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FURTHER OBSERVATIONS ON THE ALLEGED PRESENCE
OF NON-ARGYROPHILE ARGENTAFFIN CELLS
IN THE HUMAN GASTRO-INTESTINAL TRACT

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With 2 Figures in the Text

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It is now generally recognized that the so-called enterochromaffin cells of the human gastro-intestinal tract are subdivisible into two types on the basis of their silver reducing properties. The pre-enterochromaffin cells can be demonstrated by silver impregnation techniques (e.g., Bodian 1963) that involve the use of reducing agents or developers (i.e., they give a positive argyrophile reaction). The enterochromaffin cells proper (or argentaffin cells) possess the ability to reduce ammoniacal-silver, or hexamine-silver, without the aid of an extraneous developer (i.e., they give a positive argentaffin reaction). While it is generally assumed that all argentaffin cells are also argyrophile, Hellweg (1952) and Hampferl (1952) claim that about 5% of argentaffin cells are non-argyrophile. In an earlier paper (Singh 1963) I have shown that the findings of Hellweg and of Hampferl cannot be substantiated and that a critical analysis of their work indicates that their findings can be explained on the basis of shortcomings in their technique. Professor Hampferl objects to my findings on the ground that the methods used by me are not exactly the same as those used by Hellweg (see addendum to Singh, 1963). In my earlier investigation the Gomori hex-amine, Schmorl, and diazonium coupling methods are used to demonstrate argentaffin cells whereas Hellweg uses the Masson-Hamperl method. In view of Professor Hampferl’s objections it is considered necessary to repeat my investigation using the Masson-Hamperl method. The findings obtained are reported in this paper.

Material and methods

The material for this investigation consisted of portions of various parts of the human gastro-intestinal tract obtained from surgical resections and from human foetuses. All the material was fixed in 10% formol saline. Mounted paraffin sections were treated as follows:

1. The sections were stained by the Masson-Hamperl method.

2. Each section was photographed to maintain an exact record of the argentaffin cells present.

3. The sections were bleached by passing them through solutions of iodine and sodium thiosulphate.

4. The sections were then stained by the Bodian method to demonstrate the argyrophile cells. The sections were again photographed and the argentaffin and argyrophile cells in each section compared. It was thus possible to compare the cells staining by the Masson-Hamperl and the Bodian methods with absolute accuracy.
Fig. 1. Photomicrograph of a section through the pelvic colon of a human adult. The section is stained by the Masson-Hamperl method. The argentaffin cells present are numbered 1 to 56. Compare with Fig. 2. ×170

Observations

Throughout the human gastro-intestinal tract, both in adults and foetuses, it is found that all the cells staining by the Masson-Hamperl method can also be demonstrated by the Bodian method (compare Figs. 1 and 2). In addition the Bodian method also demonstrates several cells not stained by the Masson-Hamperl method. In other words the human gastrointestinal tract contains two types of silver reducing cells. The first type is argentaffin as well as argyrophile; and the