

**“Systematic Review of the Potential Adverse Effects of Caffeine Consumption  
in Healthy Adults, Pregnant Women, Adolescents, and Children”**  
*Food and Chemical Toxicology, April 2017*

### Overview

- A rigorous new scientific Systematic Review paper on caffeine safety confirms the benchmark conclusions of Nawrot et al. in 2003 which established the following caffeine intake recommendations:
  - $\leq 400$  mg/day in adults (about 4 cups of coffee per day);
  - $\leq 300$  mg/day in pregnant women; and
  - $\leq 2.5$  mg/kg-day in children and adolescents.
- Approximately 90% of Americans consume less than 400 mg/day (average caffeine intake is 165 mg/day, with consumption in the 90th percentile at 380 mg/day).<sup>i</sup>
- The first-of-its-kind in terms of merging nutrition and toxicological evidence, this review analyzed the health endpoints of acute toxicity, bone/calcium, cardiovascular, behavior, and reproductive and development, as well as pharmacokinetics in four healthy populations: children, adolescents, adults and pregnant women.
- As this study was designed to confirm existing acceptable caffeine intake levels, 400 mg/day should not be viewed as an upper limit or guideline for caffeine consumption. It serves as a reference value aimed at reassuring the typical healthy individual consuming about 400 mg/day that he or she should not expect to experience adverse effects. However, adverse effects cannot be ruled out for consumption above this level. Details around 5 health outcomes and specific endpoints can be found in the study.
- This Systematic Review was primarily funded by ILSI North America with the remainder of the funding coming from unrestricted grants from the American Beverage Association (ABA) and the National Coffee Association (NCA).

### Methodology

- The research was structured to meet the gold standards for Systematic Reviews outlined in the National Academies of Science, Institute of Medicine publication, “[Finding What Works in Health Care—Standards for Systematic Reviews](#).” (Eden et al., 2011)
- The first step involved establishing a team with the appropriate expertise and experience:
  - Eight-scientist Scientific Review Team from ToxStrategies, a private toxicology and risk assessment firm
    - Role: Develop, manage and perform the Systematic Review
  - Seven-member Scientific Advisory Board from top universities and research institutions, with expertise in Systematic Reviews, caffeine, epidemiology, bone and calcium, reproduction, behavior, pharmacokinetics, acute toxicity and clinical medicine
    - Role: Provide input, review and approval; develop protocol and conclusions



- At no point in the process were the researchers' scientific conclusions or professional judgements subject to the funders' control; rather, the contents of the Systematic Review manuscript reflect solely the view of the authors.
- All the data related to the reviewing and grading of the literature that was included and excluded is publicly available on the Agency for Healthcare and Research Quality (AHRQ) Systematic Review Data Repository. The protocols for each health outcome are publicly available on PROSPERO register for Systematic Reviews.

### **Implications for the Public**

- This Systematic Review provides evidence that furthers our understanding of caffeine on human health. This research provides the research community with data and valuable evidence to support the development and execution of recommendations and future research on caffeine safety that will impact public health. The complete transparency with which the data has been shared will encourage other researchers to build upon this work.

Learn more about the Systematic Review on the [ILSI North America website](#).

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<sup>1</sup> Diane C. Mitchell, Jon Hockenberry, Robyn Teplansky, Terryl J. Hartman, Assessing dietary exposure to caffeine from beverages in the U.S. population using brand-specific versus category-specific caffeine values, *Food and Chemical Toxicology*, Volume 80, June 2015, Pages 247-252, ISSN 0278-6915, <http://doi.org/10.1016/j.fct.2015.03.024>.