

MATURATION OF SECRETORY CELLS AND DEVELOPMENTAL CHANGES OF PORPHYRIN CONTENTS IN THE MOUSE HARDERIAN GLAND

K. Shirama and M. Hokano

Dept. of Anatomy, Tokyo Med. Coll., Tokyo

The present study attempts to determine the development of porphyrin content and to examine ultrastructurally the maturation of the Harderian gland cells during the early postnatal life in the mouse.

The porphyrins in the Harderian glands are first detectable at 7-8 days of age in both sexes. Thereafter, the levels show a marked rise during the closed-eye period, reaching a peak around the time of eyelid disjunction. To investigate the structural changes of the glandular epithelium, both glands of female mice were used. Although two types of secretory cells, designated as type A and type B, comprise the glandular epithelium in fully developed glands, the time of neonatal appearance is different between the two. Type A cells first appear on the 5th day of age, while type B cells appear around 7th day corresponding to the time at which porphyrins are first detected. Results of the investigations suggest that the porphyrins in the Harderian glands of mice may be synthesized mainly by type B cells.

ULTRACYTOCHEMICAL STUDIES ON THE SYNAPTIC TRANSMISSION IN MOUSE TASTE BUD.

M. Kudoh. Dept. of Biol., Fukushima Med. College, Fukushima.

Type III cell makes synaptic contact with afferent nerve fibers. With a view to examining types of synaptic transmission, ultracytochemical distribution of monoamine and acetylcholinesterase (AChE) was investigated in mouse taste bud. Fluorescence histochemistry by aqueous glyoxylic acid method revealed that the specific fluorescence appeared faintly in taste bud and that it was intensively enhanced by administration of monoamine precursors such as 5-HTP and L-DOPA. In ultracytochemistry by glyoxylic acid-Mg²⁺-KMnO₄ method, the amines were detected in numerous small vesicles throughout the cytoplasm of type III cell after injection of the amine precursors. This indicates that type III cell may be capable of taking up the amines and storing them in small vesicles. But it is doubtful that the amines enclosed in these small vesicles function as neurotransmitters. Ultracytochemical study on AChE revealed that intense activity was clearly observed in rER and around all the intragemmal nerves, especially at the afferent synaptic region, in type III cell. These findings suggest that type III cell is the primary gustatory receptor and the cholinergic process may participate in synaptic transmission in taste perception.

EFFECT OF LOSS OF MECHANICAL STRETCH ON COLLAGEN DEGRADATION IN POSTPARTUM UTERUS OF THE MOUSE.

K. Shimizu and M. Hokano. Dept. of Anat. Tokyo Medical College, Tokyo.

The loss of mechanical stretch from the uterine wall is a signal for starting the collagen degradation in the uterus. To discover how the loss of mechanical stretch from the uterine wall affects the removal of collagen bundles, we compared the distribution of collagen bundles in the endometrium of the pregnant uterine horn (PH) with that of non-pregnant uterine horn (NPH) in unilaterally pregnant mice during the first three postpartum days.

The animals used were female mice of the IVCS strain. At 7 weeks of age, the right oviduct was ligated. After 1 week, they were mated. Animals were killed on the day of parturition or 1, 2, or 3 days postpartum. After sacrifice, the uterine horn was removed and weighed. The sections were stained with picosirius red and then were viewed with polarizing light.

The postpartum involution of NPH was more slowly than that of PH. On the day of parturition, endometrial edema was found in PH but not in NPH. On postpartum day 3, the collagen degradation of the endometrium of NPH was similar to that of PH. These results indicated that the loss of mechanical stretch affects the early period of the postpartum collagen degradation.

FINE STRUCTURES OF JACOBSON'S ORGAN AND OLFACTORY MUCOSA IN SUNCUS (MUSK SHREW).

O. Matsuzaki

Inst. of Biol. Sci., Univ. of Tsukuba, Ibaraki.

The origin of the suncus (musk shrew) was caught in Nagasaki 1976 and was domesticated by Kondo and Oda. This animal is a species of insectivora. Most of the vomeronasal organ of this animal is enclosed by bone. This organ is a blind tube and opens in the mouth. The part including the vomeronasal organ was soaked in 10% EDTA-2Na solution 4 weeks to decalcify. The vomeronasal receptor cells have many mitochondria as many as the olfactory receptor cells. The vomeronasal cells have higher electron density than the other cells. The number of the cilia of an olfactory cell is 10 or so. There are few basal cells on the bottom of the vomeronasal epithelium. Long microvilli are derived from the free surface of the vomeronasal cells. The length of a microvillus is more than 100 μm. A vomeronasal cell have 100 microvilli or so. The vomeronasal cells distribute from ventral to medial surfaces of the organ. The influx and outflux of the stimulus molecules to and from the vomeronasal cavity would be caused by the long and well-movable snout and by contraction and extension of the sinus running along the lateral side of the vomeronasal cavity.