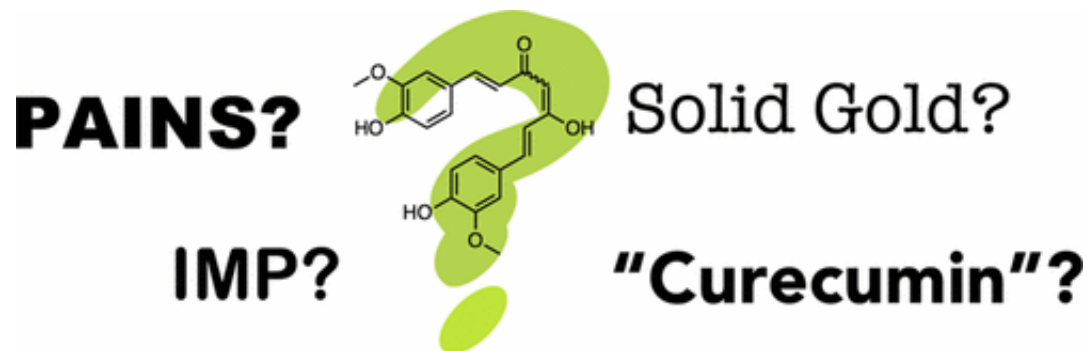


# Contrary to decades of hype, curcumin alone is unlikely to boost health

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Credit: American Chemical Society

Curcumin, a compound in turmeric, continues to be hailed as a natural treatment for a wide range of health conditions, including cancer and Alzheimer's disease. But a new review of the scientific literature on curcumin has found it's probably not all it's ground up to be. The report in ACS' *Journal of Medicinal Chemistry* instead cites evidence that, contrary to numerous reports, the compound has limited—if any—therapeutic benefit.

Turmeric, a spice often added to curries and mustards because of its distinct flavor and color, has been used for centuries in traditional medicine. Since the early 1990's, scientists have zeroed in on [curcumin](#), which makes up about 3 to 5 percent of [turmeric](#), as the potential constituent that might give turmeric its health-boosting properties. More

than 120 clinical trials to test these claims have been or are in the process of being run by clinical investigators. To get to the root of curcumin's essential medicinal chemistry, the research groups of Michael A. Walters and Guido F. Pauli teamed up to extract key findings from thousands of scientific articles on the topic.

The researchers' review of the vast curcumin literature provides evidence that curcumin is unstable under physiological conditions and not readily absorbed by the body, properties that make it a poor therapeutic candidate. Additionally, they could find no evidence of a double-blind, placebo-controlled clinical trial on curcumin to support its status as a potential cure-all. But, the authors say, this doesn't necessarily mean research on turmeric should halt. Turmeric extracts and preparations could have health benefits, although probably not for the number of conditions currently touted. The researchers suggest that future studies should take a more holistic approach to account for the spice's chemically diverse constituents that may synergistically contribute to its potential benefits.

**More information:** Kathryn M. Nelson et al. The Essential Medicinal Chemistry of Curcumin, *Journal of Medicinal Chemistry* (2017). [DOI: 10.1021/acs.jmedchem.6b00975](https://doi.org/10.1021/acs.jmedchem.6b00975)

### **Abstract**

Curcumin is a constituent (up to ~5%) of the traditional medicine known as turmeric. Interest in the therapeutic use of turmeric and the relative ease of isolation of curcuminoids has led to their extensive investigation. Curcumin has recently been classified as both a PAINS (pan-assay interference compounds) and an IMPS (invalid metabolic panaceas) candidate. The likely false activity of curcumin in vitro and in vivo has resulted in >120 clinical trials of curcuminoids against several diseases. No double-blinded, placebo controlled clinical trial of curcumin has been successful. This manuscript reviews the essential

medicinal chemistry of curcumin and provides evidence that curcumin is an unstable, reactive, nonbioavailable compound and, therefore, a highly improbable lead. On the basis of this in-depth evaluation, potential new directions for research on curcuminoids are discussed.

Provided by American Chemical Society

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