



Formation of sulforaphane by gut microbiota

In whole broccoli, sulforaphane is bound to glucose and called glucoraphanin. It has no activity until the glucose is removed by an enzyme. This enzyme is in a different compartment inside the broccoli cells, so it becomes available when crushed by someone chewing the broccoli. Then highly reactive sulforaphane springs into action. But most people cook their broccoli – and cooking for more than 3 or 4 minutes destroys the enzyme and sulforaphane is not released from glucoraphanin. Glucoraphanin then travels down into the gut, where it meets the microbiome, the collection of bacteria that live in our gut. The number of bacteria in the gut is larger than the number of human cells in our body! A healthy microbiome includes a few enzymes that release sulforaphane from glucoraphanin and eating broccoli frequently can increase this activity¹. Once free, we know that some of the sulforaphane is absorbed and some can protect the gut wall from oxidative damage, just like sulforaphane protects other parts of the body². But we don't know if sulforaphane kills any gut bacteria – or if some of the bacteria bind to, or even destroy, sulforaphane. One function of the microbiome is to interact with the brain. Research is finding that the microbiome impacts brain function. We know that sulforaphane may normalize some neurological problems - but whether sulforaphane can normalize this from the gut or must travel to the brain is still to be discovered³. It is exciting that there are new horizons for finding out new ways in which sulforaphane from broccoli can support a healthy body and healthy lifestyle.

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