

The effects of vinblastine on the secretory granule formation in the rat salivary glands.

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The intracytoplasmic fibrous structures are suggested to have an intimate relationship with the process of cytosecretion. However, the precise roles of these structures on the secretory activity are still remained to be solved. Using vinblastine (VB) as an antimicrotubular agent, the present study was performed to see the detailed aspects of microtubules in the secretory process of salivary acinar cells. VB (1mg/100g BW) was injected to Wistar rats 0, 2, 4 and 6 hr before sacrifice. Parotid and submandibular glands were processed for the localization of thiamine pyrophosphatase by the method of Novikoff and Goldfischer. After the treatment of VB, a marked reduction in size of Golgi cisternae was obvious, and the diameter and numbers of secretory granules also decreased. Particularly interesting is that the newly formed secretory granules distribute in the basal region of cytoplasm. These abnormally located secretion granules failed to fuse with plasma membranes when the secretion is stimulated by the isoproterenol. The results pointed out that the microtubules relate with the transport of secretion granules and the maintenance of normal structure of Golgi complexes. Supported by the Japanese Ministry of Education (No. 444017).

Gammaglutamyl transpeptidase (GGT) staining in human thyroid diseases

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Although a histochemical analysis of GGT has been applied to many organs, its activity in thyroid diseases has been little described. So we examined GGT activity in thyroid diseases following Rutenburg's method.

No GGT activity was present in the control thyroid, except focal and weak stainability of colloid substance or tiny follicle. On thyroid neoplasm, papillary carcinoma showed the highest and most stable activity in the apical portion of the epithelium, in contrast to rather variable staining property of follicular carcinoma. Anaplastic carcinoma depicted little GGT activity. Most of follicular adenomas possessed diffuse GGT activity. There was localized stainability in chronic thyroiditis, Basedow's disease and adenomatous goiter, especially in immature follicles.

In conclusion, there was increase in GGT activity in various thyroid diseases, neoplastic or non-neoplastic, closely related to regeneration and proliferation of the follicular cells, although little activity was demonstrated in anaplastic carcinoma.

Electron Cytochemical Study of ATPase Activity in Tracheal Epithelium of Rat

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The localization of Ca^{++} -ATPase activity in tracheal epithelium of rats was demonstrated using a new one-step lead citrate method. The incubation medium contained 250mM glycine-KOH buffer (pH 9.0), 3mM $\text{ATP}2\text{Na}$, 10mM CaCl_2 , 2mM lead citrate and 1mM bromotetramisole.

Small pieces of tissues were fixed with 2% paraformaldehyde and 0.5% glutaraldehyde in tris-HCl buffer (pH 7.2) for 2 hours and cut 20 and 40 μm in thickness with cryostat. After washing and/or pretreatment with 10mM $\text{EDTA}4\text{Na}$ for 30 minutes, sections were incubated in the medium at 5-10 minutes at room temperature. For control study, sections were incubated in the medium, (1) without the activator, (2) with different substrate (β -glycerophosphate and p-nitrophenyl phosphate).

The most intense activity was seen at the outer membrane in cilia of ciliated cells and fine reaction product was found at peri-9+2 doublets (microtubules) and central sheath in axoneme as well as basal bodies. In addition, weak activity was shown at microvilli, lateral plasma membrane in brush cells, intermediate cells and secretory cells in tracheal epithelium.

Alterations of Glomerular Basement Membrane in the Experimental Congestive Kidney

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According to Ryan and Karnovsky (1976), the filtration function of renal glomerulus depends not only the structural factors consisting glomerular capillary wall, but hemodynamic factors. In order to change the normal hemodynamic state of glomerular capillary, the experimental congestive kidney was made by crippling unilateral renal vein in rabbits and the glomerular basement membrane was observed morphologically and cytochemically (ruthenium red and performic acid-phosphotungstic acid staining) in various time intervals.

The glomerular basement membrane in the congestive kidney showed a localized thickening and polypoid changes. Cytochemical findings were similar to that of controls.

It has been known clinically that the glomerular basement membrane changes in various nephropathy and circulatory disturbances. It is of great interest to know that the basement membrane changes in the congestive kidney produced by crippling renal vein.