



Summary of research

- Caffeine is found naturally in some 60 plant species of which coffee beans, cocoa beans, kola nuts, and tea leaves are the most well-known. It is also added to some soft drinks, foods and medicines¹.
- A main effect of caffeine in the body is as a mild stimulant of the central nervous system^{2,3}. Caffeine intake is associated with an increase in alertness³ and when taken in moderate amounts, has mostly positive effects on both mental and physical endurance performance². However, caffeine may cause sleep problems in some individuals, although caffeine avoidance during the afternoon may help to improve sleep⁴.
- Research also suggests that lifelong caffeine consumption may decrease the risk of neurodegenerative conditions such as age-related cognitive decline, Alzheimer's Disease and Parkinson's Disease^{5,6}.
- Moderate caffeine consumption through coffee has not been shown to have significant adverse effects on cardiovascular function⁷⁻¹², nor does it lead to dehydration¹²⁻¹⁴.
- Caffeine is not a drug of dependence. Brain mapping technology indicates that caffeine is not linked to the brain circuit of dependence¹⁵⁻¹⁷. This is supported by the fact that individuals do not develop tolerance to the stimulant effects of caffeine.
- The American Psychological Association has recognized Caffeine Withdrawal as a syndrome that may affect some individuals¹⁸. The symptoms are short lived and can be avoided altogether if caffeine intake is decreased progressively.
- Moderate caffeine consumption, considered to be 400mg from all sources, typically corresponds to 5 regular-sized cups of coffee per day¹⁹. Intake should be decreased to 200mg of caffeine per day from all sources in pregnant women and those who are breastfeeding¹⁹.
- Overall, research shows that caffeine consumed in moderation can form part of a healthy, balanced diet and active lifestyle, as well as possibly conferring positive health effect.

Further information and references on coffee, its role in the body and associations between coffee, caffeine and health can be found on the Coffee & Health website: www.coffeandhealth.org



References

1. Heckman M.A. et al. (2010) Caffeine (1, 3, 7-trimethylxanthine) in foods: a comprehensive review on consumption, functionality, safety, and regulatory matters. *J Food Sci*, 75: R77–87
2. Nehlig A. (2016) Effects of coffee/caffeine on brain health and disease: What should I tell my patients? *Pract Neurol*, 16(2):89–95.
3. EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) (2011) Scientific Opinion on the substantiation of health claims related to caffeine and increased fat oxidation leading to a reduction in body fat mass (ID 735, 1484), increased energy expenditure leading to a reduction in body weight (ID 1487), increased alertness (ID 736, 1101, 1187, 1485, 1491, 2063, 2103) and increased attention (ID 736, 1485, 1491, 2375) pursuant to Article 13(1) of Regulation (EC) No 1924/2006. *EFSA Journal*; 9(4):2054.
4. Clark I. and Landolt H.P. (2016) Coffee, Caffeine, and Sleep. *Sleep Med Rev*, 31:70–78
5. Wu L. et al. (2017) Coffee Intake and the Incident Risk of Cognitive Disorders: A Dose-response Meta-Analysis of Nine Prospective Cohort Studies. *Clin Nutr*, 36(3):730–736.
6. Liu Q.-P. et al. (2016) Habitual coffee consumption and risk of cognitive decline/dementia: A systematic review and meta-analysis of prospective cohort studies, *Nutr*, 32(6):628–3
7. Malerba S. et al. (2013) A meta-analysis of prospective studies of coffee consumption and mortality for all causes, cancers and cardiovascular diseases. *Eur J Epidemiol*, 28(7):527–39.
8. Liu J. et al. (2013) Association of Coffee Consumption with All-Cause and Cardiovascular Disease Mortality. *Mayo Clinic Proc*, 88:10.
9. Rebello S.A. and van Dam R.M. (2013) Coffee Consumption and Cardiovascular Health: Getting to the Heart of the Matter. *Curr Cardiol Reps*, 15:403.
10. Ding M. et al (2014) Long-term coffee consumption and risk of cardiovascular disease: a systematic review and a dose-response meta-analysis of prospective cohort studies. *Circ*, 129(6):643–59.
11. Crippa A. et al. (2014) Coffee consumption and mortality from all causes, cardiovascular disease, and cancer: a dose-response meta-analysis. *Am J Epidemiol*, 180(8):763–75.
12. Maughan R.J. et al (2003). Caffeine ingestion and fluid balance: a review. *J Hum Nutr Diet*, 16,411–420.
13. Silva A. M. et al (2013) Total body water and its compartments are not affected by ingesting a moderate dose of caffeine in healthy young adult males. *App Physiol Nutr & Metab*, 38:626–632.
14. Killer S. C. et al (2014) No Evidence of Dehydration with Moderate Daily Coffee Intake: A Counterbalanced Cross-Over Study in a Free-Living Population. *PLoS ONE*, 9(1):e84154.
15. Nehlig A. (1999) Are we dependent upon coffee and caffeine? A review on human and animal data. *Neurosci Biobehav Rev*, 23(4):563–76.
16. Nehlig A. et al. (2000) Dose-response study of caffeine effects on cerebral functional activity with a specific focus on dependence. *Brain Res*, 858:71–77.
17. Nehlig A. et al. (2010) SPECT assessment of brain activation induced by caffeine: no effect on areas involved in dependence. *Dialogues Clin Neurosci*, 12:255–63.
18. American Psychiatric Association (2013) *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (DSM V) ISBN 978-0-89042-554-1DSMV.
19. EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) (2015) Scientific Opinion on the safety of caffeine. *EFSA Journal*, 13(5):4102.