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IMMUNOCYTOCHEMICAL AND ULTRASTRUCTURAL STUDIES
ON THE ENDOCRINE CELLS IN CHICK THYMUS

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Endocrine cells in chick thymus were studied immunocytochemically and ultrastructurally.

Serotonin-, dopamine-, gastrin/CCK-, CCK8-, neurotensin-, peptide YY-, glucagon-, somatostatin-, insulin-, calcitonin-, growth hormone-, and SP-1/chromogranin-immunoreactive cells were detected in the chick thymus by the peroxidase-antiperoxidase technique. These immunoreactive cells, except for the calcitonin cells, were restrictively observed in the medulla and particularly predominated in the juxtacortical medulla. They were polymorphous and were often ovoid in shape. Calcitonin-immunoreactive cells were observed extensively in the deep cortex and medulla, and the cells in the cortex were reticular, while those in the medulla were oval in shape.

Ultrastructurally, the endocrine cells were identified by the presence of numerous secretory granules and by possessing an electron-lucent nucleus. These cells were classified into eleven types by their granule sizes and internal structures. Immunoelectron microscopically, gastrin/CCK-, somatostatin-, serotonin-, calcitonin-, glucagon-, and neurotensin-immunoreactive cells were demonstrated with the protein A-colloidal gold technique.

The developmental profile of serotonin-immunoreactive cells was estimated to examine the possible function of thymic endocrine cells on the maturation of intrathymic lymphocytes. The relative number of serotonin-immunoreactive cells significantly increased from hatching day to one week of age, whereas it then decreased from young chicks to adults. These results suggest that the intrathymic endocrine cells may share some associations with the functional maturation of thymocytes on the neonatal establishment of cell-mediated immunity and humoral immunity.