Trends in Cardiovascular Medicine 29 (2019) 351–352

Contents lists available at ScienceDirect

Trends in Cardiovascular Medicine

journal homepage: www.elsevier.com/locate/tcm

# Editorial commentary: Coffee, tea, and cardiovascular morbidity and mortality

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ARTICLE INFO

*Keywords:*
Coffee
Tea
Caffeinated beverages
Cardiovascular disease

Caffeine is probably the most widely consumed stimulant worldwide, as the majority of adults worldwide consume caffeine on a daily basis, most commonly in the forms of caffeinated coffee and tea. Coffee, in particular, is one of the most commonly consumed pharmacologically active beverages across the world, with over 50% of Americans above the age of 18 drinking coffee on a daily basis, and another 30% of the population consuming it occasionally. More than 4 million metric tons of tea is consumed each year, and tea is consumed by two-thirds of all adults worldwide. Because of the remarkably high prevalence of the frequent consumption of these beverages, even small health effects of coffee and tea could translate into large effects on public health, positively or negatively, as we and others have discussed many times during the past five years [1–12]. In the past decades, there was concern that the stimulatory effects of these beverages could raise blood pressure (BP), trigger atrial and/or ventricular arrhythmias, and generally cause adverse effects on health and well-being.

In the current review in *Trends in Cardiovascular Medicine*, Voskoboinik and colleagues [13] reviewed the cardiovascular (CV) effects of these caffeinated beverages, and reviewed their impact on chronic diseases, especially CV diseases (CVD). Although acutely caffeine in large doses can increase BP, in general, these agents have been shown to have neutral to beneficial effects on the risk of developing hypertension (HTN). Regular coffee and caffeine, in a dose-dependent fashion, confer beneficial effects on glucose metabolism, including significant reductions in the risk for type 2 diabetes mellitus (T2D); maximal protection against T2D is noted with six or more cups per day. Some of the benefits may be due to reduction of obesity, either directly by increasing metabolism or indirectly or via displacing high caloric beverages. Although short-term use of unfiltered coffee may worsen lipids, this does not occur with tea or filtered coffee [1–13].

More importantly, coffee and tea consumption have not been associated with increases in CVD. Although the impact on secondary prevention of coronary heart disease (CHD) may be neutral, there seems to be modest impact to protect against incident CVD. Regular coffee consumption and tea consumption appear to reduce the risk of stroke, despite its potential vasoconstrictive effects on the cerebrovascular bed. Since coffee may protect against the development of CHD and HTN, two strong risk factors for heart failure (HF), it may protect against the development of HF, as well as benefit patients with established HF, possibly by having a diuretic effect and without worsening dysrhythmias. In fact, in population studies, caffeine and coffee may be neutral or even actually reduce the risk of atrial fibrillation, without worsening ventricular arrhythmias [2,13–15].

More importantly, large scale studies suggest that coffee and tea consumption may reduce the risk of both all-cause and CVD mortality, with consumptions as high as four to five cups per day being associated with the greatest benefits [1,2,13], although our data years ago suggested potential toxicity at doses of five cups per day or higher for younger individuals [4].

Although caffeine has potential beneficial effects, we believe it is probably prudent to keep upper doses at 200–300 mg/day (two to three cups of coffee), moreover, these benefits and safety may not extend to certain energy drinks, which can contain excessively high caffeine doses in addition to high levels of added sugar. Not surprisingly, energy drinks have been associated with serious potential toxicity [13].

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https://doi.org/10.1016/j.tcm.2018.11.016

In addition to CVD benefits, coffee has been associated with lower risks for breast, endometrial, prostate, and colorectal malignancies. Moreover, coffee (particularly caffeinated coffee) bestows other potential benefits, including slowing cognitive decline, reducing risks for depression, suicide, obesity, asthma, and liver disease [1–3,6,8]. Realizing that observational data do not prove cause and effect, it is difficult to recommend coffee and tea as a prevention strategy. Additionally, the potential benefits need to be weighed against potential risks, generally due to high caffeine content, including anxiety, insomnia, headaches, tremulousness, palpitations, low birth weight, and increased risk of fractures in women. However, the overall evidence is quite reassuring, and probably enough for us to encourage lovers of these beverages to continue to enjoy them and possibly reap the benefits of chronic disease and CVD prevention. We applaud Voskoboinik and colleagues [13] for their outstanding review in this issue of *TCM*.

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