

REPORT

Brain-Boosting Benefits of Coffee

By Trey Samuelson

A growing body of literature suggests that moderate coffee consumption delivers a broad range of significant health benefits that go far beyond providing a morning pick-me-up.

Researchers have established that coffee can promote cardiovascular and liver health, and has been found to reduce the risk of a variety of cancers.¹⁻⁴

The fact that coffee has protective effects in so many areas indicates that it acts at fundamental cellular and molecular levels, meaning that it is likely to protect a wide range of tissues and organs.

Two recent high-quality studies have shown that coffee has another valuable benefit: Consuming at least **1-2 cups** per day can boost cognitive function and reduce the risk of cognitive decline,^{5,6} including Alzheimer's disease, the most common form of dementia.

Coffee Reduces Risk of Cognitive Decline and Dementia



While hundreds of studies have been published on coffee consumption, inconsistent findings have left open the question of whether it reduces the risk of cognitive disorders faced by aging adults.

When faced with this kind of dilemma, scientists often turn to **meta-analysis**. This technique combines the results of multiple studies and subjects the pooled data to statistical analyses, allowing for sophisticated interpretation.

Two recent meta-analyses evaluated the impact of coffee intake on cognitive disorders.^{5,6} Both articles pooled data exclusively from the strongest kind of epidemiological studies: prospective cohorts. These studies follow groups of healthy people forward in time to determine the impact of a particular exposure (here, coffee intake) on a particular health outcome (here, cognitive decline).

The first new meta-analysis collected data from 11 prospective cohort studies involving a total of 29,155 subjects.⁵ It examined the relationship between coffee consumption and the risk for developing cognitive decline or dementia of any kind.

The study found that subjects with the highest daily coffee consumption had a significant **27%** reduction in their risk for developing **Alzheimer's disease**, compared with lower- or non-coffee drinkers. However, the study showed that drinking coffee did not have an effect on other forms of cognitive decline or dementia.

The second new meta-analysis, however, included more participants, and found significant differences not only in Alzheimer's, but also in other cognitive threats. That study included data from nine prospective cohort studies involving 34,282 participants.⁶

It found that, compared with people who drank less than one cup of coffee per day, those drinking one or two cups per day had a significant **18%** reduction in the risk of developing **any of the following conditions**:

- Alzheimer's disease
- Other forms of dementia
- Cognitive decline (loss of learning and memory without impairment)
- Cognitive impairment

Interestingly, the risk of developing cognitive disorders rose in subjects who drank more than three cups per day.

This produced what researchers call a "J-shaped" association, in which the risk of cognitive disorders is higher at zero cups of coffee a day, drops to a minimum at one to two cups a day, and rises again beyond three cups a day.⁶

A similar "J-shaped" association has in fact previously been reported, but in a more limited study.

A 10-year prospective cohort study in Europe showed that older men who consumed coffee had a 10-year loss of cognitive function of **1.2 points** on a standard mental status examination, while non-coffee drinkers had an *additional* **1.4-point** loss, a significant worsening of cognitive function.⁷

And when those researchers examined the relationship between the *amount* of coffee consumed and cognitive decline, they

showed that the decline was smallest (0.6 points) for those drinking about three cups per day. That was **4.3 times** smaller than that of the non-coffee drinkers.

Again, the risk for cognitive decline rose in those drinking more than three cups a day, producing that “J-shaped” association. The bottom line from this meta-analysis is that moderate coffee consumption helps prevent cognitive decline.

WHAT YOU NEED TO KNOW

Coffee’s Cognitive Benefits

- Once reviled as a possible cause of cancer, coffee is now widely recognized for its myriad health benefits.
- Until recently, reports of coffee’s association with brain-protective effects were inconsistent.
- Newer, more powerfully designed studies tell a clearer story: Moderate coffee consumption is associated with lower risks of cognitive decline, impairment, and dementia, including Alzheimer’s disease.
- Coffee contains many constituents, no single one of which seems to provide all of its benefits.
- Among the strongest contributors are chlorogenic and caffeic acids, as well as caffeine.
- People who drink one to two cups of coffee per day have significantly reduced risks of cognitive issues compared with those who drink no coffee at all.
- At consumption rates greater than three to four cups per day, some of the cognitive benefits begin to fall off, however, so moderate consumption remains the goal.



Additional Benefits of Coffee

Because coffee is a complex compound composed of many different types of bioactive chemicals, it can be expected to have benefits on many different human disorders, particularly those associated with chemical stress and inflammation.

A **2016** meta-analysis has confirmed that coffee has protective effects against stomach cancer,⁸ which kills more than 10,000 Americans annually.⁹ The analysis included 22 studies involving 7,631 cancer victims and more than a million controls.⁸

Compared to non-coffee drinkers, regular coffee drinkers had a **7%** reduction in the risk for stomach cancer. Those drinking larger amounts of coffee had a greater risk reduction. More specifically, those drinking less than **one cup** per day had a **5%** reduction in risk, those who consumed **one to two cups** per day had an **8%** reduction, and those drinking **three to four cups** per day were **12%** less likely to develop stomach cancer, compared with non-coffee drinkers.⁸

Other studies support the anticancer effects of coffee consumption, demonstrating significant protection against malignancies of the liver, brain, breast, prostate, and ovary, as well as against death from *all causes* in women over 50.^{2,4,10-13}

Other recently discovered beneficial effects of coffee include protection against chemical-induced liver damage and acute pancreatitis, and a cardioprotective effect of increasing certain compounds in the blood that can decrease chemical and oxidative stress.^{1,3,14}

ARE YOU DRINKING THE *RIGHT* COFFEE?

Drinking moderate amounts of coffee has been found to greatly reduce the risk of most major diseases, including cardiovascular disease, cancer, and liver disease. And now recent studies show that it can reduce the risk of cognitive decline as well.

But are you drinking the *right* coffee in order to most effectively harness those impressive benefits? If you’re drinking standard supermarket roasts, you may not be deriving optimal benefits.



That’s because modern roasting methods destroy an enormous amount of one of the key sources responsible for coffee’s benefits: **polyphenols**, particularly **chlorogenic acid**.

Fortunately, a *new* patented technique has been developed that preserves much of the coffee bean’s original polyphenol content. With this new method, the coffee beans are soaked in water and then drained before roasting, which essentially “captures” the polyphenols in the water.²¹ Then, after the beans have been roasted, they are placed back in the polyphenol-rich water in order to *reabsorb* the health-promoting polyphenols.²¹

Compared to conventionally processed coffee, this patented technique showed that the new beverages had a higher polyphenol content—representing approximately **250% more chlorogenic acid**.²¹

As a result, these newer “**polyphenol-retaining**” coffees have the potential to deliver many of coffee’s impressive health benefits in less than *half* the number of cups.

How Does it Work?

Coffee contains thousands of constituents in addition to caffeine.

Chlorogenic acid is one of the most effective active constituents, and it is known to play a vital role in protection against cognitive decline for a very specific reason: It helps prevent the death of brain cells.

A leading contributor to cognitive decline and, ultimately, dementia is the phenomenon called **excitotoxicity**. Excitotoxicity occurs when brain cells become overactive, particularly in response to the neurotransmitter *glutamate*.

Under glutamate stimulation, calcium ions flow uninhibited into brain cells, triggering the release of enzymes that damage cell structures and ultimately kill brain cells.¹⁵

Chlorogenic acid is now known to protect brain cells from excitotoxic death by preventing the influx of calcium. Indeed, chlorogenic acid breaks down into **caffeic acid**, which has an even broader spectrum of protective effects than its parent compound.^{16,17}

Some of the benefits of coffee consumption have yet to be attributed to a single component.

Animal studies show that consumption of the equivalent of **two to four cups** of coffee or the same amount of caffeine improved the overall antioxidant capacity in rat brains, thereby reducing the chemical stresses that damage brain cell membranes.^{18,19} The animals displayed significantly better performance on tests of memory and cognition as a result of both coffee and caffeine ingestion.¹⁸

Mice with Alzheimer's disease given caffeinated coffee showed improved immune responses in their brains that may help to clear the "junk protein" called **beta-amyloid** that is associated with Alzheimer's dementia.²⁰

LIFE EXTENSION® PILOT STUDY SHOWS COGNITIVE IMPROVEMENT IN COFFEE-SUPPLEMENTED ADULTS

Large meta-analysis studies show that regular coffee consumption can **protect** healthy brains against degeneration and resulting dementia.^{5,22}

But few studies to date have demonstrated actual **cognitive improvement** in people with existing memory problems.

A new **Life Extension**-sponsored pilot study suggests that consumption of a special coffee blend rich in **chlorogenic acid** does indeed **enhance performance** on standardized tests of **cognition**.²³

Life Extension Coffee Study

Life Extension scientists recruited 8 generally healthy volunteers who had self-reported memory complaints to participate in a pilot study of the impact of a proprietary coffee blend (**Rich Rewards® Breakfast Blend**), containing **172 mg** of **chlorogenic acid** per **6 oz.** per cup.²³

Chlorogenic acid is a polyphenol compound with versatile tissue-protective properties.^{17,24,25}

In this open-label (no placebo) study, all subjects first went through a two-week "washout" period during which they consumed no caffeine-containing foods or beverages.²³

Subjects were instructed to drink two six-ounce cups of the coffee in the morning and one in the afternoon. Each six-ounce cup provides approximately **172 mg** of chlorogenic acid and **105 to 148 mg** of caffeine.

Prior to the start of the study, baseline values were recorded for basic health parameters, body composition markers (height, weight, waist and hip circumference), routine lab tests, and the Brief Cognitive Assessment Tool (BCAT), a standardized test used to evaluate cognitive dysfunction. Higher BCAT scores indicate better function.

Subjects were evaluated at intervals during the 60-day study, with repeat BCAT scores determined on days 30 and 60.

By day 60, mean total BCAT scores were up compared with baseline, indicating an increase in cognitive functioning in association with the new coffee regimen.²³

There were no severe adverse events observed during the study period.

In fact, a significant one-inch reduction in hip circumference, an indication of reduced body-fat mass, was detected, though no other metabolic variables were affected.²³

This study concluded that significant cognitive improvements had occurred during the course of the study, without significant side effects, and with just 3 smallish cups of the coffee per day.

This is an encouraging finding for everyone who seeks not only to prevent cognitive decline with aging, but also to improve their cognitive function in their everyday lives.

Summary

Within a generation, coffee has gone from being a suspected carcinogen to a widely recognized inhibitor of age-related disorders.

Already hailed for its cardioprotective and anticancer effects, recent studies now show that coffee consumption is associated with lower risk of cognitive decline, cognitive impairment, and frank dementia, including Alzheimer's disease.

These newer studies have demonstrated that those drinking one to two, and possibly three to four cups of coffee per day, have lower risks for these age-related brain problems.

There's also new data suggesting that coffee consumption is associated with reduced risks of cancer, cardiovascular disease, and organ damage—all apparently related to coffee's ability to quell chemical stresses and subdue **inflammation**.

Detailed laboratory studies demonstrate that components of coffee act by suppressing the excitotoxicity that contributes to brain-cell death and accumulation of toxic proteins in dementia and cognitive decline.

Recent studies show moderate coffee drinking, including modest amounts of caffeine, has both short- and long-term benefits for brain function.

If you have any questions on the scientific content of this article, please call a Life Extension® Wellness Specialist at 1-866-864-3027.

References

1. Agudelo-Ochoa GM, Pulgarin-Zapata IC, Velasquez-Rodriguez CM, et al. Coffee Consumption Increases the Antioxidant Capacity of Plasma and Has No Effect on the Lipid Profile or Vascular Function in Healthy Adults in a Randomized Controlled Trial. *J Nutr*. 2016;146(3):524-31.
2. Bai K, Cai Q, Jiang Y, et al. Coffee consumption and risk of hepatocellular carcinoma: a meta-analysis of eleven epidemiological studies. *Onco Targets Ther*. 2016;9:4369-75.
3. Cachon AU, Quintal-Novelo C, Medina-Escobedo G, et al. Hepatoprotective Effect of Low Doses of Caffeine on CCl4-Induced Liver Damage in Rats. *J Diet Suppl*. 2017;14(2):158-72.
4. Ogawa T, Sawada N, Iwasaki M, et al. Coffee and green tea consumption in relation to brain tumor risk in a Japanese population. *Int J Cancer*. 2016;139(12):2714-21.
5. Liu QP, Wu YF, Cheng HY, et al. Habitual coffee consumption and risk of cognitive decline/dementia: A systematic review and meta-analysis of prospective cohort studies. *Nutrition*. 2016;32(6):628-36.
6. Wu L, Sun D, He Y. Coffee intake and the incident risk of cognitive disorders: A dose-response meta-analysis of nine prospective cohort studies. *Clin Nutr*. 2017;36(3):730-6.
7. van Gelder BM, Buijsse B, Tijhuis M, et al. Coffee consumption is inversely associated with cognitive decline in elderly European men: the FINE Study. *Eur J Clin Nutr*. 2007;61(2):226-32.
8. Xie Y, Huang S, He T, et al. Coffee consumption and risk of gastric cancer: an updated meta-analysis. *Asia Pac J Clin Nutr*. 2016;25(3):578-88.
9. Available at: <http://www.cancer.org/cancer/stomachcancer/detailedguide/stomach-cancer-key-statistics>. Accessed 10 November, 2016.
10. Bhoo-Pathy N, Peeters PH, Uiterwaal CS, et al. Coffee and tea consumption and risk of pre- and postmenopausal breast cancer in the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort study. *Breast Cancer Res*. 2015;17:15.
11. Gosvig CF, Kjaer SK, Blaakaer J, et al. Coffee, tea, and caffeine consumption and risk of epithelial ovarian cancer and borderline ovarian tumors: Results from a Danish case-control study. *Acta Oncol*. 2015;54(8):1144-51.
12. Liu H, Hu GH, Wang XC, et al. Coffee consumption and prostate cancer risk: a meta-analysis of cohort studies. *Nutr Cancer*. 2015;67(3):392-400.
13. Lof M, Sandin S, Yin L, et al. Prospective study of coffee consumption and all-cause, cancer, and cardiovascular mortality in Swedish women. *Eur J Epidemiol*. 2015;30(9):1027-34.
14. Setiawan VW, Pandol SJ, Porcel J, et al. Dietary Factors Reduce Risk of Acute Pancreatitis in a Large Multiethnic Cohort. *Clin Gastroenterol Hepatol*. 2017;15(2):257-65 e3.
15. Prentice H, Modi JP, Wu JY. Mechanisms of Neuronal Protection against Excitotoxicity, Endoplasmic Reticulum Stress, and Mitochondrial Dysfunction in Stroke and Neurodegenerative Diseases. *Oxid Med Cell Longev*. 2015;2015:964518.
16. Mikami Y, Yamazawa T. Chlorogenic acid, a polyphenol in coffee, protects neurons against glutamate neurotoxicity. *Life Sci*. 2015;139:69-74.
17. Taram F, Winter AN, Linseman DA. Neuroprotection comparison of chlorogenic acid and its metabolites against mechanistically distinct cell death-inducing agents in cultured cerebellar granule neurons. *Brain Res*. 2016;1648(Pt A):69-80.
18. Abreu RV, Silva-Oliveira EM, Moraes MF, et al. Chronic coffee and caffeine ingestion effects on the cognitive function and antioxidant system of rat brains. *Pharmacol Biochem Behav*. 2011;99(4):659-64.
19. Available at: <https://ndb.nal.usda.gov/ndb/foods/show/4277?manu=&fgcd=&ds=>. Accessed June 29, 2017.

- !0. Arendash GW, Cao C. Caffeine and coffee as therapeutics against Alzheimer's disease. *J Alzheimers Dis.* 2010;20 Suppl 1:S117-26.
 - !1. Zapp LM, Slaga TJ, Zhao J, et al. Method for enhancing post-processing content of beneficial compounds in beverages naturally containing same. Google Patents; 2010.
 - !2. Wu L, Sun D, He Y. Coffee intake and the incident risk of cognitive disorders: A dose-response meta-analysis of nine prospective cohort studies. *Clin Nutr.* 2016.
 - !3. Hirsh S, Huber L, Schmid K, et al. CL076 Final Protocol Study Report. Fort Lauderdale, FL: Life Extension Clinical Research, Inc.; 2016.
 - !4. Gul Z, Demircan C, Bagdas D, et al. Protective Effects of Chlorogenic Acid and its Metabolites on Hydrogen Peroxide-Induced Alterations in Rat Brain Slices: A Comparative Study with Resveratrol. *Neurochem Res.* 2016;41(8):2075-85.
 - !5. Liu F, Lu XW, Zhang YJ, et al. Effects of chlorogenic acid on voltage-gated potassium channels of trigeminal ganglion neurons in an inflammatory environment. *Brain Res Bull.* 2016;127:119-25.
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