**Recombinant Human Iduronate 2-Sulfatase/IDS**

**Catalog Number: 2449-SU**

### DESCRIPTION

**Source**
Mouse myeloma cell line, NS0-derived human Iduronate 2-Sulfatase/IDS protein Ser26-Pro550, with a C-terminal 10-His tag

Accession #: P22304

**N-terminal Sequence**
Ser26

**Predicted Molecular Mass**
61 kDa

### SPECIFICATIONS

**SDS-PAGE**
Multiple bands between 74-91 kDa, reducing conditions

**Activity**
Measured by its ability to hydrolyze the substrate 4-Nitrocatechol Sulfate (PNCS). The specific activity is > 1.0 pmol/min/µg, as measured under the described conditions.

**Endotoxin Level**
<1.0 EU per 1 µg of the protein by the LAL method.

**Purity**
>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.

**Formulation**
Supplied as a 0.2 µm filtered solution in Tris and NaCl. See Certificate of Analysis for details.

### Activity Assay Protocol

**Materials**
- Assay Buffer: 50 mM Sodium Acetate, 100 mM NaCl, pH 5.0
- Recombinant Human Iduronate 2-Sulfatase/IDS (rhIDS) (Catalog # 2449-SU)
- Substrate: 4-Nitrocatechol Sulfate (4-PNCS) (Sigma, Catalog # N-7251)
- NaOH (Sigma, Catalog # S-0899)
- 96-well Clear Plate (Costar, Catalog # 92592)
- Plate Reader (Model: SpectraMax Plus by Molecular Devices) or equivalent

**Assay**
1. Dilute rhIDS to 20 ng/µL in Assay Buffer.
2. Dilute Substrate to 2 mM in Assay Buffer.
3. Combine equal volumes of 20 ng/µL rhIDS and 2 mM Substrate. Include a Substrate Blank containing Assay Buffer and Substrate.
4. Incubate at 37 °C for 24 hours.
5. Stop reaction by adding equivalent volume (total volume of step 3) of 0.2 M NaOH to reaction tubes.
6. Load 200 µL from each reaction tube into the plate.
7. Read at 510 nm (absorbance) in endpoint mode.
8. Calculate specific activity:

   \[
   \text{Specific Activity} \text{ (pmol/min/µg)} = \frac{\text{Adjusted Abs}^* \times \text{Conversion Factor}^{**}}{\text{Incubation time (min)} \times \text{amount of enzyme (µg)}}
   \]

   *Adjusted for Substrate Blank
   **Derived using calibration standard P-Nitrocatechol (PNC) (Sigma, Catalog # N15553).

**Final Assay Conditions**
Per Well:
- rhIDS: 1.0 µg
- Substrate: 0.5 mM

### PREPARATION AND STORAGE

**Shipping**
The product is shipped with polar packs. Upon receipt, store it immediately at the temperature recommended below.

**Stability & Storage**
Use a manual defrost freezer and avoid repeated freeze-thaw cycles.
- 6 months from date of receipt, -20 to -70 °C as supplied.
- 3 months, -20 to -70 °C under sterile conditions after opening.

### BACKGROUND

As a member of the sulfatase family, IDS is required for the lysosomal degradation of the glycosaminoglycans (GAG) heparan sulfate and dermatan sulfate (2, 3). It hydrolyzes the 2-sulfate group of the L-iduronate 2-sulfate units of the GAG. The IDS deficiency results in mucopolysaccharidosis II (MPS II or Hunter syndrome), an X-linked inborn error leading to lysosomal accumulation of the GAG and its excretion in urine. MPS II has a wide spectrum of clinical manifestations ranging from mild to severe. The deduced amino acid sequence of human IDS consists of a signal peptide (residues 1-25), a pro peptide (residues 26-33) and a mature chain (residues 34-550) that may be further processed into the 42 kDa chain (residues 34-455) and the 14 kDa chain (residues 456-550) (1). rhIDS corresponds to the single chain and has sulfatase activity described above.

### References