

TEA & HEALTH



A TOOLKIT FOR HEALTHCARE PROFESSIONALS

TABLE OF CONTENTS

Tea and Health:

A Toolkit for Healthcare Professionals

Introduction from Joy Dubost,
Ph.D., RD, Head of Nutrition
and Health, Unilever
North America

Page 3

Tea and Heart Health:
Scientific Evidence

Pages 5-8

**Evidence-Based
Beverage Guidelines
to Improve Diet Quality**

Pages 9-10

Tea and Health:
New Supporting Evidence

Pages 11-14

**Top Questions and
Answers on Tea**

Page 15



Dear Health Professional,

I am pleased to provide you with this educational toolkit highlighting recent research about brewed green and black tea and its role in heart health. The information contained within is designed to offer evidence-based information, all substantiated by published, peer-reviewed science.

As the world's largest tea company, Unilever makes many of the most popular tea brands including Lipton, Pure Leaf, TAZO, Pukka, PG tips, Red Rose, among others. We have been creating high-quality teas since the 1800s when Sir Thomas Lipton became a tea merchant in Scotland and later in New Jersey.

Tea dates back thousands of years and is the most widely consumed beverage in the world next to water. In addition to being as hydrating as water, tea provides naturally occurring compounds, including lower levels of caffeine relative to other caffeinated beverages (up to 50 mg/cup) and the bioactive compounds, flavonoids. Tea is the one of the best contributors of flavonoids in the diet – all of which make it a smart beverage choice.

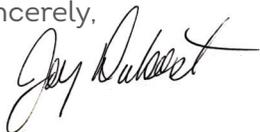
To better understand the benefits associated with drinking tea, Unilever has sponsored research at numerous universities to continue to advance the knowledge about tea and its impact on health.

This educational toolkit provides:

- **Scientific evidence supporting tea and heart health**
- **Key findings from recently published tea studies**
- **Key consumer messages about tea**
- **Evidence-based beverage guidelines**
- **Top questions and answers on tea**
- **References**

I hope you find this toolkit educational by providing you with more scientific evidence to help you offer sound recommendations on benefits of tea consumption. If you would like more information about tea and health, please reach out to me directly.

Sincerely,



Joy Dubost, Ph.D., R.D.
Head of Nutrition and Health, Unilever North America
Joy.dubost@unilever.com





LIPTON BRAND PORTFOLIO

Lipton is one of the most trusted tea brands in the US with a diverse portfolio that offers something for everyone! Its tea is grown with 4,000 hours of sunshine and its leaves are picked at the peak of freshness. As a result, each cup of Lipton tea has a naturally smooth and refreshing taste and aroma.

And since it is one of the best sources of flavonoids – pour yourself another cup!



TEA AND HEART HEALTH:

Scientific Evidence

All “true” tea originates from the *Camilla sinensis* plant. Processing conditions, including the amount of time the leaves are exposed to the air or oxidized, determine the types of tea, including white, green, oolong, and black. White and green are made from green leaves before oxidation occurs. Oolong tea is made from partially oxidized leaves while black tea is totally oxidized. Herbal infusions like chamomile and ginger have been traditionally labeled as “tea”; however, they are technically not true tea originating from the *Camilla sinensis* plant. Of note, all research cited in this toolkit are based on all types of tea originating from the *Camilla sinensis* plant and not based on herbals or blends.

Tea is the most widely consumed beverage in the world next to water. According to the Tea Association of the U.S.A., tea is found in almost 80% of all U.S. households. In 2018, Americans consumed over 84 billion servings of tea, or more than 3.8 billion gallons. About 84% of all tea consumed was black tea, 15% was green tea, and the small remaining amount was the other types of tea. Approximately 80% of tea consumed in America is iced.¹

“

TEA IS ONE OF THE BEST SOURCES OF FLAVONOIDS, *which are natural bioactive compounds, present in foods like wine, cocoa, fruit and vegetables, associated with health benefits.*

Green and black tea leaves naturally contain substances such as flavonoids, theanine, caffeine and fluoride, but in differing quantities. Flavonoids are bioactive compounds naturally found in green and black tea, wine, cocoa, fruit and vegetables, with tea being the major contributor in the diet.,^{2,3} Flavonoids have long been associated with multiple health benefits.^{4,5,6} For example, a systematic review of 15 studies with more than 550,000 total participants reported a 19% reduction in risk for cardiovascular disease (CVD) and a 13% reduced risk for death from CVD among those with the highest intake of total dietary flavonoids, compared to the lowest.⁷

A significant body of research concludes that drinking unsweetened, brewed green and black tea everyday can help support a healthy heart. **Many observational studies, several clinical trials, as well as systematic reviews and meta-analyses have found an association between tea consumption and reduced risk of CVD.**^{8,9,10}

Significant and systematic scientific evidence indicates that the bioactive compounds, including flavonoids, specifically the flavan-3-ols, present in tea contribute to its cardiovascular benefits.



The most comprehensive study to date on tea and CVD, sponsored by Unilever was published in *Advances in Nutrition* entitled **“Dose-Response Relation between Tea Consumption and Risk of Cardiovascular Disease and All-Cause Mortality: A Systematic Review and Meta-Analysis of Population-Based Studies.”**

The authors of the study synthesized the global evidence on the relationship between tea consumption and risks of all-cause mortality and CVD mortality, CVD events and stroke events among generally healthy adults, utilizing the methods outlined in the National Academy of Medicine’s Standards for Systematic Reviews.¹¹ Six databases were searched to identify scientific publications, including randomized clinical trials, prospective cohort, and nested case control/case-cohort studies published through November 2019. Studies with data on tea consumption and risk of incident CVD events (cardiac or peripheral vascular), stroke events and mortality, CVD specific mortality and all-cause mortality were included in the systematic review. Data from 39 prospective cohort publications were synthesized. Linear meta-regression showed that each cup (236.6 mL) increase in daily tea consumption (estimated 280 mg and 338 mg total flavonoids/d for black and green tea, respectively) was associated with an average 4% lower risk of CVD mortality, a 2% lower risk of CVD events, a 4% lower risk of stroke, and a 1.5% lower risk of all-cause mortality.



Subgroup meta-analysis results showed that the magnitude of association was larger in elderly individuals for both CVD mortality (n = 4; pooled adjusted RR: 0.89; 95% CI: 0.83, 0.96; P = 0.001), and all-cause mortality (n = 3; pooled adjusted RR: 0.92; 95% CI: 0.90, 0.94; P < 0.0001). Thus, in those 65 years and older, with each cup of tea consumed one could lower their risk of CVD mortality by 10%. The authors concluded based on the evidence, **daily tea intake as part of a healthy habitual dietary pattern may be associated with lower risks of CVD and all-cause mortality among adults.** Based on their results they stated the following: "Our systematic review provides evidence to begin developing dietary guidance and public health messaging around consumption of tea."¹²

The preponderance of scientific evidence supports the position that tea flavonoids can be effective in promoting cardiovascular health. This data is robust and supports a case that unsweetened tea can be included as a beverage to encourage as part of a healthy dietary pattern. Incorporating tea as part of healthy diet is a simple dietary modification that may have positive public health implications on chronic disease risk reduction, specifically CVD, the leading cause of death in the U.S. and globally. **Nearly half of all U.S. adults have a form of CVD.** About 647,000 Americans die from heart disease each year—that's 1 in every 4 deaths.¹³ Drinking tea, in place of sugar sweetened beverages or beverages with little or no health benefits, can be an effective strategy to help support a healthy heart and overall diet and lifestyle.

*Current science supports that drinking unsweetened green and black brewed tea everyday, hot or iced, **CAN HELP SUPPORT A HEALTHY HEART.***



*Daily consumption of 2-3 cups of unsweetened brewed tea providing 200-500mg of flavonoids can **HELP SUPPORT A HEALTHY HEART** as part of a diet consistent with the Dietary Guidelines for Americans.*



*A healthy diet that includes a lower intake of added sugars is associated with a **REDUCED RISK OF CARDIOVASCULAR DISEASE IN ADULTS.***



*Unsweetened tea is a **GREAT TASTING, ZERO CALORIE** beverage that does not contain added sugar.*



TEA IS 99.5% WATER
and contributes to one's total fluid needs.



A significant body of research concludes that drinking unsweetened brewed green and black tea everyday

CAN HELP SUPPORT A HEALTHY HEART.



As noted earlier, the flavonoids in tea have been associated with the benefits of tea consumption as well as the fact that tea contributes to your total fluids needs and can help you stay hydrated. **Unsweetened tea is a zero-calorie beverage that does not contain added sugars which aligns with the current dietary recommendations.** According to the 2015-2020 Dietary Guidelines for Americans a healthy diet that includes a lower intake of added sugars is associated with a reduced risk of cardiovascular disease in adults.¹⁴

In general, the scientific evidence is clear that daily consumption of 2-3 cups of unsweetened brewed green or black tea providing between 200-500mg of flavonoids can help support a healthy heart as part of a diet consistent with Dietary Guidelines.

KEY TAKE-AWAYS:

- Tea is one of the best sources of flavonoids, which are natural bioactive compounds, present in foods like wine, cocoa, fruit and vegetables, associated with health benefits.
- People who drink 2-3, 8 oz. cups of tea per day may lower their risk of death from heart disease by approximately 8-12%, compared to non-drinkers of tea.
- People who drink 2-3, 8 oz. cups of tea per day may lower their risk of all-cause mortality by approximately 4-6%, compared to those who don't drink tea.
- Each 8 oz. cup of tea consumed by those greater than 65 years old was associated with a 10% lower risk of death from heart disease.
- Daily consumption of two to three cups of unsweetened brewed tea providing 200mg-500mg of flavonoids can help support a healthy heart as part of diet consistent with Dietary Guidelines.



REFERENCES

1. Tea Association of the USA, Inc. Tea Fact Sheet, 2018 <http://www.teausa.com/14655/tea-fact-sheet>
2. Ferruzzi MG, Tanprasertsuk J, Kris-Etherton P, et al. Perspective: The Role of Beverages as a Source of Nutrients and Phytonutrients *Adv Nutr* 2019; 00:1-17
3. Wang Y, Chung SJ, Song WO, Chun OK. Estimation of Daily Proanthocyanidin Intake and Major Food Sources in the U.S. *Diet. J Nutr*; 141: 447-452, 2011
4. Greyling, A.; Ras, R.T.; Zock, P.L.; Lorenz, M.; Hopman, M.T.; Thijssen, D.H.J.; Draijer, R. The effect of black tea on blood pressure: A systematic review with meta-analysis of randomized controlled trials. *PLoS ONE* 2014, 9, e103247
5. Kim, K.; Vance, T.M.; Chun, O.K. Greater flavonoid intake is associated with improved CVD risk factors in US adults. *Br. J. Nutr.* 2016, 115, 1481-1488
6. McKay, D.L.; Blumberg, J.B. The role of tea in human health: An Update. *J. Am. Coll. Nutr.* 2002, 21, 1-13
7. Raman, G, Avendano E, Chen S. et al. Dietary intakes of flavan-3-ols and cardiometabolic health: systematic review and meta-analysis of randomized trials and prospective cohort studies. *Am J Clin Nutr.* 2019 Nov 1:110(5): 1067-1078
8. Arab L, Khan F, Lam H. Tea consumption and cardiovascular disease risk. *Am J Clin Nutr* 2013;98 (suppl):1651S-9S
9. Balentine D, Wiserman SA, Bouwens LCM. The chemistry of tea flavonoids. *Crit Rev Food Sci Nutr* 1997; 37:693-704
10. Vinson JA, Teufel K, Wu N. Green and black teas inhibit atherosclerosis by lipo, antioxidant, and fibrinolytic mechanisms. *J Agric Food Chem* 2005; 2:52(11):3661-5
11. National Academy of Medicine (US) Committee on Standards for Systematic Reviews of Comparative Effectiveness Research. *Finding What Works in Health Care: Standards for Systematic Reviews.* (National Academies Press (US), 2011)
12. Chung M, Zhao N, Wang D, et al. Dose-Response Relationship Between Tea Consumption and Risk of Cardiovascular Disease and All-Cause Mortality: A Systematic Review and Meta-Analysis of Population - Based Studies. *Adv Nutrition.* 2020 Feb 19:1-25
13. Benjamin EJ, Muntner P, Alonso A, et al. Heart disease and stroke statistics—2019 update: a report from the American Heart Association. *Circulation* 2019;139(10): 56-528
14. 2015-2020 Dietary Guidelines for Americans. <https://www.dietaryguidelines.gov/current-dietary-guidelines/2015-2020-dietary-guidelines>



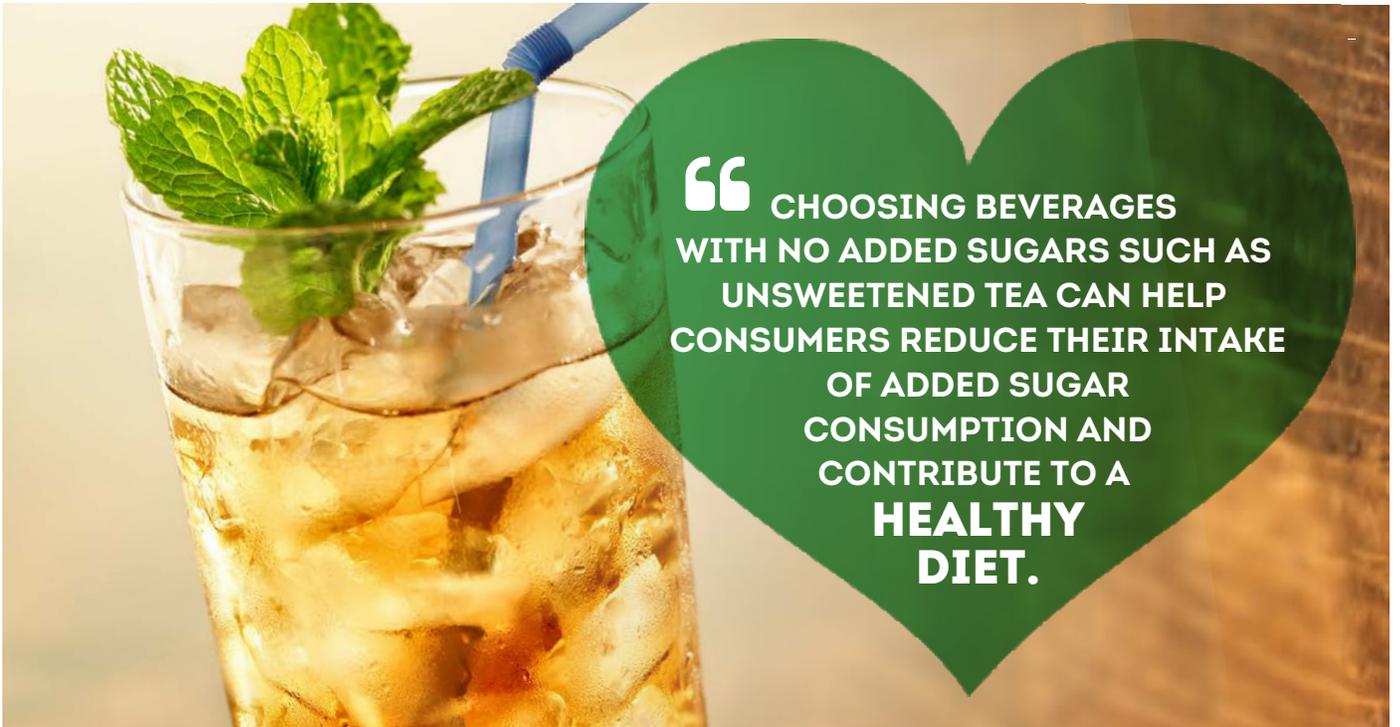
EVIDENCE-BASED BEVERAGE GUIDELINES TO IMPROVE THE DIET QUALITY

Beverages have a role in hydration, and they also have an important role in meeting food group recommendations, essential nutrients, and bioactive compounds, all of which have a role in health.

Beverages account for nearly 20 percent of the total calories in an average American diet, however public health recommendations, including the 2015-2020 Dietary Guidelines for Americans (DGAs), fail to highlight the importance beverage choices have on meeting total dietary recommendations.¹

Simple swaps to consumers' beverage choices can have significant impact in improving diet quality.

Evidence-based beverage guidelines may help individuals meet the DGAs recommendations, including the recommended intake of specific nutrients, increasing the intake of bioactive compounds that promote health, and help decrease intake of nutrients to limit, including saturated fat and added sugars.¹



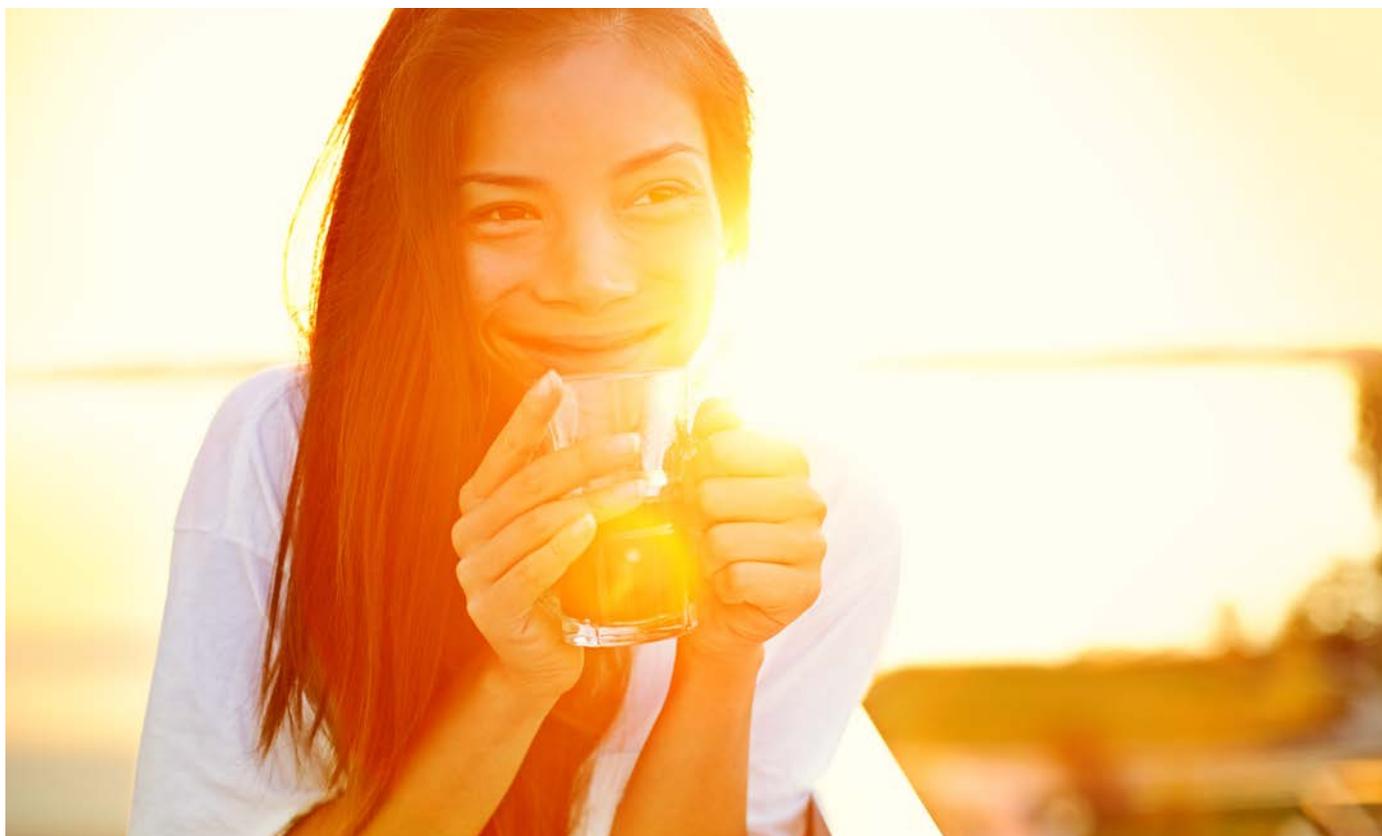
Current added sugar intake is just over 20% of total calories and sugar-sweetened beverages (SSBs) are a major source of added sugar in the U.S. diet. **Recommendations to limit SSBs and shift to sugar- and calorie-free choices like unsweetened tea or water can help consumers meet the Guidelines for added sugars of no more than 10% of total daily calories.**¹

For example, choosing beverages with no added sugars, such as water or unsweetened tea, in place of sugar sweetened beverages can help consumers reduce their intake of added sugar consumption and contribute to a healthy diet. In addition, a healthy diet that includes a lower intake of added sugars is associated with a reduced risk of cardiovascular disease (CVD) in adults. What's more, tea is a major contributor of bioactive compounds in the diet, specifically flavonoids, which have been shown to be associated with health benefits, including supporting a healthy heart.^{2,3} **Considering the current mean intake of added sugars in the U.S. is significantly higher than recommendations, substitution of one 8-oz sugar sweetened beverage with unsweetened tea would bring these averages significantly below the recommended added sugar limits while providing important flavonoids.**

Based on observational studies, randomized controlled trials, and meta-analyses, beverages can play an important role in the diet, such as those that deliver bioactive compounds, including tea, which is one of the best sources of flavonoids in the diet given the amount delivered per 8 ounce cup.² Although these bioactive compounds, specifically flavonoids, lack a Dietary Reference Intake (DRI), their amounts from current intakes of fruits, vegetables, and whole grains fall short of beneficial health effects. **Eight ounces of tea delivers an amount of flavonoids which exceeds 1 cup of commonly consumed fruits and vegetables.²**

With regards to caffeine consumption the DGAs recommend a limit of 400mg of caffeine per day.¹ Caffeine can come from a variety of foods and beverages throughout the day. Black tea contains approx. half the caffeine content of brewed coffee. According to the USDA, black tea delivers 47 mg of caffeine per cup, green tea delivers 28 mg of caffeine per cup, while brewed coffee delivers 95 mg of caffeine per cup. Keep in mind, **brewed tea can contribute to one's total daily fluid needs. In fact, tea is 99.5% water, making it just as hydrating as water.**

DGAs are designed to provide consumers with guidance to eat a healthy dietary pattern that helps to reduce the risk of chronic disease, such as CVD. Beverages play an important role in meeting the overall DGAs for daily recommended limits on total calories and added sugars, while providing specific nutrients and bioactive compounds, including flavonoids. Providing specific guidance about beverages can help consumers more easily meet the DGAs recommendations and may improve overall diet quality.



REFERENCES

1. US Department of Health and Human Services (US HHS) and USDA. 2015–2020 Dietary Guidelines for Americans [Internet]. 8th ed. Washington (DC): US HHS and USDA; December 2015
2. Ferruzzi MG, Tanprasertsuk J, Kris-Etherton P, Weaver CM, Johnson EJ. Perspective: the role of beverages as a source of nutrients and phytonutrients. *Adv Nutr* 2019;00:1–17
3. Raman G, Avendano EE, Chen S, Wang J, Matson J, Gayer B, Novotny JA, Cassidy A. Dietary intakes of flavan-3-ols and cardiometabolic health: systematic review and meta-analysis of randomized trials and prospective cohort studies. *Am J Clin Nutr.* 2019 Nov 1;110(5):1067-1078

TEA AND HEALTH:

New Supporting Evidence



Journal: *Nutrients* 2019;11, 2635 doi:10.3390/nu11112635
Unilever Sponsored Research

Title: TEA CONSUMPTION PATTERNS IN RELATION TO DIET QUALITY AMONG CHILDREN AND ADULTS IN THE UNITED STATES:
analyses of NHANES 2011–2016 data

Authors: Vieux F, Maillot M , Rehm CD. Drewnowski A

Abstract

Flavonoid-rich tea offers an alternative to sugar-sweetened beverages. The present analyses, based on 2, 24-hour dietary recalls for 17,506 persons aged ≥ 9 years old in the 2011–2016 National Health and Nutrition Examination Survey database (NHANES 2011–2016), explored tea consumption patterns in relation to demographics, diet quality, cardiovascular disease (CVD) biomarkers (lipids and blood pressure), and body weight. Beverage categories were unsweetened tea, other tea (herbal and presweetened tea), coffee, milk, 100% juice, water and other high-calorie (HC) and low-calorie (LC) beverages. Tea consumption (18.5% of the sample) was highest among older adults (51–70 years old), non-Hispanic Asians and Whites, and those with college education and higher incomes. The effects of age, gender, education, income, and race/ethnicity were all significant ($p < 0.001$ for all). **Adult tea consumers had diets with more protein, fiber, potassium, iron, and magnesium, and less added sugars and alcohol.** Their diets contained fewer HC beverages and coffee but had more total and citrus fruit, more total dark green and orange vegetables, and more seafood, eggs, soy and milk. **Tea consumers had higher Healthy Eating Index (HEI-2015) and higher Nutrient-Rich Foods (NRF9.3) nutrient density scores.** Few children drank tea and no differences in diet quality between consumers and non-consumers were observed. **Adult tea consumers had slightly higher high-density lipoprotein (HDL) cholesterol and lower body mass index (BMI) values.** Tea consumption was associated with higher socioeconomic status and better diets.



KEY FINDINGS

- On any given day, about 20% of U.S adults drink tea.
- There is an association between regular tea consumption and healthier diets, more similar to the recommendations set out by the Dietary Guidelines of Americans.
- Tea drinkers consumed more protein, fiber, select vitamins and minerals (vitamin E, potassium, iron and magnesium) and had diets lower in added sugars and alcohol.
- Tea consumers had a healthier dietary pattern with higher consumption of total fruit and vegetables, eggs, soy, oils, seafood, and milk.
- Tea consumption was associated with higher good cholesterol (HDL) and lower body mass index (BMI) values (lower body weight).

“

**TEA CONSUMPTION
WAS ASSOCIATED
WITH HIGHER
GOOD CHOLESTEROL
(HDL) AND LOWER
BODY MASS INDEX
(BMI) VALUES
(lower body weight).**



TEA AND HEALTH:

New Supporting Evidence

2

Journal: *Advances in Nutrition* 2020; 00:1–25

Title: PERSPECTIVE: the role of beverages as a source of nutrients and phytonutrients

Authors: Ferruzzi MG, Tanprasertsuk J, Kris-Etherton P, Weaver CM, Johnson EJ

Abstract

The Dietary Guidelines for Americans (DGA) provide nutrition advice for Americans >2 y of age. The 2020–2025 DGA proposes a life stage approach, focusing on birth through older adulthood. Limited recommendations for beverages exist except for milk, 100% fruit juice, and alcohol. The goal of this article is to provide a better understanding of the role of beverages in the diet using current scientific evidence. A Medline search of observational studies, randomized controlled trials, and meta-analyses was undertaken using key beverage words. **We highlight the role beverages can play as a part of the DGA and considered beverages not traditionally included, such as those that are phytonutrient dense.** Our primary consideration for beverage consumption targeted healthy Americans aged ≥ 2 y. However, with the proposed expansion to the life span for the 2020–2025 DGA, we also reviewed evidence for infants and toddlers from birth to 24 mo. Examples are provided on how minor changes in beverage choices aid in meeting recommended intakes of certain nutrients. Guidance on beverage consumption may aid in development of better consumer products to meet broader dietary advice. For example, beverage products that are nutrient/phytonutrient dense and lower in sugar could be developed as alternatives to 100% juice to help meet the fruit and vegetable guidelines. Although beverages are not meant to replace foods, e.g., it is difficult to meet the requirements for vitamin E, dietary fiber, or essential fatty acids through beverages alone, **beverages are important sources of nutrients and phytonutrients, phenolic acids and flavonoids in particular.** When considering the micronutrients from diet alone, mean intakes of calcium (in women), potassium, and vitamins A, C, and D are below recommendations and sodium intakes are well above. Careful beverage choices could close these gaps and be considered a part of a healthy dietary pattern.



KEY FINDINGS

- Eight ounces of green or black unsweetened tea delivers flavonoids in the amount which exceeds 1 cup of commonly consumed fruits and vegetables.
- Minor changes in beverage choices can help in meeting recommended intakes of certain essential as well as nonessential nutrients, like flavonoids.
- Replacing sugar-sweetened beverages from soda or energy drinks with water or unsweetened tea will help reduce added sugars and empty calories to recommended levels.



TOP FIVE QUESTIONS COMMONLY ASKED:

Q: How does Lipton green and black tea help maintain a healthy heart?

Lipton green and black tea with no sugar added can help maintain a healthy heart in several ways. First, unsweetened tea is more than 99% water and can contribute to people's daily fluid requirement. Proper hydration is important for circulatory functions. In addition, the Dietary Guidelines for Americans and FDA indicate that a lower intake of added sugars is associated with a reduced risk of cardiovascular disease in adults. Plus, daily consumption of at least 200-500 mg of flavonoids can help maintain a healthy heart as part of a diet consistent with Dietary Guidelines. Tea can be a major source of flavonoids in the diet.

Q: Are there different health benefits associated with green and black tea?

Both green tea and black tea come from the *Camellia sinensis* plant. Because they come from the same plant, green and black teas both contain the same components, such as flavonoids, caffeine, fluoride, and theanine. However, the component levels may vary between green and black tea. Based on results from current scientific studies, we know that the health benefits, including cardiovascular health benefits from drinking green and black teas, are comparable.

Q: Does decaffeinated green and black tea contain flavonoids?

Decaffeinated green and black tea also contains flavonoids. However, during the decaffeination process some flavonoids in tea are lost. Therefore, decaffeinated teas contain less flavonoids than regular teas.

Q. What is the flavonoid content of regular green and black tea?

We currently test our Lipton regular green and black teas for flavonoids, which are a type of polyphenol. Brewed Lipton 100% Natural Green Tea contains about 150mg of flavonoids per 8 fl oz cup. Brewed Lipton Black tea contains about 170mg of flavonoids per 8 fl oz cup.

Q. Will brewing tea in hot or cold water impact flavonoid levels?

Hot water used to prepare the tea will allow more flavonoids to dissolve in the brew. Consumers should follow brew instructions on pack for best taste and quality.



TEA PREPARATION INSTRUCTIONS:

TASTES GREAT

HOT
or
ICED ❄️



TRY IT HOT

1.  Fill a cup with boiling water and add 1 teabag*
2.  Steep for **3-5 minutes**
3.  Add milk if desired and sweeten to taste

**Do not microwave teabag*

LIPTON QUICK CHILL METHOD

1.  Fill half a pitcher with boiling water, and add **4 teabags for 3 minutes**
2.  Fill the rest of the pitcher with ice
3.  Enjoy now, or refrigerate for later