

1. **In Vivo and In Vitro Anti-tumor Effect of a Unique Nutrient Mixture on Lung Cancer Cell Line A-549**

M.W. Roomi, V. Ivanov, T. Kalinovsky, A. Niedzwiecki, M. Rath
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We tested the efficacy of a combination of micronutrients that included vitamin C, the amino acids lysine and proline, green tea extract (EGCG) and other micronutrients in lung cancer cells using in vivo and in vitro approaches.

The study used immuno-compromised mice and showed that dietary intake of this micronutrient mixture significantly suppressed the growth of lung tumors. The weight of tumors in the supplemental group was 44% lower than in the test group of mice, and the size of the tumors was 47% smaller.

In addition, we evaluated whether this nutrient mixture can affect the secretion of specific enzymes (matrix metalloproteinases or MMPs) that lung cancer cells need in order to invade surrounding tissues and metastasize. We showed that relatively low concentrations of these micronutrients were effective in achieving a complete inhibition of MMPs secretion by lung cancer cells and in halting their invasion.

The results warrant further investigation of this micronutrient synergy approach as a safe and effective measure in lung cancer.

2. **Chemopreventive effect of a novel nutrient mixture on lung tumorigenesis induced by urethane in male A/J mice**

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Similarly, in one of our other studies, the micronutrient mixture containing vitamin C, lysine, proline, green tea extract (EGCG), and others was shown to be effective in reducing the growth of lung tumors in mice exposed to urethane. Urethane is a known carcinogen present in many types of processed foods and is a natural constituent of tobacco smoke. In our study, the mice exposed to urethane developed multiple lung tumors. However, the group of mice receiving the micronutrients in their diet showed a statistically significant 49% reduction in the number of tumors. In addition, the tumors were 18% smaller compared to non-supplemented mice that received the control diet only.