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Iodine in evolution of salivary glands and in oral health

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Abstract

The authors hypothesize that dietary deficiency or excess of iodine (I) has an important role in oral mucosa and in salivary glands physiology. Salivary glands derived from primitive I-concentrating oral cells, which during embryogenesis, migrate and specialize in secretion of saliva and iodine. Gastro-salivary clearance and secretions of iodides are a considerable part of "gastro-intestinal cycle of iodides", which constitutes about 23% of iodides pool in the human body. Salivary glands, stomach and thyroid share I-concentrating ability by sodium iodide symporter (NIS) and peroxidase activity, which transfers electrons from iodides to the oxygen of hydrogen peroxide and so protects the cells from peroxidation. Iodide seems to have an ancestral antioxidant function in all I-concentrating organisms from primitive marine algae to more recent terrestrial vertebrates. The high I-concentration of thymus supports the important role of iodine in the immune system and in the oral immune defence. In Europe and in the world, I-deficiency is surprisingly present in a large part of the population. The authors suggest that the trophic, antioxidant and apoptosis-inductor actions and the presumed antitumour activity of iodides might be important for prevention of oral and salivary glands diseases, as for some other extrathyroidal pathologies.

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