

## **IP<sub>6</sub> & Inositol as Broad-spectrum Anticancer Agents**

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Inositol and inositol hexaphosphate (IP<sub>6</sub>) are ubiquitous, abundantly present in cereals and legumes, and within mammalian cells wherein IP<sub>6</sub> is important in regulating vital cellular functions such as signal transduction, cell proliferation and differentiation. Exogenously administered IP<sub>6</sub> is rapidly taken up into cells and dephosphorylated to lower inositol phosphates, which further affect signal transduction pathways resulting in cell cycle arrest. A strikingly consistent and reproducible anticancer action of IP<sub>6</sub> has been demonstrated in various experimental models of cancer including metastatic and transplantable tumors; Inositol acts synergistically to enhance this action. In addition to reducing cell proliferation, IP<sub>6</sub> & inositol also induce differentiation of malignant cells *via* PI3K, AP-1, MAPK, p53. Enhanced natural killer (NK) cell activity, suppressed tumor angiogenesis and antioxidant properties also contribute to cancer inhibition. Recent studies demonstrate protection against radiation damage by IP<sub>6</sub> & inositol. Preliminary studies in humans show that IP<sub>6</sub> + inositol enhance the anticancer effect of conventional chemotherapy, control cancer metastases, and improve quality of life. Thus IP<sub>6</sub> + inositol hold great promise in our strategies for cancer prevention and therapy. IP<sub>6</sub> also stimulates insulin secretion from pancreatic  $\beta$  cells, prevents pathological calcification and kidney stone formation, lower elevated serum cholesterol, and reduce pathological platelet activity; inositol prevents complications of diabetes mellitus. IP<sub>6</sub> & inositol may therefore offer additional health benefits.

Reference: *Nutrition & Cancer* 55: 109-125, 2006