USANA Technical Bulletin

Lycopene

Technical Background

- Lycopene is one of the major carotenoids consumed in the western diet. Highest concentrations are found in tomatoes and tomato products. Lycopene is responsible for the deep red color of tomatoes, strawberries, and watermelon.[1]
- The antioxidative properties of lycopene are well-documented.[2] Many of the protective benefits of lycopene are due to its ability to protect against oxidative damage.[3,4,5] Studies also seem to indicate that lycopene may have a potential role in reducing cholesterol, and possibly helping lower the risk of heart disease.[6]
- Lycopene has also been extensively studied for its potential benefits in reducing total cancer risk,[7,8,9] especially lung,[10] oral,[11] stomach,[9,12,13] prostate cancers,[9,14,15,16] and pancreatic cancer.[17]
- Lycopene is predominately concentrated in tissues of the prostate gland, adrenal glands, testes, and liver.[18]

Sources and Recommended Intake

- No Recommended Dietary Allowance (RDA) has been established for lycopene.
- More than 80% of the lycopene consumed in the United States is derived from tomato products. Guavas, watermelon, papaya, pink grapefruit, and apricots also contribute to the dietary intake of lycopene.[5]
- Processed foods (such as ketchup, tomato paste and spaghetti sauce) may be better sources of bioavailable lycopene than fresh tomato products. This is thought to be due to the breakdown of cell walls during processing and the presence of small amounts of fat, aiding in overall bioavailility.[19,20]
- Epidemiological evidence suggests that regular intake of tomato and other lycopene and carotenoid-containing products could potentially reduce the risk of heart disease and possibly cancer.[9]

Abstracts

Nkondjock A, Ghadirian P, Johnson KC, Krewski D, Dietary intake of lycopene is associated with reduced pancreatic cancer risk. J Nutr. 2005 Mar;135(3):592-7. Although fruits and vegetables have been implicated in the etiology of pancreatic cancer, the role of phytochemicals in these food groups has received little attention to date. In this study, we investigated the possible association between dietary carotenoids and pancreatic cancer risk. A case-control study of 462 histologically confirmed pancreatic cancer cases and 4721 population-based controls in 8

Canadian provinces took place between 1994 and 1997. Dietary intake was assessed by a self-administered FFQ. Unconditional logistic regression was used to assess associations between specific and total carotenoid intakes and the risk of pancreatic cancer. All tests of statistical significance were 2-sided. After adjustment for age, province, BMI, smoking, educational attainment, dietary folate, and total energy intake, lycopene, provided mainly by tomatoes, was associated with a 31% reduction in pancreatic cancer risk among men [odds ratio (OR) = 0.69; 95% CI: 0.46-0.96; P = 0.026 for trend] when comparing the highest and lowest quartiles of intake. Both beta-carotene (OR = 0.57; 95% CI: 0.32-0.99; P = 0.016 for trend) and total carotenoids (OR = 0.58; 95% CI: 0.34-1.00; P = 0.02 for trend) were associated with a significantly reduced risk among those who never smoked. The results of this study suggest that a diet rich in tomatoes and tomato-based products with high lycopene content may help reduce pancreatic cancer risk.

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