

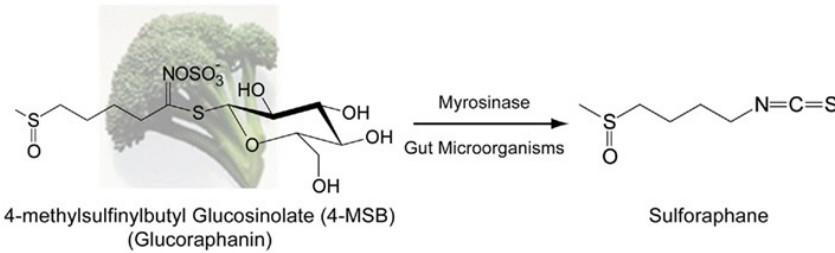
Sulphoraphane in the Treatment of Autism



A recent study has been published that has shown significant benefits of **sulphoraphane** in some core symptoms of Autism Spectrum Disorder (ASD). This is an encouraging initial study.

What is Sulphoraphane?

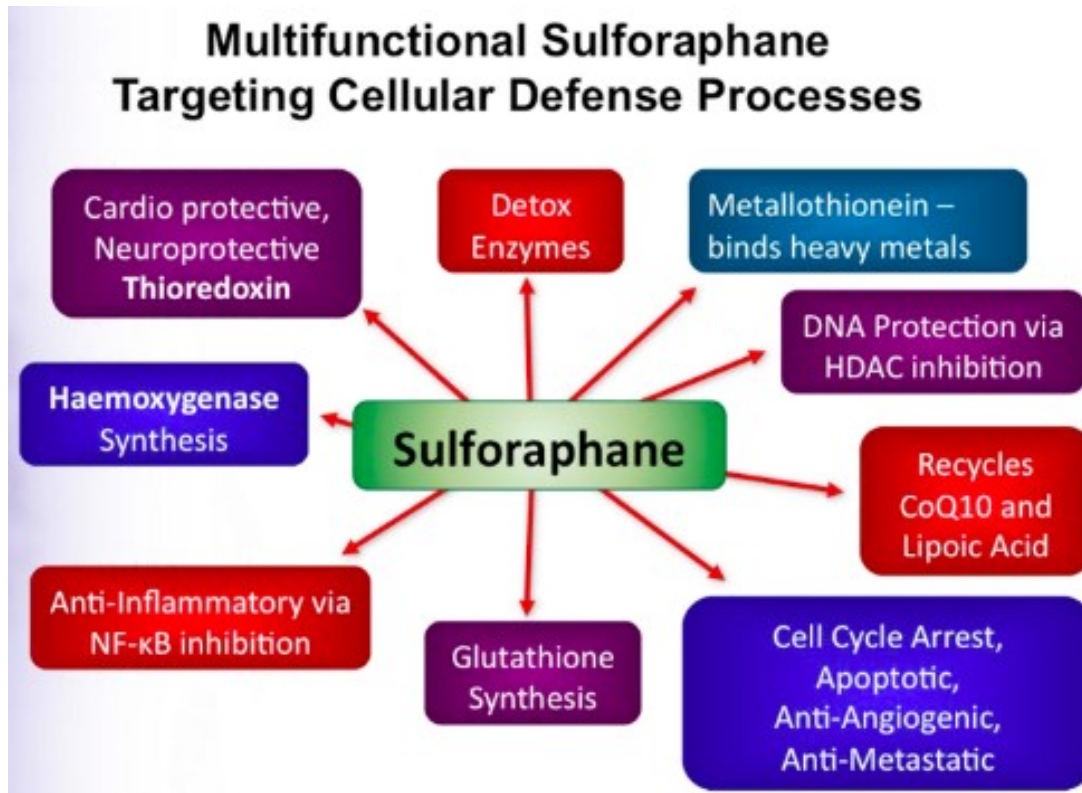
Sulforaphane is isolated from a group of phytochemicals called glucosinolates of which glucoraphanin, contained in **broccoli sprouts**, is converted to sulforaphane by the action of the enzyme myrosinase.



Sulphoraphane is also found in Brussels sprouts, cabbage, cauliflower, bok choy, kale, collards, Chinese broccoli, broccoli, kohlrabi, mustard, turnip, radish, and watercress.

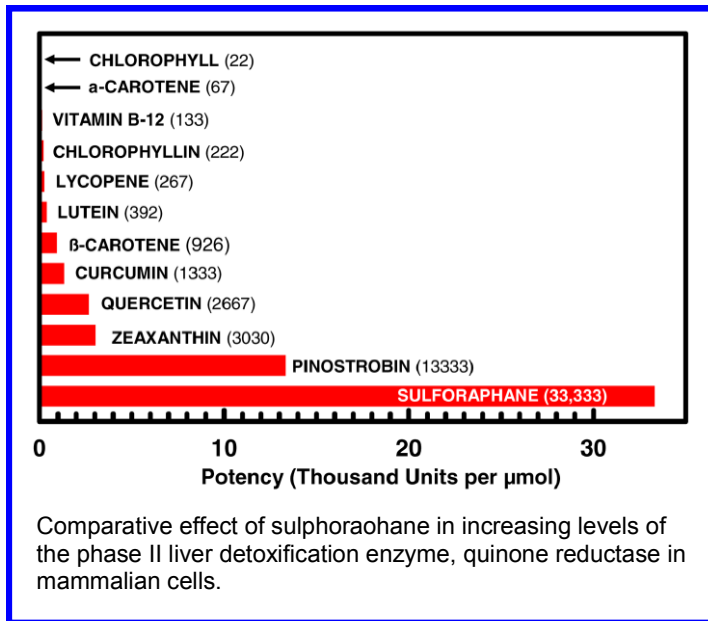
Sulphoraphane acts as a long lasting antioxidant that detoxifies free radicals in the body.

Sulphoraphane has reportedly many benefits, including enhancing cellular defences, as an anti-inflammatory and activating hundreds of cytoprotective genes. Sulforaphane has attracted recent attention for its antioxidant properties, which may persist for hours after ingestion. Research into sulphoraphane indicates potential for treatment of neurodegenerative disorders and cancer.



Mechanism of Action of Sulphoraphane?

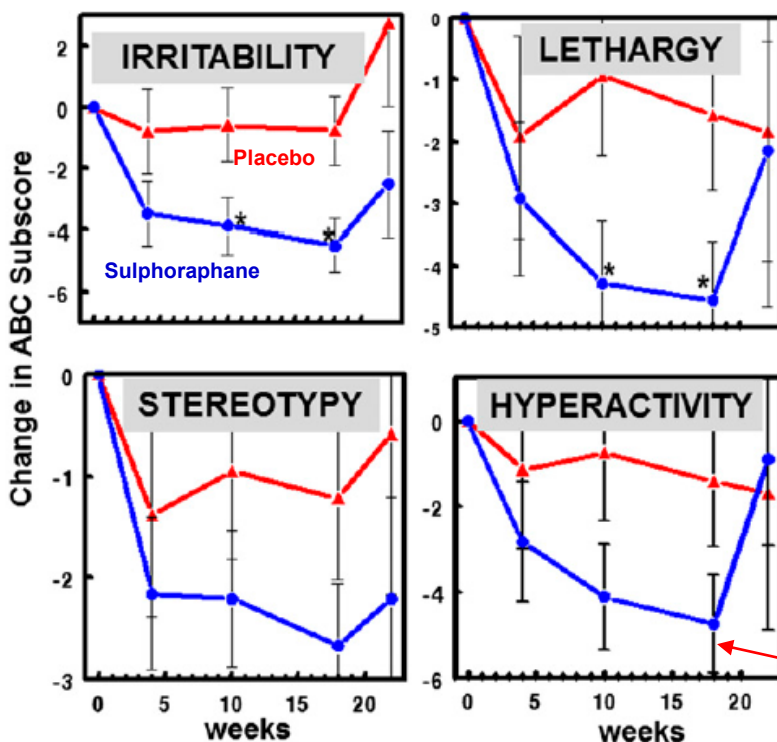
The therapeutic potential of sulphoraphane is based on its potent activity in up-regulating genes that control mechanisms whereby cells protect themselves against oxidative stress, inflammation, DNA-damage, and radiation. Basically, sulphoraphane up-regulates the cells ability to protect itself, reducing the risk of developing malignancies and other chronic condi-



As an example, the diagram to the left shows how potent sulphoraphane can be in up regulating phase II liver detoxification genes compared to other compounds. Sulforaphane enhances cellular defences primarily by activating transcription factor, Nrf2, which up-regulates genes coding for more than 200 cytoprotective enzymes and other compounds. These genes include those that code for the synthesis of glutathione and the detoxification enzymes. In addition sulphoraphane activates the gene which codes for metallothionein, essential for detoxifying heavy metals, including mercury.

So what about this study of sulphoraphane in ASD individuals?

This placebo-controlled, double-blind, randomized trial, of young men (aged 13–27) with moderate to severe ASD, received sulphoraphane derived from broccoli sprout extracts or placebo. The effects on behaviour of daily oral doses of sulphoraphane (50–150 μmol) for 18 weeks, followed by 4 weeks without treatment, was assessed by three widely accepted behavioural measures completed by parents/caregivers and physicians.



After 18 weeks, participants receiving placebo experienced minimal change (<3.3%), whereas **those receiving sulphoraphane showed substantial improvement of behaviour (34%)**. A significantly greater number of participants receiving sulphoraphane had **improvement in social interaction, abnormal behaviour, and verbal communication**. Upon discontinuation of sulphoraphane, total scores on all scales rose toward pre-treatment levels.

18 week period, sulphoraphane discontinued

Sulphoraphane as used in the trial is available through my clinic.

Study details:

Sulforaphane treatment of autism spectrum disorder (ASD). Kanwaljit Singh, Susan L. Connors, et al. www.pnas.org/cgi/doi/10.1073/pnas.1416940111