

# PRODUCT INFORMATION



## HMG-CoA Reductase (human recombinant)

Item No. 14944

### Overview

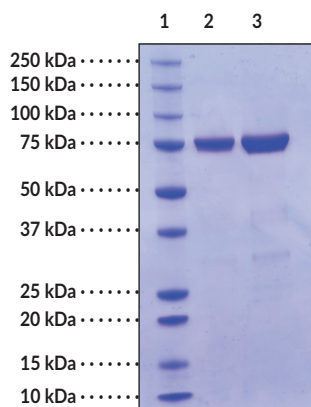
**Synonyms:** 3-hydroxy-3-methylglutaryl-Coenzyme A Reductase, HMGCR, HMGR  
**Source:** Recombinant N-terminal GST-tagged protein expressed in *E. coli*  
**Amino Acids:** 426-888 (N-terminal truncation)  
**Uniprot No.:** P04035  
**Molecular Weight:** 76.5 kDa  
**Storage:** -80°C (as supplied)  
**Stability:** ≥2 years  
**Purity:** *batch specific* (≥85% estimated by SDS-PAGE)  
**Supplied in:** 50 mM Tris, pH 8.0, with 300 mM sodium chloride and 20% glycerol  
**Activity:** *batch specific*  
**Specific Activity:** One unit is defined as the amount of enzyme required to convert 1 μmol of NADPH to NADP<sup>+</sup> per minute at 37°C in 20 mM sodium phosphate, pH 6.5, 100 mM sodium chloride, and 10 mM DTT, containing 300 μM (R,S)-HMG-CoA and 300 μM NADPH.

### Protein

**Concentration:** *batch specific*

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Image



Lane 1: MW Markers  
Lane 2: HMG-CoA Reductase (2 μg)  
Lane 3: HMG-CoA Reductase (4 μg)

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

#### WARRANTY AND LIMITATION OF REMEDY

Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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## Description

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HMG-CoA reductase (HMGR) is a highly regulated enzyme found on the endoplasmic reticulum (ER) membrane. It is bound to the ER membrane by a multi-pass 339 amino acid N-terminal transmembrane domain while the carboxy terminal catalytic region projects into the cytosol.<sup>1,2</sup> HMGR is controlled by feedback regulation from sterols and non-sterol metabolites derived from mevalonate.<sup>3-4</sup> Binding of cholesterol derived from internalized LDL receptors suppresses HMGR. The enzyme is responsible for catalyzing the rate-limiting step in cholesterol biosynthesis. Mevalonate, which is converted to isopentenyl pyrophosphate, is the building block for cholesterol and non-sterol isoprenoids. The four-electron reduction of HMG-CoA catalyzed by HMGR to form mevalonate is the committed step in the biosynthesis of sterols and isoprenoids.<sup>5</sup> Potent inhibitors of HMGR, collectively called statins, are effective in lowering mortality due to hypercholesterolemia by lowering serum cholesterol levels.<sup>6</sup>

## References

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1. Istvan, E.S., Palnitkar, M., Buchanan, S.K., *et al.* Crystal structure of the catalytic portion of human HMG-CoA reductase: Insights into regulation of activity and catalysis. *EMBO Journal* **19(5)**, 819-830 (2000).
2. Luskey, K.L., and Stevens, B. Human 3-hydroxy-3-methylglutaryl coenzyme A reductase. Conserved domains responsible for catalytic activity and sterol-regulated degradation. *The Journal of Biological Chemistry* **260(18)**, 10271-10277 (1985).
3. Brown, M.S., and Goldstein, J.L. Multivalent feedback regulation of HMG CoA reductase, a control mechanism coordinating isoprenoid synthesis and cell growth. *Journal of Lipid Research* **21(5)**, 505-517 (1980).
4. Sever, N., Yang, T., Brown, M.S., *et al.* Accelerated degradation of HMG CoA reductase mediated by binding of insig-1 to its sterol-sensing domain. *Mol. Cell.* **11(1)**, 25-33 (2003).
5. Istvan, E.S., and Deisenhofer, J. Structural mechanism for statin inhibition of HMG-CoA reductase. *Science* **292(5519)**, 1160-1164 (2001).
6. Brown, W.V. Safety of statins. *Current Opinion in Lipidology* **19(6)**, 558-562 (2008).

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