

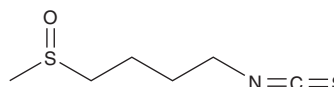
# PRODUCT INFORMATION



## Sulforaphane

Item No. 10496

**CAS Registry No.:** 4478-93-7  
**Formal Name:** 1-isothiocyanato-4-(methylsulfinyl)-butane  
**Synonym:** SFN  
**MF:** C<sub>6</sub>H<sub>11</sub>NOS<sub>2</sub>  
**FW:** 177.3  
**Purity:** ≥90%  
**UV/Vis.:** λ<sub>max</sub>: 245 nm  
**Supplied as:** A solution in ethanol  
**Storage:** -80°C  
**Stability:** ≥2 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Laboratory Procedures

Sulforaphane is supplied as a solution in ethanol. To change the solvent, simply evaporate the ethanol under a gentle stream of nitrogen and immediately add the solvent of choice. Solvents such as DMSO and dimethyl formamide purged with an inert gas can be used. The solubility of sulforaphane in these solvents is approximately 16 and 3 mg/ml, respectively.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. If an organic solvent-free solution of sulforaphane is needed, it can be prepared by evaporating the ethanol and directly dissolving the neat oil in aqueous buffers. The solubility of sulforaphane in PBS (pH 7.2) is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

### Description

Nrf2 activation of the antioxidant response element (ARE) is central to cytoprotective gene expression against oxidative and/or electrophilic stress.<sup>1</sup> Unless activated by inflammatory, environmental, or oxidative stressors, Nrf2 is sequestered in the cytoplasm by its repressor, Keap1.<sup>2</sup> Because of its protective capabilities, small molecules that activate Nrf2 signaling are being examined as potential anti-cancer or anti-inflammatory agents.<sup>3</sup> Sulforaphane is an isothiocyanate derived from cruciferous vegetables, including broccoli, that potently induces chemopreventative enzymes via Keap1-Nrf2 signaling and ARE-driven gene expression.<sup>4</sup> At 15 μM, sulforaphane inhibits class I and II HDAC activity and suppresses tumor growth by inducing cell cycle arrest and apoptosis selectively in various cancerous prostate epithelial cells without affecting normal cells.<sup>5</sup>

### References

1. Wang, R., Kern, J.T., Goodfriend, T.L., *et al.* Activation of the antioxidant response element by specific oxidized metabolites of linoleic acid. *Prostaglandins Leukot. Essent. Fatty Acids* **81(1)**, 53-59 (2009).
2. Gao, L., Wang, J., Sekhar, K.R., *et al.* Novel n-3 fatty acid oxidation products activate Nrf2 by destabilizing the association between Keap1 and Cullin3. *J. Biol. Chem.* **282(4)**, 2529-2537 (2007).
3. Taguchi, K., Motohashi, H., and Yamamoto, M. Molecular mechanisms of the Keap1-Nrf2 pathway in stress response and cancer evolution. *Genes Cells* **16(2)**, 123-140 (2011).
4. Dinkova-Kostova, A.T., Holtzclaw, W.D., Cole, R.N., *et al.* Direct evidence that sulfhydryl groups of Keap1 are the sensors regulating induction of phase 2 enzymes that protect against carcinogens and oxidants. *Proc. Natl. Acad. Sci. USA* **99(18)**, 11908-11913 (2012).
5. Clarke, J.D., Hsu, A., Yu, Z., *et al.* Differential effects of sulforaphane on histone deacetylases, cell cycle arrest and apoptosis in normal prostate cells versus hyperplastic and cancerous prostate cells. *Mol. Nutr. Food Res.* **55(7)**, 999-1009 (2011).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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