

# Carbonyl reductase 1/2/3 (E-5): sc-377174

## BACKGROUND

Carbonyl reductase 1 and Carbonyl reductase 3 belong to the family of short-chain dehydrogenase/reductase proteins that play a role in metabolism throughout the body. Both proteins are monomeric carbonyl reductases that function to catalyze the NADPH-dependent reduction of various carbonyls (generally products of lipid peroxidation) to their corresponding alcohols. Carbonyl reductase 1 and Carbonyl reductase 3 share high sequence similarity at the amino acid level and are responsible for the metabolism of not only endogenous compounds, but of various pharmacological products, as well. Genetic polymorphisms in both proteins result in individual variability at the level of drug metabolism. Defects in the genes encoding Carbonyl reductase proteins have implications in cancer, diabetes and errors in metabolism.

## REFERENCES

1. Watanabe, K., et al. 1998. Mapping of a novel human Carbonyl reductase, CBR3, and ribosomal pseudogenes to human chromosome 21q22.2. *Genomics* 52: 95-100.
2. Terada, T., et al. 2000. Cloning and bacterial expression of monomeric short-chain dehydrogenase/reductase (Carbonyl reductase) from CHO-K1 cells. *Eur. J. Biochem.* 267: 6849-6857.
3. Olson, L.E., et al. 2003. Protection from doxorubicin-induced cardiac toxicity in mice with a null allele of Carbonyl reductase 1. *Cancer Res.* 63: 6602-6606.
4. Lakhman, S.S., et al. 2005. Functional significance of a natural allelic variant of human Carbonyl reductase 3 (CBR3). *Drug Metab. Dispos.* 33: 254-257.
5. Bergholdt, R., et al. 2005. Fine mapping of a region on chromosome 21q21.11-q22.3 showing linkage to type 1 diabetes. *J. Med. Genet.* 42: 17-25.
6. Tanaka, M., et al. 2005. An unbiased cell morphology-based screen for new, biologically active small molecules. *PLoS Biol.* 3: e128.
7. Oppermann, U. 2007. Carbonyl reductases: the complex relationships of mammalian Carbonyl- and quinone-reducing enzymes and their role in physiology. *Annu. Rev. Pharmacol. Toxicol.* 47: 293-322.
8. Gonzalez-Covarrubias, V., et al. 2007. A functional genetic polymorphism on human Carbonyl reductase 1 (CBR1 V88I) impacts on catalytic activity and NADPH binding affinity. *Drug Metab. Dispos.* 35: 973-980.

## CHROMOSOMAL LOCATION

Genetic locus: Cbr1/Cbr3 (mouse) mapping to 16 C4, Cbr2 (mouse) mapping to 11 E2.

## SOURCE

Carbonyl reductase 1/2/3 (E-5) is a mouse monoclonal antibody raised against amino acids 1-94 mapping at the N-terminus of Carbonyl reductase 3 of mouse origin.

## RESEARCH USE

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

## PRODUCT

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

## APPLICATIONS

Carbonyl reductase 1/2/3 (E-5) is recommended for detection of Carbonyl reductase 1, Carbonyl reductase 2 and Carbonyl reductase 3 of mouse and rat origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg 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).

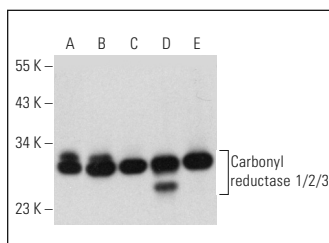
Molecular Weight of Carbonyl reductase 1/2/3: 31 kDa.

Positive Controls: LADMAC whole cell lysate: sc-364189, NIH/3T3 whole cell lysate: sc-2210 or F9 cell lysate: sc-2245.

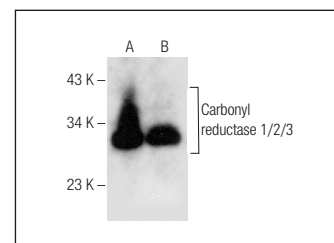
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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



Carbonyl reductase 1/2/3 (E-5): sc-377174. Western blot analysis of Carbonyl reductase 1/2/3 expression in F9 (A), NIH/3T3 (B), EOC 20 (C), RPE-J (D) and H19-7/IGF-IR (E) whole cell lysates.



Carbonyl reductase 1/2/3 (E-5): sc-377174. Western blot analysis of Carbonyl reductase 1/2/3 expression in LADMAC (A) and F9 (B) whole cell lysates.

## STORAGE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.