Anti-Human Glyoxalase I (monoclonal)

Immunogen: Recombinant Glyoxalase I

Clone: 4C10

Subtype: IgG1, affinity-purified

Species: Mouse

Description: This monoclonal antibody recognizes an epitope at human recombinant and native glyoxalase I (EC 4.4.1.5). It strongly reacts with glyoxalase I in Western blot under non-reducing as well as reducing conditions (Fig. 1). The antibody is preferably used for immunofluorescence labelling of glyoxalase I in cultured cells (Fig. 2). Glyoxalase I can properly be detected in paraffin section of human tissues (Fig. 3). No cross-reactivity was found with glyoxalase I from mouse, rat and yeast and with human glyoxalase 2.

Recommended fields: Western blot (working dilution: 1 µg/ml) Immunofluorescence (working dilution: 5 to 10 µg/ml) (suitable for the staining of glyoxalase I in paraformaldehyde-fixed cells and cryo-sections of tissues). Immunohistochemistry (working dilution: 10 µg/ml) (suitable for staining glyoxylase I in paraffin-embedded tissue sections)

Package: 200 µg freeze-dried from 200 µl 10 mM phosphate-buffer, pH 7.4, stabilized with 0.1% BSA and sodium azide as preservative. Reconstitute with 200 µl PBS.

Storage: 4°C, avoid repeated freezing and thawing

Safety Information: Sodium azide is a poisonous and hazardous substance which should be handled by trained staff only.
Background

Glyoxalases are involved in detoxification of methylglyoxal (MGO) which arises mainly non-enzymatically from triose phosphates and to a minor extent from aceton and threonine metabolism. Glyoxalase I (GLO 1; lactoylglutathione lyase, (R)-S-lactoylglutathione methylglyoxal-lyase (isomerizing), EC 4.4.1.5) catalyzes condensation of MGO and reduced glutathione (GSH) to form S-lactoylglutathione. Glyoxalase 2 (HAGH, hydroxylacylglutathione hydrolase, S-(2-hydroxyacyl)glutathione hydrolase, EC 3.1.2.6) converts the latter substance to D-lactic acid and GSH which is regenerated within this cycle.

GLO 1 is a zinc metalloenzyme whose crystal structure has been solved (1). The monomer has a molecular mass of approximately 23 kDa as judged by SDS-PAGE under reducing conditions (2). High affinity inhibitors of GLO 1 have been prepared and proposed as antitumor agent (3). Two different alleles are responsible for the red cell GLO 1 polymorphism (A111E) (4). GLO 1 was found over-expressed in some tumors (5) and up-regulation was found in Alzheimer’s disease (6). Changes in expression and genetic variants have been related to aging (7) autism (8) and anxiety (9, 10).

References


Database Information

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**Fig. 1. Western blot**

Reaction of monoclonal antibody (#02-14) with GLO 1. Purified human GLO 1 (0.1 µg) (lane 1); purified human GLO 2 (1 µg) (lane 2), purified yeast GLO 1 (1 µg) (lane 3) and cytosolic extract of human astrocytoma cells (40 µg) were separated by SDS-PAGE gradients gels under reducing condition and blotted to a nylon membrane.

![Western blot image](image1)

**Fig. 2. Immunofluorescence**

Detection of GLO 1 in human astrocytoma cells (1321 N1) fixed by paraformaldehyde (left: GLO 1 immunoreactivity in the cytosol; right: DAPI staining of the nucleus)

![Immunofluorescence image](image2)

Primary antibody: Anti-GLO 1 monoclonal antibody (#02-14) (1 µg/ml)
Secondary Antibody: Goat anti-mouse-Ig-Alexa 488 conjugated

**Fig. 3. Immunohistochemistry**

Detection of GLO 1 in paraffin section of prostate cancer tissue

![Immunohistochemistry image](image3)

Primary antibody: Anti-GLO 1 monoclonal antibody (#02-14) (10 µg/ml)
Secondary Antibody: Goat anti-mouse-Biotin conjugated / Streptavidine-HRP conjugated / DAB/H₂O₂.