

S-allylmercaptocysteine inhibits cell proliferation and reduces the viability of erythroleukemia, breast, and prostate cancer cell lines.

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Abstract

Organosulfur compounds are the biologically active components of allium vegetables. Many health benefits have been ascribed to them, including inhibition of carcinogenesis. Inasmuch as several of these thioallyl compounds are quite unstable and others are rapidly inactivated in the body, we have investigated one of the stable components present in aged garlic extract, S-allylmercaptocysteine (SAMC), in an effort to determine whether it can inhibit proliferation of cancer cells. Proliferation and viability of two erythroleukemia cell lines, HEL and OCIM-1, two hormone-responsive breast and prostate cancer cell lines, MCF-7 and CRL-1740, respectively, and normal human umbilical vein endothelial cells in response to different concentrations of SAMC were studied for up to two weeks. There were variations in sensitivity to this organosulfur compound in the different cell lines examined, but the two hormone-responsive cancer cell lines of breast and prostate clearly were far more susceptible to the growth-inhibitory influence of the thioallyl compound. The antiproliferative effect of SAMC was limited to actively growing cells. Human umbilical vein endothelial cells that had reached confluence escaped the reduction in viability so noticeable in the cancer cell lines tested. Our studies thus give evidence of a direct effect of SAMC on established cancer cells.