Caffeine is an ingredient found in many widely consumed foods and beverages, including coffee, tea, soft drinks, and chocolate. There have been hundreds of studies conducted over many decades to evaluate the effects of caffeine on the body. One area of focus for researchers has been caffeine’s effect on cardiovascular health, with emphasis on coronary heart disease (CHD), blood pressure, arrhythmia, stroke and gastro-esophageal reflux disease (GERD).

Overall, the research finds that moderate amounts of caffeine (about 300 milligrams per day, or about three eight-ounce cups of coffee) do not negatively impact heart health or cause heart-related conditions. Those with a history of heart disease or high blood pressure, however, may be more sensitive to caffeine and should consult with a health professional regarding their caffeine intake.

This Fact Sheet will address common myths and provide the science regarding the relationship between caffeine and heart health.

**Caffeine does not cause or worsen coronary heart disease (CHD).**

According to a review by Nawrot et al., caffeine consumption of 400 mg or less—or four or fewer cups of coffee per day—does not adversely affect cardiovascular health (Nawrot, et al., 2003). However, insufficient data exist to determine whether consumption of caffeine above 400 mg would increase a person’s risk of CHD or mortality. According to the American Heart Association (AHA), “whether high caffeine intake increases the risk of coronary heart disease is still under study” (AHA, 2007). However, a long-term study in Spain looking specifically at the relationship between coffee and CHD found that coffee consumption was not associated with increased risk of CHD (Lopez-Garcia, et al., 2006).

A 2010 study examined the effects of coffee, as well as green, black and oolong teas, on cardiovascular disease (CVD) mortality in Japanese men and women. The researchers found a reduced risk of mortality from CVD among coffee, green tea, and oolong tea drinkers; however, black tea did not show any association (Minoharu, et al., 2010). Other data from a large population-based study in Japan found a strong inverse association between coffee consumption and all-cause mortality and cardiovascular disease mortality, especially CHD, in women (Sugiyama, et al., 2010).

Another large prospective study found that habitual consumption of coffee is not associated with an increased risk of mortality from cardiovascular events among women with type 2 diabetes (Zhang, et al., 2009).

**Caffeine does not cause high blood pressure.**

The weight of evidence shows that caffeinated coffee does not cause high blood pressure. Multiple epidemiological studies confirm that there is no link between coffee consumption and hypertension, hyperlipidemia, and coronary artery disease. In addition, the Nurses Health Studies I and II found that coffee consumption, even at high levels, has no effect on blood pressure (Winkelman, et al., 2005). Interestingly, the studies found a modest relationship between soda consumption (both regular and diet) and blood pressure. However, the reason for this relationship is unknown and more studies must be done to determine the effects on blood pressure of caffeine in beverages other than coffee. There is not currently sufficient evidence to indicate that caffeine in soda increases blood pressure.

Caffeine can temporarily increase blood pressure and heart rate immediately following consumption. However, regular caffeine consumers can build up a tolerance to these effects, which are comparable to climbing a flight of stairs. Caffeine consumed as a supplement has a significantly greater impact on blood pressure compared to consuming it in coffee (Frisman and Sonnenblick, 2002). Those with persistent high blood pressure may be more sensitive to caffeine’s effects and should consult a health professional about their caffeine intake.

**Caffeine does not increase risk of cardiac arrhythmia.**

A correlation has not been found between caffeine consumption and cardiac arrhythmia in the scientific literature. A seven-year Danish study also found no association between caffeine consumption and the development of atrial fibrillation (Frost and Vestergaard, 2005).

**Caffeine does not increase risk of stroke in healthy individuals.**

A limited number of studies have evaluated the association between coffee consumption and stroke. Most of these have not found a significant association between caffeine and stroke (Rashid, et al., 2006). One exception was a study that examined stroke rate in relation to caffeine consumption among non-smoking men with hypertension. In that high-risk population, the risk of ischemic (clot-induced) stroke was two times higher in men who consumed 24 ounces of coffee per day (about 300 mg of caffeine, or three 8-ounce cups) than in men who did not drink coffee (Hakim, et al., 1998). However, it is not known whether caffeine or another component of coffee was responsible for the increase. For now, people who have had a stroke or who have high blood pressure should consult a health professional regarding their caffeine intake.

According to the long-term follow-up study by Lopez-Garcia, et al., coffee consumption in women is not associated with an increased risk of stroke. In fact, the study found that women who regularly consume coffee have a modestly lower risk of stroke than non-consumers. Further investigation showed frequent caffeinated coffee consumption is strongly associated with a diet higher in potassium and with a lower glycemic load, which are factors associated with lower risk of stroke. The data also indicate that components of coffee other than caffeine may lower stroke risk, although the biological mechanism is unclear (Lopez-Garcia, et al., 2009).
Another study suggested that high consumption of coffee and tea may reduce the risk of stroke among men. This is thought to be due to compounds in coffee and tea other than caffeine (Larsson, et al., 2008). Further research is needed to better understand the relationship between caffeine and stroke.

**Caffeine does not cause gastro-esophageal reflux disease (GERD).**

Some people suffering from gastro-esophageal reflux disease (GERD), commonly referred to as “heartburn,” have reported increased symptoms after drinking coffee. However, multiple studies suggest that GERD may be brought on by components of coffee other than caffeine. Three studies have found that tap water with and without added caffeine has no effect on GERD symptoms (Pehl, et al., 1997; Wendl, et al., 1994; Boekema, et al., 1999). Additionally, a survey in Australia reported that heartburn is aggravated by a number of factors - including spicy foods, greasy or rich foods, stress, alcohol, overeating, smoking, pregnancy, food allergy, and coffee – many of which do not relate to caffeine (Bolin, et al., 2000). And a large evidence-based review found that removing caffeine from a person’s diet does not improve symptoms of GERD. Current research suggests that patients with GERD do not need to avoid caffeinated beverages. The only lifestyle change that has been found to favorably impact those with GERD is sleeping with the head elevated (Kaltenbach, et al., 2006).

**For More Information:**

IFIC Review: Caffeine and Health: Clarifying the Controversies

Fact Sheet: Caffeine and Health

Healthy Eating During Pregnancy

Caffeine and Women’s Health

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