Studies on the Technique of the Local Labeling of the Human Stomach Epithelium

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Autoradiography has enabled detailed study on cell proliferation and differentiation and dynamic analysis of cell function.

Application of autoradiography to the study of the human stomach epithelium has long been hoped for.

(1) *In vitro labeling*

This is easy to carry out, but the ability of the DNA synthesis of cell is rapidly diminished after explantation and if this ability were kept, it is not same as in vivo.

(2) *In vivo labeling*

To study the proliferation in situ, in vivo autoradiography is needed. But in the intravenous administration to human massive dosages of labeled compounds are required to obtain a good labeling. Comparing various methods, it was established that with local labeling method autoradiographic result is identical with that of intravenous administration. The local labeling method is best suited for human studies because of its small dosage of labeled compound and of negligible effect to the human body; the labeled tissue is totally removed by subsequent gastrectomy.

The followings are necessary to obtain good results in the local labeling method.

1. Minimal dosages of labeled compounds to get good labeling are ^{3}H-thymidine 25 μc, $^{35}SO_4$ 250 μc and ^{3}H-glucose 250 μc.
2. Use of 5% isotonic glucose solution to dilute the label enhances isotopic incorporation.
3. The labeled compound should be carefully injected into the lamina propria by a syringe for mantoux reaction from mucosal surface after gastrotomy.
4. Marking with suture thread of injected area of labeled compound is needed to get the labeled specimen after gastrectomy without fail.

A Study on Scintigrams of the Stomach Using ^{131}I-Sialogastron and ^{131}I-Urogastron

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The clinical observation that the incidence of peptic ulcer is low in pregnant women lead to the discovery of urogastron (U.G.). Code et al. noted the existance in the salive of a substance which had an inhibitory effect upon gastric secretion. By studies in experimental animals, this substance was shown to possess an antisecretory, antiulcerogenic effect which was similar to that of urogastron, and was named sialogastron (S.G.).

In order to study the mode of absorption of U.G. and S.G., the changes of radioactivity in the stomach after oral administration of ^{131}I-S.G. and ^{131}I-U.G. were measured by means of linear scanning and gastric photoscanning technic. ^{131}I-S.G. and ^{131}I-U.G. were produced according to the method of Greenwood and Hunter. ^{131}I-U.G. was shown to be free of inorganic ^{131}I radiopaperchromatography, and to possess an intact biological