

ABSTRACT

Histochemical and Immunohistochemical Studies of the Effects of Chronic Diabetes and Anti-inflammatory Drugs on the Enteroendocrine Cells of Alloxan-Diabetic Sprague Dawley Rats

Camille Vanessa Mitchell

A group of hormone-secreting cells is scattered throughout the mucosa of the gastro-intestinal tract. These cells are collectively called enteroendocrine cells. Some of these cells have common embryonic origins with endocrine cells of the pancreas and they secrete hormones, which are structurally and/or functionally similar to those secreted by endocrine cells of the pancreas.

Diabetes mellitus results when the beta cells of the endocrine pancreas are depleted or hypofunctional. In this situation, it is speculated that enteroendocrine cells which secrete hormones involved in carbohydrate metabolism, will undergo changes aimed at maintaining carbohydrate homeostasis.

The following histochemical methods were used to demonstrate the distribution of enteroendocrine cells: Lead Hematoxylin, Grimelius, Acid Hydrolysis Basophilia, Toluidine Blue Metachromasia and Acid Diazonium. Immunohistochemical techniques were used to determine the distribution of Bombesin, Glucagon and VIP-secreting cells.

Enteroendocrine cells are found in the mucosa of the stomach, small intestine, and the colon. It was found that chronic diabetes mellitus increased the population of most of these enteroendocrine cells and that prednisolone inhibited this increase.

The purpose of this investigation is to determine:

- i) how enteroendocrine cells react to chronic diabetes mellitus and the effect of prednisolone on such reaction
- ii) the possible role that the proliferation of some of these enteroendocrine cells may play in the management of diabetes, or in the pathogenesis of some of the complications of diabetes.

Keywords: Camille Vanessa Mitchell; enteroendocrine cells, chronic diabetes, prednisolone treatment, and diabetes.