Editorial Note
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Editorial Note on Histochemistry

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Editorial

Histochemistry is comprised of two words Histo & Chemistry, which means the chemistry of tissues. In the year 1800, histochemistry became a part of science and now it is one of the most widely used techniques to help scientists localize and visualize cellular components, tissues, and other living structures. This technique uses different stains and indicators, which reacts with the cellular components, to develop tiny colored structures that could be easily observed under a microscope. Histochemistry involves the aspect of both Chemistry and Histology.

There are different techniques used to stain the cells or tissue to observe the colored structures under the microscope. However, cells can't be directly stained. Before proceeding with the staining part, there are steps involved in coloring the cell;

- Animal treatment and tissue processing
- Fixation of tissues and cells (chemical fixation and cryo-fixation)
- Embedding and sectioning
- Staining & observation of specimen by microscopy

Enzyme histochemistry serves as a link between biochemistry and morphology. It is based on metabolization of a substrate provided to a tissue enzyme in its orthotopic localization. Visualization is accomplished with an insoluble dye product. It is a sensitive dynamic technique that mirrors even early metabolic imbalance of a pathological tissue lesion, combined with the advantage of histotopographic enzyme localization. With the advent of immunohistochemistry and DNA-oriented molecular pathology techniques, the potential of enzyme histochemistry currently tends to be underrecognized.

This review aims to draw attention to the broad range of applications of this simple, rapid and inexpensive method. Alkaline phosphatase represents tissue barrier functions in brain capillaries, duodenal enterocyte and proximal kidney tubule brush borders. Decrease in enzyme histochemical alkaline phosphatase activity indicates serious functional impairment.

Enzyme histochemical increase in lysosomal acid phosphatase activity is an early marker of ischemic tissue lesions Over the last four decades, acetylcholinesterase enzyme histochemistry has proven to be the gold standard for the diagnosis of Hirschsprung disease and is one of the most commonly applied enzyme histochemical methods today. Chloroacetate esterase and tartrate-resistant phosphatase are both resistant to formalin fixation, EDTA decalcification and paraffin embedding.

Early enzyme histochemical insight into development of a pathologic tissue lesion and evaluation of function and vitality of tissue enhance our understanding of the pathophysiology of diseases. In this process, enzyme histochemistry constitutes a valuable complement to conventional histology, immunohistochemistry and molecular pathology for both diagnostic and experimental pathology.

Enzyme histochemistry is a morphological technique applied to functional questions in histopathology. Enzyme histochemistry constitutes a link between biochemistry and morphology and provides important information complementary to conventional histology, immunohistochemistry and molecular pathology.

Enzyme histochemistry combines the biochemical analysis of enzyme activity with information on its topographical localization. The basic techniques of enzyme histochemistry are described in detail in the laboratory manuals of Pearse, Meier-Ruge, Meier-Ruge and Bruder and Lojda and Schiebler.

The goal of histochemistry is to provide color and contrast to microscopic images. The field uses disparate techniques to accomplish the specific labelling of biological structures. Histochemists pioneered the use of small-molecule cellular stains, labelled molecules such as antibodies, and enzyme-mediated detection and signal amplification. Historically, however, histochemistry has been synonymous with the imaging of fixed (i.e., dead) cells and tissues. The advent of genetic manipulation techniques has greatly expanded histochemical methods to living cells. This review examines the current collection of labelling strategies and discusses the correlating fluorescent dyes that allow biologists to add color to live systems.

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