

Abstract

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Dietary alpha-, beta-, gamma- and delta-tocopherols in lung cancer risk

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BACKGROUND: Studies of vitamin E and cancer have focused on the alpha-tocopherol form of the vitamin. However, other forms of vitamin E, in particular gamma-tocopherol may have unique mechanistic characteristics relevant to lung cancer prevention.

OBJECTIVE AND METHODS: In an ongoing study of 1,088 incident lung cancer cases and 1,414 healthy matched controls, we studied the associations between 4 tocopherols (alpha-, beta-, gamma-, and delta-tocopherol) in the diet and lung cancer risk.

RESULTS: Using multiple logistic regression analysis, the adjusted odds ratios (OR) and 95% confidence intervals (CI) of lung cancer for increasing quartiles of dietary alpha-tocopherol intake were 1.0, 0.63 (0.50-0.79), 0.58 (0.44-0.76) and 0.39 (0.28-0.53), respectively (p-trend < 0.0001). For dietary intake of beta-tocopherol, the OR and 95% CI for all subjects were: 1.0, 0.79 (0.63-0.98), 0.59 (0.45-0.78) and 0.56 (0.42-0.74), respectively (p-trend < 0.0001). Similar results for dietary gamma-tocopherol intake were observed: 1.0, 0.84 (0.67-1.06), 0.76 (0.59-0.97) and 0.56 (0.42-0.75), respectively (p-trend = 0.0002). No significant association between delta-tocopherol intake and lung cancer risk was detected. When the 4 tocopherols were summed as total tocopherol intake, a monotonic risk reduction was also observed. When we entered the other tocopherols in our model, only the association with dietary alpha-tocopherol intake remained significant; i.e., increasing intake of dietary alpha-tocopherol accounted for 34-53% reductions in lung cancer risk.

CONCLUSION: To the best of our knowledge, this is the first report of the independent associations of the 4 forms of dietary tocopherol (alpha-, beta-, gamma- and delta-tocopherol) on lung cancer risk. Given the limitations with case-control studies, these findings need to be confirmed in further investigations.

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