Fatty-acid O-methyltransferase

1 NOMENCLATURE

EC number
2.1.1.15

Systematic name
S-Adenosyl-L-methionine:fatty-acid O-methyltransferase

Recommended name
Fatty-acid O-methyltransferase

Synonyms
Methyltransferase, fatty acid
Fatty acid methyltransferase
Fatty acid O-methyltransferase

CAS Reg. No.
37256-89-6

2 REACTION AND SPECIFICITY

Catalysed reaction
S-Adenosyl-L-methionine + a fatty acid →
→ S-adenosyl-L-homocysteine + a fatty acid methyl ester

Reaction type
Methyl group transfer

Natural substrates
S-Adenosyl-L-methionine + a fatty acid (enzyme participates in fatty acid metabolism) [2]

Substrate spectrum
1 S-Adenosyl-L-methionine + a fatty acid (oleic acid is the most effective fatty acid acceptor [1], abietic acid [2]. only S-adenosylmethionine is effective as methyl donor [1]) [1, 2]

Product spectrum
1 S-Adenosyl-L-homocysteine + a fatty acid methyl ester

Inhibitor(s)
Ca²⁺ [1]; S-Adenosylhomocysteine [1]

Cofactor(s)/prosthetic group(s)/activating agents
Metal compounds/salts
Fatty-acid O-methyltransferase

Turnover number (min\(^{-1}\))
Specific activity (U/mg)

\(K_m\)-value (mM)
0.025 (S-adenosylmethionine) [1]; 1.3 (oleic acid) [1]

pH-optimum
8.5 [1]

pH-range
7.2–9.8 (about 50% of activity maximum at pH 7.2 and 9.8) [1]

Temperature optimum (\(^\circ\)C)
30 (assay at) [1]

Temperature range (\(^\circ\)C)

3 ENZYME STRUCTURE
Molecular weight
Subunits
Glycoprotein/Lipoprotein

4 ISOLATION/PREPARATION
Source organism
Mycobacterium phlei [1]; Mycobacterium sp. MB 3683 [2]

Source tissue
Localization in source
Soluble [1]

Purification
Crystallization

Cloned
Renatured

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