



Inhibition of N-Methyl-N-Nitrosourea-Induced Mammary Tumors by Nutrient Synergy– A Novel Anti-Cancer Agent (2004)

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Abstract

Breast cancer in women is the third most prevalent cancer worldwide. In 1996 alone, 910,000 new cases were diagnosed, accounting for 9% of all new cancers. Incidence and mortality from cancer are, in general, steadily increasing, especially in developed societies. We have developed strategies to inhibit cancer development and its spread using naturally occurring nutrients such as lysine, proline, ascorbic acid, and green tea extract. This unique formulation, Nutrient Synergy (NS), was shown to exert synergistic anti-cancer activity in vitro in a number of cancer cell lines, including human breast, by inhibiting cancer cell growth, matrix metalloproteinase expression (by zymography), and invasive ability. The present study examined the in vivo effect of NS on the development of N-methyl-N-nitrosourea (MNU)-induced mammary tumors in rats. For this purpose, 50-day-old female Sprague-Dawley rats were initiated with a single dose of MNU (50 mg/Kg, i.p.). Two weeks post MNU treatment, by which time the animals had recovered from MNU-induced toxicity, the rats were divided into two groups. Group 1 was fed a Purina chow diet, while Group 2 was fed the same diet supplemented with 0.5% NS. Twenty-four weeks thereafter, the rats were euthanized and skinned, and tumors were processed. The results indicated that NS inhibited MNU-induced mammary tumor incidence and tumor multiplicity (number of tumors per rat) by 68.4% and tumor burden by 60.5%. The inhibitory effect of NS was also reflected in decreased tumor weight. For example, tumor weight per rat and per group decreased by 41% and 78%, respectively. These results suggest that NS significantly inhibits the incidence, as well as the growth, of MNU-induced mammary tumors, indicating that it has strong potential as a useful therapeutic regimen for inhibiting breast cancer development.

Comment:

Incidence and mortality from breast cancer in women, the third most prevalent cancer worldwide, is steadily increasing, especially in developed societies. This study examined the synergistic effect of a specific formulation of nutrients containing lysine, proline, ascorbic acid, and green tea extract on the growth of mammary tumors induced in 50-day-old female Sprague-Dawley rats by the carcinogen N-methyl-N-nitrosourea (MNU). Nutrient Synergy significantly inhibited the incidence, as well as the growth, of MNU-induced mammary tumors, indicating that it has strong potential as a useful therapeutic regimen for inhibiting breast cancer development.

