SANTA CRUZ BIOTECHNOLOGY, INC.

# CES2 (D-15): sc-65022

SANTA CRUZ BIOTECHNOLOGY

*The Power to Question*

## BACKGROUND

CES1 and CES2 are the two major liver carboxylesterases which belong to the type-B carboxylesterase/lipase family. Helping the body in the detoxification of a wide range of xenobiotics, CES1 and CES2 are involved in the hydrolyzing activation of therapeutic ester and amide pro-drugs, as well as in the detoxification of several narcotic compounds. The catalytic activity of CES1 and CES2 is influenced by both the esterification site and the structure/moiety of the amino acid. While CES1 shows high affinity for aromatic and aliphatic esters, CES2 shows high affinity for 3,6-diacetyl and 6-monoacetly esters, such as those found in morphine and morphine derivatives. Since CES1 and CES2 are crucial in the breakdown of various foreign molecules, several therapeutic compounds, such as anti-tumor agents, are structurally designed to target the catalytic sites of one or both of these key carboxylesterase proteins.

## REFERENCES


1. Kim, S.R., Nakamura, T., Saito, Y., Sai, K., Nakajima, T., Saito, H., Shirao, K., Minami, H., Ohtsu, A., Yoshida, T., Saijo, N., Ozawa, S. and Sawada, J. 2004. Twelve novel single nucleotide polymorphisms in the CES2 gene encoding human carboxylesterase 2 (hCE-2). Drug Metab. Pharmacokinet. 18: 327-332.
2. Furihata, T., Hosokawa, M., Fujii, A., Derbel, M., Satoh, T. and Chiba, K. 2005. Dexamethasone-induced methylprednisolone hemisuccinate hydrolase: its identification as a member of the rat carboxylesterase 2 family and its unique existence in plasma. Biochem. Pharmacol. 69: 1287-1297.
3. Kubo, T., Kim, S.R., Sai, K., Saito, Y., Nakajima, T., Matsumoto, K., Saito, H., Shirao, K., Yamamoto, N., Minami, H., Ohtsu, A., Yoshida, T., Saijo, N., Ohno, Y., Ozawa, S. and Sawada, J. 2005. Functional characterization of three naturally occurring single nucleotide polymorphisms in the CES2 gene encoding carboxylesterase 2 (HCE-2). Drug Metab. Dispos. 33: 1482-1487.
4. Landowski, C.P., Lorenzi, P.L., Song, X. and Amidon, G.L. 2006. Nucleoside ester prodrug substrate specificity of liver carboxylesterase. J. Pharmacol. Exp. Ther. 316: 572-580.
5. Geshi, E., Kimura, T., Yoshimura, M., Suzuki, H., Koba, S., Sakai, T., Saito, T., Koga, A., Muramatsu, M. and Katagiri, T. 2006. A single nucleotide polymorphism in the carboxylesterase gene is associated with the responsiveness to imidapril medication and the promoter activity. Hypertens. Res. 28: 719-725.
6. Furihata, T., Hosokawa, M., Masuda, M., Satoh, T. and Chiba, K. 2006. Hepatocyte nuclear factor-4$\alpha$ plays pivotal roles in the regulation of mouse carboxylesterase 2 gene transcription in mouse liver. Arch. Biochem. Biophys. 447: 107-117.
7. Hosokawa, M., Furihata, T., Yaginuma, Y., Yamamoto, N., Koyano, N., Fujii, A., Nagahara, Y., Satoh, T. and Chiba, K. 2007. Genomic structure and transcriptional regulation of the rat, mouse, and human carboxylesterase genes. Drug Metab. Rev. 39: 1-15.
8. Imai, T. 2007. Hydrolysis by carboxylesterase and disposition of prodrug with ester moiety. Yakugaku Zasshi 127: 611-619.


## CHROMOSOMAL LOCATION

Genetic locus: CES2 (human) mapping to 16q22.1.

## SOURCE

CES2 (D-15) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of CES2 of human origin.

## 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-65022 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

CES2 (D-15) is recommended for detection of CES2 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).

CES2 (D-15) is also recommended for detection of CES2 in additional species, including equine, canine and bovine.

Molecular Weight of CES2: 60 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.

## 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.

## PROTOCOLS

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