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Iodine intake and health: The more, the better

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Statement of the Problem: Iodine is an essential microelement for human health. Historically, Historically, (IDD) has been a global public health concern. Comprehensive studies on IDD led to the implementation of Universal Salt Iodizationpolicy in many countries. With rapid global progress in correcting iodine deficiency, excessive iodine intake is emerging as a new concern. The spectrum of iodine excess induced thyroid disorders has been reported including hypothyroidism, autoimmune thyroiditis, endemic goiter and thyroid cancer whereas the extra-thyroidal effects of iodine excess on health is less studied. A comprehensive understanding of iodine excess on health will be of great benefit.

Methodology & Theoretical Orientation: We established a mouse model of excess iodine intake by adding different levels of iodine to drinking water for different period of time. Plasma lipid parameters and serum thyroid hormones were measured. Expressions of hepatic genes were detected by PCR and WB.

Findings: Dose-dependent hypercholesterolemic effects were detected in mice (TC, $r=0.615$; $p< 0.01$). Drinking 1.2 ug/mL iodine water for one month had no significant effect on serum lipid metabolism, while prolonged exposure induced an increase of serum cholesterol. Serum thyroid hormones were not affected by excess iodine intake throughout the study. At the molecular levels, a dose-dependent attenuation of hepatic low density lipoprotein receptor (LDLr) and thyroid hormone receptor β1 (TR β1) expression was detected in parallel to the change of serum cholesterol.

Conclusion & Significance: Our findings demonstrated a dose and time dependent hypercholesterolemic effect of iodine excess. TRβ1-mediated down regulation of hepatic LDLr gene may play a critical role. This study further expanded our knowledge on the potential hazard effect of iodine on health and will be instructive for reasonable iodine intake for improving overall health.

Biography

Lina Zhao has her expertise in Nutrition and Chronic diseases. The inner layer of blood vessels is lined with endothelial cells, which act as the early responder to dietary factors. Her research focus on the effects of dietary factors on the endothelial functions and their roles in the development of chronic metabolic diseases including obesity, diabetes and atherosclerosis, and thus developing dietary intervention targeting disease prevention and management.

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