

COFFEE

by Ann Gerhardt, MD

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One hundred million Americans drink an average of 28 ounces of coffee every day, but we're light-weights when compared to the top ten coffee drinking countries in the world. Finland takes first prize for guzzling a daily average of 21 ounces per every man, woman and child.

For years, tea drinkers, health foodies and scientists have indicted coffee as being unhealthy. Epidemiological studies have pretty much refuted those claims. Science hasn't reached a definitive verdict yet, but so far the alarmists are losing credence.

Both tea and coffee contain caffeine – between 95 and 200 mg per 8 ounces of coffee compared to 14-70 mg for tea. Caffeine is a cardiac, brain and energy stimulant. It is an alkaloid that occurs naturally in the leaves, seeds and fruit (beans) of tea, coffee, cacao and kola trees, as well as >50 other plants. Better mental alertness and energy after consuming coffee are due to caffeine.

Both coffee and tea contain healthy, naturally occurring chemical substances. Many are bioactive, often as antioxidants. Some people estimate that there are >1000 such beneficial substances in coffee, far more than in tea. Scientists attribute the health effects of coffee to these chemicals.

Coffee is rich in polyphenols, the most abundant antioxidants in a balanced diet. Coffee contains quinic acids, caffeic acid, chlorogenic acid, phytosterols, flavanols, procyanidins and tannins. A quinic acid derivative attenuates the activity of fat-making enzymes of the body, possibly aiding weight control

Otherwise, coffee contains few nutrients. There's a little potassium and only minor amounts of vitamin E, folate, oil, calcium and magnesium.

The English word 'coffee' originates from the Arabic word "qahwah" or 'kaweh', meaning strength or vigor. Apparently, Ethiopia grew the first Coffea trees. They exported beans to Yemen, where writers first documented coffee drinking by monks in the 15th century. Coffee houses opened in Arabia in the 16th century and in Europe and America in the mid to late 1600s. The Dutch began growing it on the island of Java, now Indonesia in 1696.

Coffee comes from the seed of the Coffea plant. Two species, *C. arabica* and *C. canephora* (commonly called robusta) account for most of the world's brewed coffee. The Minas and Cioccolato varieties are arabica. Cherry and Vietnam varieties are canephora (robusta).

Cherry coffee contains the highest overall content of total phenols, followed by Minas coffee and Cioccolato with the lowest. Though Cherry has more total polyphenols, Minas and Cioccolato coffees contain the most chlorogenic acid, which is both antioxidant and anti-hypertensive. Intense and prolonged roasting leads to fewer bioflavonoids, as well as less caffeine.

Health studies: Most of the information about coffee's health effects came from following groups of healthy people over time and seeing what happened to them. They didn't omit people with unhealthful behaviors, like smoking and lack of exercise. They also didn't assess coffee type or strength or incidental calories (≥ 500 in fancy mocha/latte/sugary drinks). Overall, these surveys found slightly lower death rates with increasing coffee consumption, with less death from diabetes and vascular, lung and infectious disease, but not for deaths from cancer.

Infection: A 2011 study published in the Annals of Family Medicine found that drinking hot coffee or tea lessens the likelihood of harboring MRSA in the nasal passages. MRSA is a bacteria that causes serious infections that can kill. In coffee, trigonelline, glyoxal, methylglyoxal and diacetyl are potential candidates for

the effect on MRSA. Iced tea and caffeinated sodas had no effect, so it's not the caffeine that does the job.

Drinking more coffee reduces risk of hepatitis C progressing to liver failure. Three or more cups daily reduced risk of progression by 53%.

Cancer: Coffee is mutagenic in a laboratory test, causing genetic damage that may cause cancer. Early studies showed a possible connection between coffee and kidney, bladder and pancreatic cancers. With time however, studies involving huge numbers of people debunked those suspicions.

The only study that linked colon cancer to coffee looked at Seventh Day Adventists' health outcomes. They are non-smoking, non-alcohol drinking vegetarians in whom colon cancer is infrequent. Any amount of coffee increased their cancer death rate.

On the other hand, coffee may protect against primary liver cancer. In one Finnish and three Japanese studies, liver cancer risk progressively declined as coffee drinking increased from one to eight cups daily. At eight cups daily the risk was cut by two-thirds. The association was not affected by age, tobacco use, how the coffee was prepared, alcohol consumption or weight, even though coffee drinkers tended to weigh and smoke more.

Contrary to common thinking, coffee doesn't cause fibrocystic breast disease (or breast cancer). The exceptions may be some women with slow caffeine metabolism who are at higher risk for it.

Diabetes: Women who drink six or more cups of decaffeinated coffee a day are 33 percent less likely to develop type 2 diabetes, a disease that affects more than 18 million Americans, according to a study in the Archives of Internal Medicine.

The more coffee guzzled by Finnish people, the fewer new diabetes diagnoses. Drinking more than five cups per day reduced new diabetes risk by over 50%. The effect plateaued in men at 5-6 cups daily, but kept improving in women who drank progressively more coffee. Pooled data from multiple studies show that 3-4 cups of coffee daily reduces new diabetes risk by about 18-31%, with a 5-9% risk reduction for each additional daily cup of coffee. Three to four cups of decaffeinated coffee daily reduced diabetes risk by 23-46%, so the effect is not due to caffeine-induced hyper-metabolism.

Cardiovascular: Short-term caffeine ingestion may cause irregular heartbeats, rapid heart rate and jitteriness. But a 2009 analysis of 21 large studies of healthy people indicated that the risk of **heart attack and cardiac arterial disease** was reduced by 18% in female and 13% in male coffee drinkers.

Excessive coffee consumption raises **homocysteine** levels, which are associated with vascular disease and heart attacks. Apparently this effect is offset by other, beneficial effects of coffee's bioflavonoids.

Drinking unfiltered coffee prepared by boiling or using a French press raises total and LDL-**cholesterol** because of high concentrations of cafestol and kahweol. A paper filter traps these compounds, so most coffee consumed in the U.S. won't raise cholesterol.

A 2011 analysis of 11 studies following healthy people for 2 to 21 years suggested that **stroke** risk is least (17% lower) when drinking 3-4 cups of coffee daily. Risk is higher with high and low intake.

A 2012 analysis of 5 cohorts (healthy or post-heart attack) over 8-35 years, found slightly less **heart failure** in people who drank any amount of coffee.

A 2011 analysis of 6 healthy cohorts over 6.4-33 years showed no excess of new **high blood pressure** diagnoses in coffee drinkers. Though caffeinated coffee bump up blood pressure by constricting blood vessels soon after drinking it, it doesn't cause sustained hypertension throughout the day. That's because habitual caffeine consumption induces a type of 'tolerance' that relaxes blood vessel walls, so the blood pressure decreases. This is why caffeine **withdrawal causes a headache** – the constricting effect goes away faster than the dilating effect, so the brain's blood vessels expand.

Osteoporosis: Coffee drinking doesn't affect bone density or cause osteoporosis, except in elderly white women who don't consume enough calcium.

Hydration: Coffee contains water, but it doesn't help to hydrate, due to the diuretic effect of caffeine. Too much caffeine without extra water can dehydrate, causing constipation, fatigue and joint pain.

In 1903, a passage in the Journal of the American Medical Association summarized a century of studies

not yet done: “Notwithstanding the scare advertisements of health substitutes for coffee, says the *American Journal of Pharmacy*, there is no cause for apprehending danger to the race at large from coffee-drinking. ... The life-insurance companies, constantly warring against all that lessens longevity or conduces to abnormal organs, nerves and actions, seem content to accept the use of coffee as one of the ordinary elements of every-day life.”