

Metallothionein 1B/H/X (N-19): sc-12807

BACKGROUND

Metallothionein (MT) is a sulfhydryl- and cysteine-rich protein that is found in microorganisms, plants and all invertebrate and vertebrate animals. Metallothioneins are a group of ubiquitous low-molecular-weight proteins that have functional roles in cell growth, repair and differentiation. Due to their essential role in the protection of cells against the toxicity of cadmium, mercury, and copper, metallothioneins are implicated primarily in metal ion detoxification. Metallothionein, as an acute phase or stress-response protein and free radical scavenger, is related to inflammation and cellular protection from reactive forms of oxygen, ionizing radiation, pharmacological agents and mutagens. Metallothioneins are known to be broadly expressed in heart, liver, kidney, breast and testis tissue. Metallothionein 1H (MT1H), Metallothionein 1B (MT1B) and Metallothionein 1X (MT1X) are 61 amino acid monomeric class I metallothioneins that are encoded by genes mapping to human chromosome 16.

REFERENCES

1. Iachim, E.E., et al. 2000. Immunohistochemical localization of Metallothionein in endometrial lesions. *J. Pathol.* 191: 269-273.
2. Liu, J., et al. 2000. Metallothionein I/II null mice are more sensitive than wildtype mice to the hepatotoxic and nephrotoxic effects of chronic oral or injected inorganic arsenicals. *Toxicol. Sci.* 55: 460-467.
3. Cai, L., et al. 2000. Induction of Metallothionein synthesis with preservation of testicular function in rats following long term renal transplantation. *Urol. Res.* 28: 97-103.
4. Florianczyk, B. and Grzybowska, L. 2000. Metallothionein levels in cell fractions from breast cancer tissues. *Acta Oncol.* 39: 141-143.
5. Theocharis, S.E., et al. 2000. Liver Metallothionein expression in thioacetamide-intoxicated rats. *Pathol. Res. Pract.* 196: 313-319.
6. Kang, Y.J., et al. 2000. Metallothionein inhibits myocardial apoptosis in copper-deficient mice: role of atrial natriuretic peptide. *Lab. Invest.* 80: 745-757.
7. Syring, R.A., et al. 2000. Cloning and sequencing of cDNAs encoding for a novel copper-specific Metallothionein and two cadmium-inducible metallothioneins from the blue crab *Callinectes sapidus*. *Comp. Biochem. Physiol. C Toxicol. Pharmacol.* 125: 325-332.

CHROMOSOMAL LOCATION

Genetic locus: MT1H/MT1X (human) mapping to 16q13, MT1B (human) mapping to 16q12.2.

SOURCE

Metallothionein 1B/H/X (N-19) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the N-terminus of Metallothionein 1H of human origin.

STORAGE

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

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-12807 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Metallothionein 1B/H/X (N-19) is recommended for detection of Metallothionein 1B, Metallothionein 1H and Metallothionein 1X of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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); may cross-react with other metallothionein 1 family members.

Metallothionein 1B/H/X (N-19) is also recommended for detection of Metallothionein 1B, Metallothionein 1H and Metallothionein 1X in additional species, including canine and porcine.

Molecular Weight of Metallothionein 1B/H/X polymerized forms: 15-42 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Mahboobi, H., et al. 2003. Effect of metal-based anticancer drugs on wild type and metallothionein null cell lines. *Biometals* 16: 403-409.
2. Yousuf, S., et al. 2009. Resveratrol exerts its neuroprotective effect by modulating mitochondrial dysfunctions and associated cell death during cerebral ischemia. *Brain Res.* 1250: 242-253.
3. Peng, B., et al. 2012. Microarray-assisted pathway analysis identifies MT1X & NFκB as mediators of TCRP1-associated resistance to cisplatin in oral squamous cell carcinoma. *PLoS ONE* 7: e51413.
4. Lahiri, A. and Abraham, C. 2014. Activation of pattern recognition receptors up-regulates metallothioneins, thereby increasing intracellular accumulation of zinc, autophagy, and bacterial clearance by macrophages. *Gastroenterology* 147: 835-846.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.