

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

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ABSTRACT

Aims and background. Lung cancer, a leading cause of cancer death, is associated with exposure to inhalation carcinogens, most commonly those found in tobacco smoke. We investigated the *in vivo* effect of dietary supplementation with a nutrient mixture containing lysine, proline, arginine, ascorbic acid, green tea extract, N-acetyl cysteine, selenium, copper and manganese on the development of urethane-induced lung tumors in male A/J mice.

Methods. After one week of isolation, seven-week-old male A/J mice (n = 25) weighing 17-19 g were randomly divided into three groups: group A (n = 5), group B (n = 10), and group C (n = 10). Mice in groups B and C were each given a single intraperitoneal injection of urethane (1 mg/g body weight) in saline, whereas group A mice received an injection of saline alone. Groups A and B were fed a regular diet, whereas group C was fed the same diet supplemented with 0.5% nutrient mixture. After 20 weeks, mice were sacrificed, lungs were excised and weighed, and tumors were counted and processed for histology.

Results. Urethane-challenged mice developed tumors. However, the mean number of tumors and the mean lung weights in the mice on the supplemented diet were significantly reduced, by 49% ($P < 0.0001$) and 18% ($P = 0.0025$), respectively, compared to mice on the control diet. We observed neither significant differences in body weight gains nor in diet consumption among the mice. Pulmonary lesions were morphologically similar for both the groups (adenomas), but lesions were smaller in the test group.

Conclusions. The results suggest that nutrient mixture has inhibitory potential on the development of mouse lung tumors induced by urethane

Key words: A/J mice, nutrient mixture, primary lung tumors, urethane.

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