USANA Technical Bulletin

Inositol

Technical Background

- Inositol is a cyclic 6-carbon compound closely related to glucose. Myoinositol, the nutritionally active form, is an important component of phospholipids (which form cell membranes). It is available in a wide variety of foods, and is also synthesized within cells.[1]
- Large quantities of inositol are found in spinal cord nerves, in the brain, and in cerebral spinal fluid.
- Taken in large amounts, inositol may have therapeutic benefits for illnesses that respond to serotonin selective reuptake inhibitors (SSRIs), including depression, panic disorder, and obsessive-compulsive disorder.[2]
- Myoinositol may also be effective in preventing and treating diabetic neuropathy.[3]
- Studies have shown that inositol hexaphosphate (IP6) may have a potential role in reducing the growth of certain cancers,[4] as well as being an effective adjunct in treating prostate cancer.[5,6,7]
- Inositol promotes the production of lecithin, which aids in the metabolism of fats and helps to reduce blood cholesterol. With the help of choline, it also protects the heart by helping prevent the hardening of arteries.[1]
- Research has shown that inositol can help to reduce folate-resistant neural tube defects. Combining inositol with folate should further help to prevent the majority of neural tube defects.[8]

Sources and Recommended Intake

- No Recommended Dietary Allowance (RDA) has been established for inositol.
- Inositol is present in most of the foods we eat. Principle sources include meat, yeast, wheat germ, fruits, whole grains, nuts, legumes, milk, and vegetables.
- Inositol is water soluble and non-toxic.

Abstracts

Somasundar P, Riggs DR, Jackson BJ, Cunningham C, Vona-Davis L, McFadden DW. Inositol Hexaphosphate (IP6): A Novel Treatment for Pancreatic Cancer(1). J Surg Res. 2005 Jun 15;126(2):199-203. BACKGROUND: Inositol hexaphosphate (IP6) is a naturally occurring polyphosphorylated carbohydrate found in food sources high in fiber content. IP6 has been reported to have significant inhibitory effects against a variety of primary tumors including breast and colon. The effects of IP6 have not been evaluated in pancreatic cancer. We hypothesized that IP6 would significantly inhibit cell growth and increase the apoptotic rate of pancreatic cancer in vitro. MATERIALS AND METHODS: Two pancreatic cancer cell lines (MIAPACA and PANC1) were cultured using standard techniques and treated with IP6 at doses of 0.5, 1.0, and 5.0 mm. Cell viability was measured by MTT at 24

and 72 h. Apoptosis was evaluated by Annexin V-FITC and results calculated using FACS analysis. Statistical analysis was performed by ANOVA. RESULTS: Significant reductions ($P < 0.01$) in cellular proliferation were observed with all IP6 concentrations tested in both cell lines and at both time points. Reductions in cell proliferation ranged from 37.1 to 91.5%. IP6 increased early and late apoptotic activity ($P < 0.01$). CONCLUSIONS: Treatment of pancreatic cancer with the common dietary polyphosphorylated carbohydrate IP6 significantly decreased cellular growth and increased apoptosis. Our findings suggest that IP6 has the potential to become an effective adjunct for pancreatic cancer treatment. Further in vivo and human studies are needed to evaluate safety and clinical utility of this agent in patients with pancreatic cancer.

References

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