

# PRODUCT INFORMATION



## Fatty Acid Desaturase 1 (human recombinant)

Item No. 25827

### Overview and Properties

**Synonyms:** Acyl-CoA (8-3)-Desaturase,  $\Delta^5$  Desaturase;  $\Delta^5D$ ,  $\Delta^5$  Desaturase, EC 1.14.19., FADS1, FADS $\Delta^5$ , FADS6,  $\Delta^5$  Fatty Acid Desaturase, Linoleoyl-CoA Desaturase ( $\Delta^6$  Desaturase)-Like 1, TU12

**Source:** Recombinant N-terminal histidine-tagged FADS1 N-terminal domain purified from *E. coli*

**Amino Acids:** 2-121

**Uniprot No.:** O60427

**Molecular Weight:** 15.89 kDa

**Storage:** -80°C (as supplied)

**Stability:**  $\geq 1$  year

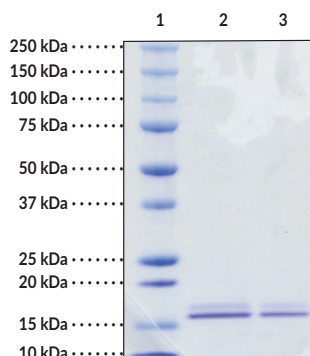
**Purity:** *batch specific* ( $\geq 80\%$  estimated by SDS-PAGE)

**Supplied in:** 50 mM HEPES, pH 8.0, with 150 mM sodium chloride and 10% glycerol

**Protein Concentration:** *batch specific* mg/ml

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

### Image



Lane 1: MW Markers  
Lane 2: FADS1 (4 µg)  
Lane 3: FADS1 (2 µg)

Representative gel image shown; actual purity may vary between each batch.

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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Fatty acid desaturase 1 (FADS1), also known as  $\Delta^5$  desaturase, is a 444-amino acid transmembrane protein encoded by *FADS1*.<sup>1</sup> This product is the N-terminal cytoplasmic domain of FADS1, corresponding to residues 2-121 of the full-length sequence. It catalyzes conversion of dihomo- $\gamma$ -linolenic acid (Item No. 90230) to arachidonic acid (Item No. 90010) and  $\omega$ -3 arachidonic acid (Item No. 90011) to eicosapentaenoic acid (Item Nos. 90110 | 90110.1 | 21908) during the production of  $\omega$ -6 and  $\omega$ -3 long-chain polyunsaturated fatty acids (LC-PUFAs), respectively. Hepatic FADS1 protein levels and mRNA expression are increased in mice with high-fat diet-induced obesity and non-alcoholic steatohepatitis (NASH).<sup>2</sup> Tissue-selective knockdown of *fads1* in the liver, adipose tissue, and reticuloendothelial system of adult hyperlipidemic LDL receptor-null mice promotes hepatic inflammation and formation of atherosclerotic plaques and suppresses hepatic lipogenesis.<sup>3</sup> Increased expression of FADS1 positively correlates with disease-free survival and overall survival times in patients with esophageal squamous cell carcinoma (ESCC).<sup>4</sup>

## References

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1. Lattka, E., Illig, T., Heinrich, J., *et al.* FADS gene cluster polymorphisms: Important modulators of fatty acid levels and their impact on atopic diseases. *J. Nutrigenet. Nutrigenomics* **2(3)**, 119-128 (2009).
2. López-Vicario, C., González-Pérez, A., Rius, B., *et al.* Molecular interplay between  $\Delta 5/\Delta 6$  desaturases and long-chain fatty acids in the pathogenesis of non-alcoholic steatohepatitis. *Gut* **63(2)**, 344-55 (2014).
3. Gromovsky, A.D., Schugar, R.C., Brown, A.L., *et al.* The  $\Delta$ -5 fatty acid desaturase FADS1 impacts metabolic disease by balancing pro-inflammatory and pro-resolving lipid mediators. *Arterioscler. Thromb. Vasc. Biol.* **38(1)**, 218-231 (2018).
4. Du, Y., Yan, S.M., Gu, W.Y., *et al.* Decreased expression of FADS1 predicts a poor prognosis in patients with esophageal squamous cell carcinoma. *Asian Pac. J. Cancer Prev.* **16(12)**, 5089-5094 (2015).

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