

- 205.** Histochemical Study of Peroxidase. S. Ochi,
Dept. of Anatomy, Keio University School of
Medicine and H. Ogawa, Dept. of Otolaryngology,
Tokyo Municipal Okubo Hospital.

Two different substrates, hydrogen donors (HD) and hydrogen acceptors (HA), are required for the histochemical study of peroxidase activities (POD) such as myeloperoxidase (MPO) and horseradish peroxidase (HRP). Although benzidine and diaminobenzidine (DAB) are frequently used as HD, they are considered to be carcinogens. Therefore, research for a new HD is desired. We have already reported a new highly sensitive and stable method for detecting POD based on the systematic study with POD staining using a combination of HD—i.e., with 3-methyl-2-benzothiazolinone hydrozone hydrochloride (MBTH)-naphthol group (41 kinds) and with MBTH-phenol group (102 kinds). Simultaneously, we have pointed out that H₂O₂ used as HA has an optimal range of concentration. The optimal concentration range, which varies according to the POD, is considered important in detecting POD activities. That is, when the concentration of HA is high in any given amount of HD, enzyme action is prevented or retarded. Therefore, when POD activity is weak in detecting endogenous POD activity, histochemical study using an optical microscope fails to reveal any positive reactions in many cases. This is a problem especially in cases of leukemia because the diagnosis depends largely on enzyme reactions. In this study, the quantitative relationship of HD and HA was determined in view of their in vitro reaction to MPO. Moreover, the relationship of various substrates (that have been reported by various investigators) to H₂O₂ and their sensitivities were compared.

- 206.** Immunohistochemical Studies on Gastrin Releasing Peptide (GRP) and ACTH Cells in the Lung.—Normal and Pathological Conditions— Y. Tsutsumi, Y. Osamura, K. Watanaabe and N. Yanaihara*, Tokai Univ, Isehara

GRP is one of the brain-gut peptides and is a mammalian analog of amphibian bombesin which is known to be present in the fetal bronchial Kul-tschitzky cells. The appearance of GRP and ACTH immunoreactive cells in paraffin sections of normal and pathological human lungs was studied with the peroxidase-labeled antibody method.

During the fetal development, GRP immunoreactive bronchial endocrine cells were discerned at the 12th gestational week and increased to form small aggregates in later fetal life. A few GRP cells were present in almost all sections of adult lungs. But, ACTH cells were not found in these normal fetal or adult lungs. In bronchiectasia and/or lung fibrosis, the GRP cells occasionally formed hyperplastic small nests at the basal part of the bronchial mucosa. A small number of ACTH cells appeared in these non-neoplastic foci. Five tumorlets, all originated in fibrotic lungs, showed the constant appearance of the GRP immunoreactivity with occasional ACTH cells. Five out of 7 carcinoids (including small cell carcinomas, intermediate cell type) could deserve to be designated as "GRPoma" from the numbers of GRP cells. In 4 out of 10 oat cell carcinomas, a few GRP cells were recognized. The ACTH cells in these endocrine tumors were confined to the areas with the GRP cells. As conclusions, GRP, a peptide with a potentiality of bronchial contraction, seems to be a good marker of bronchial endocrine cells in both physiological and pathological conditions. In addition, the production of ACTH may be induced within the non-neoplastic as well as neoplastic bronchial GRP cells. (*Shizuoka Col of Pharm, Shizuoka)