

# Galactose Mutarotase (E-4): sc-365556

## BACKGROUND

Galactose Mutarotase is a member of the aldose epimerase family and is involved in hexose metabolism. Through its catalytic activity, Galactose Mutarotase converts  $\beta$ -aldose to  $\alpha$ -aldose on several sugars, including D-glucose, L-arabinose and D-xylose. Found in the cytoplasm of most cells, Galactose Mutarotase plays a key role in galactose metabolism by catalyzing the conversion of  $\beta$ -D-galactose to  $\alpha$ -D-galactose. The enzyme contains two residues, Glu 304 and His 170, that are critical for catalysis, as well as His 96 and Asp 243, which are important for proper substrate recognition by the active site. No known diseases have been associated with mutations in the Galactose Mutarotase gene, although inhibition of Galactose Mutarotase activity could potentially be associated with a build-up of unmetabolized sugars during metabolism.

## REFERENCES

1. Beebe, J.A. and Frey, P.A. 1998. Galactose Mutarotase: purification, characterization, and investigations of two important histidine residues. *Biochemistry* 37: 14989-14997.
2. Beebe, J.A., et al. 2003. Galactose Mutarotase: pH dependence of enzymatic mutarotation. *Biochemistry* 42: 4414-4420.
3. Thoden, J.B., et al. 2003. The catalytic mechanism of Galactose Mutarotase. *Protein Sci.* 12: 1051-1059.
4. Thoden, J.B., et al. 2004. Molecular structure of human Galactose Mutarotase. *J. Biol. Chem.* 279: 23431-23437.
5. Kim, I., et al. 2004. Ribose utilization with an excess of mutarotase causes cell death due to accumulation of methylglyoxal. *J. Bacteriol.* 186: 7229-7235.
6. Thoden, J.B. and Holden, H.M. 2005. The molecular architecture of Galactose Mutarotase/UDP-galactose 4-epimerase from *Saccharomyces cerevisiae*. *J. Biol. Chem.* 280: 21900-21907.
7. Ryu, K.S., et al. 2005. Structural insights into the monosaccharide specificity of *Escherichia coli* rhamnose mutarotase. *J. Mol. Biol.* 349: 153-162.

## CHROMOSOMAL LOCATION

Genetic locus: GALM (human) mapping to 2p22.1; Galm (mouse) mapping to 17 E3.

## SOURCE

Galactose Mutarotase (E-4) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 211-241 within an internal region of Galactose Mutarotase of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-365556 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## APPLICATIONS

Galactose Mutarotase (E-4) is recommended for detection of Galactose Mutarotase of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Galactose Mutarotase (E-4) is also recommended for detection of Galactose Mutarotase in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for Galactose Mutarotase siRNA (h): sc-72266, Galactose Mutarotase siRNA (m): sc-72267, Galactose Mutarotase shRNA Plasmid (h): sc-72266-SH, Galactose Mutarotase shRNA Plasmid (m): sc-72267-SH, Galactose Mutarotase shRNA (h) Lentiviral Particles: sc-72266-V and Galactose Mutarotase shRNA (m) Lentiviral Particles: sc-72267-V.

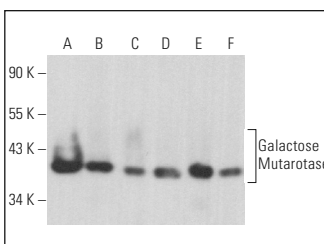
Molecular Weight of Galactose Mutarotase: 42 kDa.

Positive Controls: human small intestine extract: sc-364225, SK-N-SH cell lysate: sc-2410 or Hep G2 cell lysate: sc-2227.

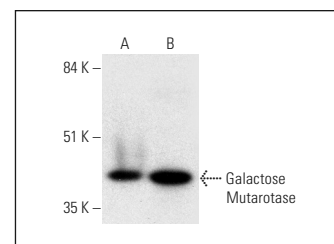
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA



Galactose Mutarotase (E-4): sc-365556. Western blot analysis of Galactose Mutarotase expression in Hep G2 (A), HeLa (B), SK-N-SH (C), SH-SY5Y (D), CCRF-CEM (E) and Neuro-2A (F) whole cell lysates.



Galactose Mutarotase (E-4): sc-365556. Western blot analysis of Galactose Mutarotase expression in Hep G2 whole cell lysate (A) and human small intestine tissue extract (B).

## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.