High-Selenium Brassica juncea

National Cancer Institute

Source

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A formulation of the mustard plant Brassica juncea grown in a medium that has been enriched with the trace element selenium with potential chemopreventive and chemopotentiating activities. Brassica juncea hyperaccumulates trace elements in soil. Selenium amino acid species found in selenized Brassica juncea include methylselenomethionine (MeSeMet) and methylselenocysteine (MeSeCys); both may be incorporated into selenoproteins in vivo. Selenium functions as a cofactor for antioxidant enzymes such as glutathione peroxidases and thioredoxin reductase, which protect cells from the free radical damage. In addition, in vitro MeSeCys has been shown to potentiate the antitumor effects of the irinotecan metabolite SN-38, by inducing phosphorylation of checkpoint kinase 2 (chk2) at threonine 68, which results in poly(ADP-ribose) polymerase cleavage, caspase 3 activation, and DNA fragmentation.