



What is Sulforaphane

Thirty years ago, Paul Talalay and colleagues published a paper describing sulforaphane, a compound from broccoli that increases detoxification enzymes when you eat broccoli¹. Since that time, scientists have shown how this bioactive food component has multiple health benefits^{2,3}. Many drugs were originally isolated from plants, but sulforaphane is a little different in two ways. First, it works to activate our normal health maintenance systems, typically without the side effects seen from synthetic drugs². Secondly, because sulforaphane is unstable and highly reactive, it cannot just be isolated then ingested. When you chew fresh broccoli or broccoli sprouts, a plant enzyme releases sulforaphane, which is then absorbed and travels around the body bound to the amino acid cysteine. Upon arriving at a site that is more oxidized than normal healthy tissue, cysteine releases sulforaphane, which activates a local molecule, Nrf2, a major player in normal health maintenance. Nrf2 turns on synthesis of many health maintenance systems, including synthesis of antioxidant enzymes, correcting the tissue's balance between oxidation and reduction. Nrf2 also slows or stops inflammation, normalizing multiple systems that are disrupted by infection, inflammation and oxidative damage⁴. Eating broccoli 3 or 4 times a week helps to maintain a healthy body.

1. Zhang Y, Talalay P, Cho CG, Posner GH. A major inducer of anticarcinogenic protective enzymes from broccoli: isolation and elucidation of structure. *Proc Natl Acad Sci U S A*. 1992 Mar 15; 89:2399-403. doi: 10.1073/pnas.89.6.2399.
2. Mirmiran, P., Bahadoran, Z., Golzarand, M. *et al*. A comparative study of broccoli sprouts powder and standard triple therapy on cardiovascular risk factors following *H.pylori* eradication: a randomized clinical trial in patients with type 2 diabetes. *J Diabetes Metab Disord* **13**, 64 (2014).
3. Sulforaphane: Its “Coming of Age” as a Clinically Relevant Nutraceutical in the Prevention and Treatment of Chronic Disease. Houghton, C.A, (2019) *Oxidative Medicine and Cellular Longevity*, 2716870
4. Mazarakis, N., Snibson, K., Licciardi, P.V., Karagiannis, T.C. The potential use of L-sulforaphane for the treatment of chronic inflammatory diseases: A review of the clinical evidence (2020) *Clinical Nutrition*, 39 (3), pp. 664-675