



MONOCLONAL ANTI-INSULIN

Mouse Ascites Fluid

Product No. I 2018

Product Description

Monoclonal Anti-Insulin (mouse IgG1 isotype) is derived from the K36aC10 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from an immunized mouse. Human insulin was used as the immunogen. The isotype was determined using Sigma ImmunoType™ Kit (Product Code ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Product Code ISO-2).

Monoclonal Anti-Insulin reacts specifically against insulin in RIA, immunodot and immunocytochemistry.¹⁻³ The antibody reacts with insulin purified from the pancreas of human, bovine, horse and sheep and with human proinsulin.³ It may be used for the immunocytochemical staining of Bouin-fixed and formalin-fixed, paraffin-embedded pancreatic tissue sections. It may also be used in RIA and dot blots (native and denatured). The product binds to insulin with an affinity constant of 8.8×10^9 L/M in RIA.^{1,2} Cross reaction has been observed with insulin-containing cells in fixed sections of pancreas from human, monkey, porcine, dog, rabbit, bovine, sheep, rat, guinea pig, and cat.

Monoclonal Anti-Insulin may be used for the localization of insulin using RIA, dot blot and immunocytochemistry.

Insulin is a 51-amino acid polypeptide composed of A and B chains connected by disulfide bonds.⁴ Its precursor, proinsulin, is a single-chain molecule consisting of A and B chains connected through the C-peptide. Proinsulin, which has little biological activity, is cleaved by proteases within its cell of origin into the insulin molecule and the C-terminal basic residue. The main storage sites for insulin and the C-peptide are the pancreatic islets. Insulin is one of the major regulatory hormones of intermediate metabolism throughout the body. The biological actions of this hormone involve integration of carbohydrate, protein, and lipid metabolism. Insulin enhances membrane transport of glucose, amino acids, and certain ions. It also promotes glycogen storage, formation of triglycerides and synthesis of proteins and nucleic acids. The exact mechanism(s) by which insulin achieves these intracellular effects remains somewhat elusive, but is assumed to involve activation of one or more second messengers. Immunocytochemical investigations have

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localized insulin in the B or β cells of pancreatic islets of Langerhans. These cells, characterized for many years on the basis of their histochemical and ultrastructural features, comprise 70-80% of the pancreatic islet cells, and are located toward the center of the islets. The hormone is stored inside secretory granules which possess a crystalline core displaying a well-defined periodicity by electron microscopy. Deficiency of insulin results in diabetes mellitus, one of the leading causes of morbidity and mortality in the general population. Insulin is also present in tumors of β -cell origin such as insulinoma. Insulin-specific antibodies prove useful as β -cell and tumor markers using immunohistochemical techniques, and as analytical tools in quantification of the hormone.

Reagents

The product is provided as ascites fluid containing 15 mM sodium azide as a preservative.

Precautions and Disclaimer

Due to the sodium azide content a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Product Profile

A minimum working dilution of 1:1,000 is determined by indirect immunoperoxidase labeling of formalin-fixed, paraffin-embedded sections of human or animal pancreas.

In order to obtain best results, it is recommended that each individual user determine their working dilution by titration assay.

Storage

For continuous use, store at 2-8 °C for up to one month. For extended storage, solution may be frozen in working aliquots. Repeated freezing and thawing is **not** recommended. Storage in "frost-free" freezers is **not** recommended. If slight turbidity occurs upon prolonged storage, clarify by centrifugation before use.

References

1. Keilacker, H., et al., Biomed. Biochim. Acta, **45**, 1093 (1986).
2. Witt, S., et al., Acta Histochem., **Suppl. XXXV**, 217 (1988).
3. Madsen, O., Diabetes, **36**, 1203 (1987).
4. Lechago, J., and Shah, I., In: Atlas of Diagnostic Immunohistopathology, True, L. (Ed.), Chapter 14, J.B. Lippincott Co., Philadelphia (1990).

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