

## Product Information

### Monoclonal anti-Superoxide Dismutase (SOD)

#### Clone SD-G6

Mouse Ascites Fluid

Product No. **S 2147**

#### Product Description

Monoclonal Anti-Superoxide Dismutase (mouse IgG1 isotype) is derived from the hybridoma produced by the fusion of mouse myeloma cells and splenocytes from an immunized mouse. Recombinant, human copper-zinc superoxide dismutase (Cu-Zn-SOD) was used as the immunogen. The isotype is determined using Sigma ImmunoType<sup>™</sup> Kit (Product Code ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Product Code ISO-2).

Monoclonal Anti-Superoxide Dismutase (SOD) recognizes natural (human erythrocyte SOD) and recombinant SOD (human Cu-Zn-SOD and human placental SOD) by ELISA. In an ELISA, no reactivity was observed with SOD from the following sources: bovine erythrocyte, kidney and liver, bacillus stearothermophilus, dog erythrocyte, *E. coli* (Fe or Mn), and horseradish. In immunoperoxidase techniques on formalin-fixed tissues the antibody reacts with SOD in human liver and salivary gland, and rat and dog salivary gland. The monoclonal antibody does not recognize SOD in immunoblotting.

Monoclonal Anti-Superoxide Dismutase may be used for the immunochemical detection of SOD including the enzymatically inactive form of the enzymes.

Superoxide Dismutase (SOD) is a family of metalloenzymes widely distributed in both plants and animals. Superoxide dismutases appear to protect cells against reactive free radicals by scavenging the superoxide radicals produced by ionization radiation or through other mechanisms. The enzymes catalyze the dismutation (destruction) of the superoxide anion in  $O_2$  and  $H_2O_2$ . In mammalian tissues, three types of superoxide dismutase [Cu-Zn-SOD, Mn-SOD, extracellular (EC)-SOD] occur. These enzymes are encoded by three separate genes on the human chromosome. The Cu-Zn-SOD and EC-SOD are localized in the cytosol and extracellular fluid, respectively, whereas Mn-SOD is reported to be localized in the mitochondrial matrix. The complete amino acid sequence of SOD has been reported. The various sources of SODs have variable molecular sizes. Human Mn-SOD isolated from liver is composed of

22 kDa subunits each containing one Mn atom, while SOD from bovine erythrocyte has a molecular weight of 32.5 kDa. Superoxide Dismutase occurs in high concentrations in brain, liver, heart, erythrocytes, and kidney.

Superoxide Dismutases have been proposed as clinically useful for a wide variety of applications including prevention of oncogenesis, tumor promotion, tumor invasiveness, radiation damage, reduction of the cytotoxic and cardiotoxic effects of anticancer drugs, as a measure against the aging process and as anti-inflammatory agents. The specific activity of Cu-Zn-SOD is increased in erythrocytes from patients with Down's syndrome, uremia, renal failure and liver disease. Its activity is low in the erythrocytes of patients with Fanconi's anemia, sickle cell anemia, Duchenne muscular dystrophy or idiopathic pulmonary hemosiderosis. There is increased Mn-SOD activity and decreased Cu-Zn-SOD activity in plasma of patients with alcoholic injuries to the liver. Tumor cells are generally, but not always, low in SOD activity and the degree of loss of SOD activity is directly proportional to the degree of differentiation of the tumor. Poorly differentiated tumors have low SOD activity and well-differentiated tumors having high SOD activity.

#### Reagents

The product is provided as ascites fluid with 0.1% 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

The minimum antibody titer of 1:300 was determined by ELISA using human erythrocyte SOD at 50  $\mu$ g/ml as the antigen.

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, 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.

PCS/KMR 02/02

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.