assist in building the immune system.
- Offer lower caffeine content than green or black teas (when brewed as recommended).
- Provide far greater health promoting benefits than even green tea.

Source: The Linus Pauling Institute, Oregon State University; American Society For Microbiology

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HEALTH BENEFITS OF RED TEA

On-going research suggests components of naturally caffeine free Red Tea (or *Rooibos*) have been shown to:

- Have a unique antioxidant composition that may help protect against free radical damage that can lead to varying types of cancer and heart problems.
- Have the health-giving properties of Super Oxide Dismutase (SOD) – an antioxidant of polyphenols and flavonoids, fighters of free radical damage, a known cause in the formation of cancer and other diseases.
- Benefit the management of allergies like hay fever, asthma and eczema.
- Calm to the skin when applied as tincture or can relieve itching, rashes and sunburn when added to a bath.
- Contain antioxidants, which limit the effects of free-radicals (a by-product of normal cell function) in the process of aging and the declining immune system.
- Supplement the daily amounts of calcium, manganese and especially fluoride, needed for the development of strong teeth and bones.
- Contain zinc and alpha hydroxy acid, which promote healthy skin and magnesium, which is necessary for a healthy nervous system.

Source: Medical Research Council of South Africa; Rooibos BPK, LTD; AICHI Medical University in Japan.

HEALTH BENEFITS OF TEA OIL

The U.S. Food and Drug Administration (FDA) announced the availability of a qualified health claim for monounsaturated fat from olive oil and reduced risk of coronary heart disease (CHD). There is limited but not conclusive evidence that suggests consumers may reduce their risk of CHD if they consume monounsaturated fat from olive oil and olive oil-containing food in place of foods high in saturated fat, while at the same time not increasing the total number of calories consumed daily.

Source: U.S. Food and Drug Administration

The Republic of Tea's **Imperial Republic Tea Oil** has less saturated fat than olive oil, is rich in Vitamin A, D and E and other natural antioxidants (which studies show help build the immune system and protect the body from free-radicals that weaken the body's defenses). Tea oil is shown to raise the level of healthy HDLs (beneficial fat) and lower unwanted LDLs (harmful fat). Unrefined and minimally processed, **Imperial Republic Tea Oil** contains no sodium, cholesterol or trans-fatty acids and is never hydrogenated.

Source: The Republic of Tea

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LEADING PROFESSIONALS IN THE STUDY/FIELD OF TEA AND HEALTH

For information, research and articles, see the works of the following health professionals who specialize in the field of tea and health:

- Jeffery B. Blumberg, Ph.D., F.A.C.N. Tufts University
- Junshi Chen, M.D. Institute of Nutrition and Food Hygiene,
Chinese Academy of Preventive Medicine
- Roderick H. Dashwood Linus Pauling Institute, Oregon State University
- Allan H. Conney, Ph.D. Laboratory for Cancer Research, Rutgers, the State
University of New Jersey
- James E. Klaunig Indiana University School of Medicine
- Joseph Vita, M.E.D. Boston University – Boston Medical Center

Medical Council of South Africa

Additional source: Tea Council of the U.S.A., Inc. - www.teausa.org.

REFERENCE MATERIAL ON TEA AND HEALTH AVAILABLE VIA THE REPUBLIC OF TEA

New Study Shows That White Tea Has An Inhibitory Effect on Various Pathogenic Bacteria, Fungi and Bacterial Virus.

104th General Meeting of the American Society for Microbiology.
Milton Schiffenbauer, Pace University, New York, NY
American Society for Microbiology
www.asm.org.

Hepatoprotective Effect of Rooibos Tea (*Aspalathus linearis*) on CCl₄-Induced Liver Damage in Rats

O. Uliřná, M. Greksák, O. Vanřová, L. Zlatá, ě. Galbavý
Physiological Research, Institute of Physiology, Academy of Sciences of the Czech Republic, Prague,
Czech Republic
www.physres@biomed.cas.cz.

The Effects of Chinese Tea on the Occurrence of Esophageal Tumors Induced by N-Nitrosomethylbenzylamine in Rats

Junshi Chen, M.D.
Institute of Nutrition and Food Hygiene, Chinese Academy of Preventive Medicine, Beijing 100050,
China

Tea Components: Antimutagenic and Anticarcinogenic Effects

Hasan Nukhtar, Ph.D., Zhi Y. Wang, Ph.D., Santosh K. Katiyar, Ph.D., and Rajesh Agarwal, Ph.D.
Department of Dermatology, Skin Diseases Research Center, University Hospitals of Cleveland, Case
Western Reserve University; and Department of Veterans Affairs Medical Center, Cleveland, Ohio 44106

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Inhibitory Effect of Green Tea on Tumorigenesis by Chemicals and Ultraviolet Light

Allan H. Conney, Ph.D., Zhi-Yuan Wang, M.S., Mou-Tuan Huang, Ph.D., Chi-Tang Ho, Ph.D., and
Chung S. Yang, Ph.D.
Laboratory for Cancer Research, Department of Chemical Biology and Pharmacognosy, College of
Pharmacy, Rutgers, The State University of New Jersey, Piscataway, New Jersey 08854; and Department
of Food Science, Cook College, Rutgers, The State University of New Jersey, New Brunswick, New Jersey

The Chemopreventive Effects of Tea on Human Oral Precancerous Mucosa Lesions

Nign Li, Zheng Sun, Chi Han and Junshi Chen

Institute of Nutrition and Food Hygiene, Chinese Academy of Preventive Medicine, Beijing 100050, China; and Beijing Dental Hospital, Beijing 100050 China

Inhibitory Effect of Green and Black Tea on Tumor Growth

A.H. Conney, Y.-P. Lu, Y.-R. Lou, J.-G. Xie and M.-T. Huang

Laboratory for Cancer Research, Department of Chemical Biology, College of Pharmacy, Rutgers, The State University of New Jersey, Piscataway, New Jersey 08854-8020

The Prevention of Lung Cancer Induced by a Tobacco-Specific Carcinogen in Rodents by Green and Black Tea

Fung-Lung Chung

Division of Carcinogenesis and Molecular Epidemiology, American Health Foundation, Valhalla, New York 10595

Cancer Chemopreventive Mechanisms of Tea Against Heterocyclic Amine Mutagens from Cooked Meat

Roderick H. Dashwood, Meirong Xu, Judith F. Hernaez, Nahidh Hasaniya, Kristi Youn and Aziz Razzuk
The Linus Pauling Institute, and Department of Environmental and Molecular Toxicology, Oregon State University, Corvallis, Oregon 97331-6512

Antioxidant Capacity and Polyphenolic Components of Teas: Implications for Altering In Vivo Antioxidant Status

Ronald L. Prior and Guohua Cao

US Department of Agriculture, Agriculture Research Service, Jean Mayer Human Nutrition Research Center on Aging at Tufts University, Boston, Massachusetts 02111; and Nutritional Science Department, University of Connecticut, Storrs, Connecticut 06269

The Effect of Tea Consumption on Oxidative Stress in Smokers and Nonsmokers

James E. Klaunig, Yong Xu, Chi Han, Lisa M. Kamendulis, Junshi Chen, Carla Heiser, Michael S. Gordon and Emile R. Mohler III

Indiana University School of Medicine, Indianapolis, Indiana and Academy of Preventive Medicine, Beijing, PRC

Inhibition of Carcinogenesis by Tea: Bioavailability of Tea Polyphenols and Mechanisms of Actions

Chung S. Yang, Sungbin Kim, Guang-Yu Yang, Mao-Jung Lee, Jie Liao, Lee Y. Chung and Chi-Tang Ho
Laboratory for Cancer Research, College of Pharmacy, Rutgers, The State University of New Jersey, Piscataway, New Jersey 08854-8020

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Conference Review - The Second International Scientific Symposium on Tea & Human Health, September 14th, 1998

Ronald P. Phipps, China Products North America, Inc., Jericho, New York

The Role of Tea in Human Health: An Update

Diane L. McKay, PhD, and Jeffery B. Blumberg, PhD, FACN, Jean Mayer USDA Human Nutrition Research Center on Aging Tufts University

Tea and Health: The Underlying Mechanisms

John H. Weisburger, American Health Foundation, Valhalla, New York 10595

Black, Green Tea May Slow Alzheimer's Disease

Dr. Ed Okello

Phytotherapy Research, University of Newcastle upon Tyne

New Scientific Studies Reveal Mechanisms Behind Rooibos' Multiple Health Benefits

Rooibos Ltd., Clanwilliam, South Africa with U.S. offices in Irvine, California.

www.rooibosltd.co.za or www.rooibos.us

Finding Health Benefits in Tea Leaves

Pat Kendall, Ph.D., R.D. – Food Science and Human Nutrition Specialist

Colorado State University Cooperative Extension – Nutrition Resources

www.ext.colostate.edu

Studies Suggest Health Benefits of Tea

HealthLink

Medical College of Wisconsin

www.healthlink.mcw.edu

NCI FACT SHEET: Tea and Cancer Prevention

National Cancer Institute

www.cancer.gov

Green Tea Could Help Stem Rising Rates of Esophageal Cancer

Nutra USA Ingredients.com

www.nutraingredients-usa.com

FDA Allows Qualified Health Claim to Decrease Risk of Coronary Heart Disease

The Food and Drug Administration

www.fda.gov

The Proof Is In: Drinking Tea is Healthy, Says *Harvard Women's Health Watch*

Harvard Health Publications

www.health.harvard.edu

Black Tea Benefits

Prepared Foods

www.preparedfoods.com

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Is White Tea Better than Other Teas as a Potential Anticarcinogen

The Linus Pauling Institute, Oregon State University

www.oregonstate.edu

Tea Complements Drugs in Fight Against Colon Cancer

The Linus Pauling Institute, Oregon State University

www.oregonstate.edu

Tea and Health – A Report on the Influence of Tea Drinking on the Nation's Health

Prof. Vincent Marks, Prof. Ron Walker, Dr. Simon Maxwell, Prof. David Forman and Anne Murcott

Commissioned by the Tea Council, Sir John Lyon House, 5 High Timer Street, London, EC4V 3NJ

TECHNICAL TERMS/DEFINITIONS

Polyphenols: Polyphenols have been found to have antioxidant properties. Antioxidants are substances that protect cells from oxidative damage caused by molecules called free radicals. These chemicals can damage important parts of cells, including proteins, membranes and DNA. Cellular damage caused by free radicals has been implicated in the development of cancer. Research on the antioxidants found in tea has shown that they may help inhibit the development of certain cancers.

Catechins: Catechins are flavonoid phytochemical compounds that appear predominantly in green tea. Smaller amounts of catechins are also in black tea, grapes, wine, and chocolate. Four polyphenol catechins in green tea include gallic catechin (GC), epigallocatechin (EGC), epicatechin (EC), and epigallocatechin gallate (EGCG). Due to their potent antioxidant capabilities, catechins, often referred to as "tea flavonoids," are being investigated for their ability to prevent cancer and heart disease. In experimental models, catechins show a wide range of protective effects, including cardioprotective, chemoprotective, and antimicrobial properties.

Antioxidants: Antioxidants act as cell protectors. Oxygen, an essential element for life, can create damaging by-products during normal cellular metabolism. Antioxidants counteract these cellular by-products, called free radicals, and bind with them before they can cause damage. If left unchecked, free radicals may cause heart damage, cancer, cataracts, and a weak immune system. Antioxidants work by: binding to the free radicals; transforming them into non-damaging compounds; or repairing cellular damage. Antioxidants come in a variety of forms and include Vitamin C, Vitamin E, the Carotenoids, and Selenium.

MINISTER OF HEALTH FOR THE REPUBLIC OF TEA

In keeping with its whimsical identity as an independent republic, people working for The Republic of Tea are not managers or vice presidents; the company designates its employees as Ministers, sales representatives as Ambassadors, customers as Citizens and sales outlets as Embassies.

Lee D. Katz, M.D. -- Professor and Chief, Musculoskeletal Imaging, Yale Medical Group, The Physicians of Yale University, Yale-New Haven Hospital -- serves as Minister of Health for The Republic of Tea. Dr. Katz earned his M.D. from Pritzker School of Medicine of University of Chicago and his M.B.A. from the University of New Haven. He completed his residency at Yale-New Haven Hospital, Internal Medicine and Diagnostic Radiology. He is board certified in Diagnostic Radiology and Internal Medicine.

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THE REPUBLIC OF TEA

Founded in 1992 under a charter to start a "Tea Revolution," The Republic of Tea, leading purveyor of premium teas, is committed to offering only the highest quality teas and herbs, while conducting business in a socially responsible manner. In keeping with its whimsical identity as an independent republic, The Republic of Tea designates its employees as Ministers, customers as Citizens and retail outlets as Embassies. The brand remains devoted to developing products in support of worthy organizations like the Susan G. Komen Breast Cancer Foundation, Sunny Hills Services and the Prostate Cancer Foundation. The Republic of Tea is also a member of the Ethical Tea Partnership.

The Republic of Tea's distinguished collection of teas, herbs, brewed iced teas and tea-inspired products are available at over 20,000 gourmet retailers and restaurants throughout the United States. Signature offerings include: Fair Trade Certified teas, the Iced Tea Square, Sip and Go Bottled Iced Teas, tea honey, tea jam, Stir Fry Tea Oil, USDA Organic teas, tea ware and a set of varietal glass-bottled iced teas crafted exclusively for fine restaurants. All full-leaf and bagged teas are Certified Gluten-Free by the Gluten-Free Certification Organization.

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