



## Caffeine and Your Health: Controversies and Misconceptions Continue

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Caffeine is a naturally occurring substance found in the seeds, leaves, or fruits of more than 60 plants, such as in coffee and cocoa beans, kola nuts, and tea leaves. It is used as a flavoring in many beverages and is one of the most thoroughly researched ingredients in our food supply. In 1958, the US Food and Drug Administration (FDA) designated caffeine as “generally recognized as safe” (GRAS) for consumption.

Legend says that the first pot of tea was brewed accidentally by the Chinese emperor Shen Nung about 5000 years ago when leaves from a nearby bush fell onto a pot of boiling water. Coffee beans originally were served in Ethiopia before 1000 AD as a food rather than a drink. Although it is believed that the Mayans used cacao beans for a frothy drink, it is the story of the Aztec emperor Montezuma treating the Spanish conquistadores with a chocolate drink in 1519 that is cited. About three centuries later, in the 1880s, the first caffeinated soft drinks were introduced. Today, and to many of us, caffeine is almost synonymous with coffee, tea, and chocolate—three foods that are pleurably seductive. This is probably why controversies and misconceptions about caffeine persist.

### Caffeine “addiction”

Many would say that caffeine or even coffee is addictive. The word “addictive” is being used very loosely in this case and generally means a habit of practice. In this same context, the word “addictive” is used by many to describe their devotion to chocolate, music, or vigorous exercise. The World Health Organization states, “there is no evidence whatsoever that caffeine use has even remotely comparable physical and social consequences which are associated with serious drugs of abuse.” Most experts agree that moderation and common sense should

prevail when eating *any* foods and beverages, including those containing caffeine. Moderate caffeine consumption is considered to be about 300 mg of caffeine, which is about two to three 8-oz cups of coffee or five to six cups of tea a day. The amounts of caffeine in common beverages are shown in the table below.

The American Medical Association reassures us that “moderate tea or coffee drinkers probably need have no concern for their health relative to their caffeine con-

**Caffeine content of various food and beverage products.**

Item	Milligrams of caffeine	
	Typical	Range*
<b>Coffee (8-oz cup)</b>		
Brewed, drip method	85	65–120
Instant	75	60–85
Decaffeinated	3	2–4
Espresso (1-oz cup)	40	30–50
<b>Teas (8-oz cup)</b>		
Brewed, major U.S. brands	40	20–90
Brewed, imported brands	60	25–110
Instant	28	24–31
Iced (8-oz glass)	25	9–50
Some soft drinks (8 oz)	24	20–40
Cocoa beverage (8 oz)	6	3–32
Chocolate milk beverage (8 oz)	5	2–7
Milk chocolate (1 oz)	6	1–15
Dark chocolate, semi-sweet (1 oz)	20	5–35
Baker's chocolate (1 oz)	26	26
Chocolate-flavored syrup (1 oz)	4	4

\*Due to brewing method, plant variety, brand, etc.  
Source: International Food Information Council website,  
<http://www.ific.org/publications/brochures/caffeinebroch.cfm>

sumption provided other lifestyle habits (diet, alcohol consumption) are moderate, as well.” A recent review of caffeine research by the FDA stated that they “found no evidence to show that the use of caffeine in carbonated beverages would render these products injurious to health.”

### **Caffeine sensitivity**

People react very differently to the effects of caffeine. Some can take several cups of caffeine-containing beverages and have a restful sleep right afterward, while others may notice an increase in alertness with one cup of coffee. Research by the National Institutes of Health indicates that children and adults metabolize caffeine with similar mechanisms and that hyperactivity and decreased attention span are not consequences of caffeine consumption in children. Since caffeine does not accumulate in the bloodstream or body and is normally excreted several hours after consumption, the effect of caffeine on individuals depends on their sensitivity and the frequency of caffeine consumption.

### **Cancer**

There is also a misconception that caffeine is linked to cancer risk. The Journal of the National Cancer Institute published a study of 16,600 individuals in 1986, and a recent review by the International Agency for Research on Cancer concluded that there was no association between caffeine consumption and increased cancer risk in humans. In addition, the American Cancer Society states that “available information does not suggest a recommendation against the moderate use of coffee. There is no indication that caffeine, a natural component of both coffee and tea, is a risk factor in human cancer.”

### **Pregnancy**

Even among the heaviest caffeine beverage drinkers, research results of three major studies involving 15,000 women indicate that birth defects are not associated with caffeine consumption. Research from the Centers for Disease Control and Prevention, Harvard Medical School, and the University of California at Berkeley also indicates that moderate caffeine consumption does not delay a woman’s time to conception. Research results of other human studies further support the conclusion

that moderate caffeine consumption does not result in fetus with low birth weight, spontaneous abortion, or preterm delivery. Moderate caffeine consumption does not adversely affect human reproduction. The FDA’s advice to expectant women is to consume caffeine-containing foods and beverages in moderation, just as they should with other foods and beverages.

### **Breast diseases**

Another misconception is the link between caffeine and breast diseases. An investigation of 100,000 deaths due to breast cancer reported no relationship between caffeine consumption and development of breast cancer. Furthermore, the American Medical Association’s Council of Scientific Affairs and the National Cancer Institute reported that there is no association between caffeine consumption and fibrocystic breast disease.

### **Osteoporosis**

Research results of several studies conducted to date indicate that caffeine consumption is not a risk factor for osteoporosis or loss of bone density or mineral content, especially for women with adequate calcium intake. A 1994 National Institutes of Health advisory panel stated that caffeine does not significantly affect calcium absorption or excretion.

### **Hypertension**

Health Canada, in a comprehensive review published in 2003, and Finnish researchers in 1999 concluded that for healthy adults with moderate daily caffeine intake there is no association with adverse effects, including cardiovascular problems, such as hypertension. In addition, long-term studies indicated no relationship between caffeine consumption and blood pressure. Results of short-term studies confirmed caffeine sensitivity in some people. Those who consumed caffeine regularly did not show elevated blood pressure levels, whereas those who did not consume caffeine regularly experienced a short and temporary increase in blood pressure after consumption. Blood pressure usually returned after 2 hours to its level before caffeine consumption. Further research studies tested the significance of this temporary blood pressure elevation for the older population over a period of time. Conflicting results were obtained and may be due to difference in age, different sensitivity to caffeine, dif-

ferent experimental approaches, or consumption of other food containing nutrients that may also influence blood pressure. Further investigations were generated.

These studies support the belief—widely accepted in the scientific community—that hypertension is a complex condition with multiple causes and risk factors and that no single study will suffice to let us understand the entire picture. Results of research studies to date, however, allow us to draw a few conclusions about hypertension and caffeine consumption:

- Moderate caffeine consumption (300 mg/day) has no negative impact on blood pressure.
- Caffeine reduction is not a recommended means of managing blood pressure.
- Those with hypertension should seek advice from a health professional.
- Certain lifestyle adjustments were found effective in lowering blood pressure:
  - Weight reduction in overweight or obese individuals
  - Reduction of dietary sodium
  - Moderation of alcohol consumption
  - Increased amounts of physical activity
  - Adoption of the eating plan, Dietary Approaches to Stop Hypertension (DASH)\*

\*<http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/>

In its newest report issued in 2003, the National Institutes of Health's Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, a group representing 46 professional, voluntary, and federal organizations charged with developing clinical guidelines on hypertension, did not mention caffeine as a risk factor for blood pressure.

### **Be prudent**

In summary, it would be prudent to follow what many experts recommend—to practice moderation and use common sense when eating foods and beverages containing caffeine.

### **Sources**

American Heart Association, [www.americanheart.org](http://www.americanheart.org)  
National Heart, Lung, and Blood Institute,  
[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)  
International Food Information Council, [www.ific.org](http://www.ific.org)