



Product Information

MONOCLONAL ANTI-CATALASE

Clone CAT-505

Purified Mouse Immunoglobulin

Product Number **C 0979**

Product Description

Monoclonal Anti-Catalase (mouse IgG1 isotype) is derived from the CAT-505 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from BALB/c mice immunized with a purified human erythrocyte catalase. 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). The antibody is purified from culture supernatant of hybridoma cells grown in a bioreactor.

Monoclonal Anti-Catalase reacts specifically with human catalase. The antibody may be used in ELISA, immunoblotting (60 kDa in denatured reduced preparations), immunocytochemistry (3% paraformaldehyde, 0.5% Triton X-100) and immunohistochemistry (formalin-fixed paraffin-embedded sections). Reactivity has been observed with human, bovine, rat, and mouse catalase.

Living organisms produce reactive oxygen species such as H_2O_2 during physiological processes, and in response to external stimuli such as UV radiation. Biologically relevant oxidants (e.g. hydrogen peroxide and nitric oxide) that serve as pleiotropic signaling molecules have been well documented.¹ To protect themselves against oxidative attacks, but also to maintain a redox balance in their different subcellular compartments, cells have evolved complex mechanisms.^{2,3} The antioxidant defense systems include: nonenzymatic antioxidants (vitamin E, vitamin C, vitamin A, and uric acid), enzymes with antioxidant properties (catalase, superoxid dismutase, and glutathione peroxidase) as well as low molecular weight reducing agents (glutathione and thioredoxin).⁴ Oxidants and antioxidants represent a set of signaling molecules that modify function through redox. Antioxidants govern intracellular redox status; similar to phosphorylation, redox can serve as the critical switch in many processes. Catalase is one of the most efficient enzymes known. In most mammalian cell types catalase is localized in peroxisomes. Catalase (EC 1.11.1.6, H_2O_2 oxidoreductase) is a tetrameric haemin-enzyme consisting of 4 identical tetrahedrally arranged subunits of 60 kDa.

It contains 4 ferriprotoporphyrin groups per molecule, and its molecular mass is about 240 kDa.⁵ Catalase reacts with hydrogen peroxide, a reactive oxygen species, activating its decomposition into water and molecular oxygen, and it reacts with hydrogen donors (methanol, ethanol, formic acid, phenol, etc.). It thus functions as a natural anti-oxidant, protecting cells against oxidative damage of proteins,⁶ lipids,^{7,8} and nucleic acids.^{9,10} Catalase also plays a role in gene expression and apoptosis.¹¹⁻¹³ Antioxidants have been identified in association with a variety of diverse cellular functions including growth control, proliferation, differentiation, immune response, tumor promotion, and apoptosis, as well as activation of viruses, notably HIV, from latency. Monoclonal antibodies reacting specifically with catalase are useful tools for the detection and determination of the functional activity of catalase.

Reagents

Monoclonal Anti-Catalase is supplied as a solution in 0.01 M phosphate buffered saline pH 7.4, containing 15 mM sodium azide as a preservative.

Antibody Concentration: Approx. 2 mg/ml.

Precautions and Disclaimer

Due to the sodium azide content a material safety 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 up to one month. For extended storage, freeze 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. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

A working concentration of 0.5 – 1 µg/ml is determined by immunoblotting using a whole extract of cultured human hepatocellular carcinoma Hep G2 cells.

Note: In order to obtain best results in different techniques and preparations we recommend determining optimal working concentration by titration test.

References

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