Zinc picolinate in the prevention of leiomyoma in Japanese quail.


Source

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Abstract

Epidemiologic studies suggest that zinc deficiency may be associated with increased risk of cancer. We investigated the effects of zinc picolinate supplementation on the development of leiomyomas, malondialdehyde (MDA), 8-isoprostane, 4-hydroxyalkenal (HAE), and 8-hydroxy-2'-deoxyguanosine (8-OHdG) levels, and heat shock protein 70 (Hsp70) expression in Japanese quails. One hundred fifty quails (6 months old) were assigned to three treatment groups consisting of 50 birds in each group. Birds were fed either a basal diet or the basal diet supplemented with 30 mg or 60 mg of zinc/kg of diet. The animals were sacrificed after 350 days, and the tumors were identified. Zinc picolinate supplementation did not affect the number of leiomyomas compared to control birds (P > .05). However, the tumors in zinc-fed birds were smaller than those found in control birds (P = .01) Serum MDA, 8-isoprostane, and HAE levels were lower in the treatment groups than in the control group: MDA, 1.95 versus 0.93 micromol/L; 8-isoprostane, 108 versus 85 pg/mL; HAE, 1.55 versus 0.96 micromol/L (P = .01 for all three parameters). The concentrations of serum 8-OHdG, which is a marker of oxidative damage, in the groups were 28.5, 23.6, and 20.1 ng/mL, respectively (P = .01). Hsp70 expression was significantly decreased in zinc-treated birds (P < .01). The results indicate that dietary zinc picolinate supplementation reduces the growth of spontaneously occurring leiomyomas of the oviduct in the Japanese quail. Clinical trials should be conducted to investigate the efficacy of zinc supplementation in the prevention and treatment of uterine leiomyoma in humans.

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