



Sulforaphane-mediated anti-inflammatory mechanisms OR Controlling chronic inflammation with sulforaphane from broccoli

If you cut your hand, or receive an insect sting, that area is painful: nerves send messages to your brain to say there is damage that needs repair. Soon, the area swells and becomes red, as your body increases the blood flow and sends aggressive messengers, called cytokines, together with white blood cells to fight the invasion. Their aim is to cause the body to destroy any damaged cells, remove toxic compounds and kill bacteria that might cause infection. In one or two days, your body sends another group of messengers to stop that first attack, and let the body stop the swelling and pain and return to normal. This useful, dual response of the body is "acute inflammation". But sometimes the messages calling for aggressive repair continue and the tissue does not return to normal health, but continues to damage even normal tissue and cause pain indefinitely, causing "chronic inflammation"¹.

Sulforaphane activates a new, different messenger system, inhibiting the aggressive repair system and returning the balance to normal². This new messenger molecule is called Nrf2 and when we eat broccoli, sulforaphane will enhance formation and release of Nrf2, to aid in the return of damaged, inflamed and irritated tissues back to normal. Without re-balancing like this, destructive messages will slowly damage more and more tissue, maintaining pain and tissue malfunction. Eating broccoli 3 or 4 times a week can support normalization of inflamed tissues, acting as an anti-inflammatory.

1. Furman, D. et al. Chronic inflammation in the etiology of disease across the life span. *Nat. Med.* 25, 1822–1832 (2019).
2. López-Chillón MT, Carazo-Díaz C, Prieto-Merino D, Zafrilla P, Moreno DA, Villaño D. Effects of long-term consumption of broccoli sprouts on inflammatory markers in overweight subjects. *Clin Nutr.* (2019) 38:745–52. doi: 10.1016/j.clnu.2018.03.006