Monoclonal Anti-Growth Hormone (HGH)
Clone GH-C2
Mouse Ascites Fluid

Product Number G 8523

Product Description
Monoclonal Anti-Human Growth Hormone (mouse IgG1 isotype) is derived from the hybridoma produced by the fusion of mouse myeloma cells and splenocytes from an immunized mouse. Recombinant Human Growth Hormone was used as the immunogen. The isotype is 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-Human Growth Hormone (HGH) reacts specifically with both natural and recombinant HGH when tested in a radioimmunoassay (RIA) using iodinated HGH. In the RIA the product shows less than 0.1% cross-reactivity at 50% displacement with the following: glucagon, HCG, HPL, insulin, LH, prolactin, and TSH. The antibody stains formalin-fixed, paraffin-embedded human hypophysis but not placenta, adrenal, appendix, liver, pancreas or thyroid tissues. No cross-reactivity with tissues from dog or cat is observed.

Human Growth Hormone (HGH, somatotropin) is a single chain polypeptide of 191 amino acids with a molecular weight of approximately 22 kDa. It is the major hormone produced in the anterior pituitary gland by the acidophilic cells. It is involved in a wide range of metabolism and growth functions and shares significant structural homology and biological activity with other phylogenetically related hormones such as prolactin and placental lactogen. Human growth hormone actions are believed to be mediated predominantly through a group of polypeptide growth factors known as the somatomedins or insulin-like growth factors. These growth factors are released by target organs in response to the hormone and also exert feedback control over the hypothalamus and anterior pituitary gland to inhibit further growth hormone secretion. The most dramatic function of growth hormone is to accelerate growth, although it also influences several other metabolic processes such as milk secretion and lypolysis in synergy with other hormones.

The measurement of circulating HGH is used in the assessment of hyposomatotropism and hyper-somatotropism and their resultant clinical disorders. Hyposomatotropism (hyposecretion of HGH) may be due to hypopituitarism or to an isolated defect at the hypothalamic level. Hypopituitarism may be idiopathic, or may result from such states as surgical ablation of non-secretory pituitary tumors. Growth retardation is the most significant manifestation of HGH deficiency, but retardation may also result from the failure of adequate amounts of HGH to initiate production of somatomedins (Laron dwarfism), or from an end-organ defect where tissues fail to respond to HGH somatomedins (Turner's syndrome). In both of these latter situations circulating HGH levels are normal. Measurements of HGH are useful in determining whether growth retardation in children is an abnormality of secretion or physiological ineffectiveness and also in separating those with HGH deficiency problems from those with other causes of growth failure (e.g. juvenile hypo-thyroidism, gonadal disorders, inadequate nutrition). Hypersecretion of HGH results in gigantism and acromegaly.

Since the normal levels of HGH are low (1 ng/ml for males, 4.2 ng/ml for females) and with the short half-life (20-30 minutes) the diagnosis of growth hormone disorders traditionally depended upon demonstrating whether a change in HGH concentration occurs in response to provocative inhibition or stimulation, a measure of the ability of the anterior pituitary gland to secrete the hormone.

Reagents
The product is provided as diluted ascites fluid containing 1% bovine serum albumin as a stabilizer and 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.
**Storage/Stability**
For continuous use, store at 2-8 °C. For extended storage, the 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 the solution by centrifugation before use.

**Product Profile**
Monoclonal Anti-Human Growth Hormone may be used for determination of hormone levels, the study of hypothalamus-hypophysial function and immunohistochemical identification of the hormone.

**Immunohistology**
A minimum dilution of 1:200 was determined by indirect immunoperoxidase labeling of formalin-fixed, paraffin-embedded sections of human pituitary tissue using the Mouse ExtrAvidin<sup>7</sup> Staining Kit (Product Code EXTRA-2).

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

**RIA**
A minimum working dilution of 1:1,200 was determined using iodinated HGH (50 pg/tube) with a specific activity of approximately 100μCi/μg as tracer and 0.1 ml of the antibody.

It is recommended that the antiserum first be evaluated in the particular assay system chosen due to differences in systems and procedures.

**Specificity**
Specificity of the antiserum is defined as the ratio of antigen concentration to cross-reactant concentration at 50% inhibition of maximum binding. The cross-reactivity data obtained in the second antibody PEG I<sup>125</sup> RIA system is as follows:

<table>
<thead>
<tr>
<th>Cross-reactant</th>
<th>% Cross-reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>HGH</td>
<td>100</td>
</tr>
<tr>
<td>Glucagon</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>HCG</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>HPL</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Insulin</td>
<td>&lt;0.01</td>
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<tr>
<td>LH</td>
<td>&lt;0.01</td>
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<tr>
<td>Prolactin</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>TSH</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

Sensitivity is defined as the 90% intercept of a B/B<sub>0</sub> standard curve. In the above system, the sensitivity has been found to be 100 pg/tube.

**RIA Affinity Constant**
The affinity constant (K<sub>a</sub>) is determined by a Scatchard plot using this RIA system.

\[ K_a = 1 - 5 \times 10^{10} \text{ L/M} \]

**References**

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