



Product Information

MONOCLONAL ANTI-ORNITHINE DECARBOXYLASE (ODC)

CLONE ODC-29

Mouse Ascites Fluid

Product No. **O 1136**

Monoclonal Anti-Ornithine Decarboxylase (ODC) (mouse IgG2b isotype) is derived from the ODC-29 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from immunized BALB/c mice. Recombinant mouse ornithine decarboxylase was used as the immunogen. The isotype is determined using Sigma ImmunoType™ Kit (Sigma ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Sigma ISO-2). The product is provided as ascites fluid with 0.1% sodium azide (see MSDS)* as a preservative.

Specificity

Monoclonal Anti-Ornithine Decarboxylase (ODC) recognizes ornithine decarboxylase (ODC, 53 kD) in immunoblotting, immunoprecipitation, immunohistochemistry and ELISA. In immunohistochemical staining of formalin-fixed, paraffin-embedded human prostate and colon carcinoma, the labeling is confined to the epithelial cells. Cross reactivity has been observed with human and mouse.

Description

Polyamines are polycationic cellular components which play an essential role in cell growth and differentiation.^{1,2} Their intracellular levels rise during proliferation processes such as embryogenesis, liver regeneration and during malignant transformation. Besides their role in cellular growth processes, polyamines and particularly putrescine have been shown to function as modulators of calcium fluxes at the cell membrane and of neurotransmitter release from nerve endings. Polyamine synthesis is sharply activated in various pathological states of the brain: cerebral ischemia, transient hypoglycemic coma, seizure, electrical stimulation, lesions, excitotoxic conditions and disturbances in the functioning of the blood-brain barrier induced by a cold lesion, hypertonic bolus injection or amnesia.^{3,4} Polyamine synthesis is controlled by the activity of the key enzymes ornithine decarboxylase (ODC) and S-adenosylmethionine decarboxylase (SAMDC). Ornithine decarboxylase (ODC, EC 4.1.1.17, 53 kD), the initial and rate-limiting enzyme in the biosynthetic pathway of polyamines, is involved in the conversion of ornithine to putrescine. Its amino acid

sequence is well conserved among species; the overall identity of the amino acid sequences of mouse, rat and human ODC proteins is greater than 90%. The biological activity of ODC is rapidly induced in response to virtually all agents known to promote cell proliferation including hormones, drugs, growth factors, mitogens and tumour promoters. Hormonal activation of tissues that induces an activation of calcium fluxes into the cell and from intracellular stores into the cytoplasm causes, within seconds, a short-lasting increase in ODC activity and polyamine levels. Severe metabolic stress triggers pathological disturbances in polyamine metabolism that are characterized by a sharp increase in ODC activity, most likely resulting from an activation of ODC gene expression, and a marked suppression in SAMDC activity, probably resulting from an inhibition of overall protein synthesis. Many studies have demonstrated that ODC activity is substantially increased in tumors, transformed cells and in some cases, in tissues predisposed to malignant transformation. ODC mRNA levels are also elevated in transformed cells including lung carcinomas and human colon adenomas and carcinomas. ODC activity in colorectal carcinomas has been shown to be greater than that in adenomas, which, in turn, is greater than that of normal mucosa.⁵ *In vivo*, ODC has a half-life of 8-30 min, the shortest half-life time reported in eukaryotic cells. Its activity is regulated at the transcriptional and translational as well as post-translational levels. Several immunochemical and chemical methods for the detection of ODC, which can serve as a marker of proliferation, have been described, but none permits the quantitative estimation of the protein. Monoclonal antibody, reacting specifically with ODC is an essential tool enabling the more precise study of the biological role of the ODC/polyamine system.

Uses

Monoclonal Anti-Ornithine Decarboxylase (ODC) may be used for the localization of ornithine decarboxylase using various immunochemical assays including ELISA, immunoblot, immunoprecipitation, and immunohistochemistry.

Titer: Minimum 1:100

The antibody titer was determined by indirect immunoblotting, using whole cell extract of mouse myeloma cell line, expressing high levels of ornithine decarboxylase.

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

Storage

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.

* 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 hazardous and safe handling practices.

References

1. Hayashi, S. (ed.), Ornithine Decarboxylase: Biology, Enzymology and Molecular Genetics, Pergamon Press, New York (1989).
2. Janne, J., et al., Ann. Med., **23**, 241 (1991).
3. Paschen, W., Molec. Chem. Neuropathol., **16**, 241 (1992).
4. Paschen, W., Cerebrovasc. Brain Metab. Rev., **4**, 59 (1992).
5. O'Brien, M., et al., Cancer, **70**, 1317 (1992).

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