

Note that this data sheet is not lot-specific. Please consult the vial label and the certificate of analysis for information on specific lots.

Recombinant Human s-COMT (soluble Catechol-O-Methyltransferase),

Natural Variant 158 Val -> Met - reference MB-COMT

Natural Variant 108 Val -> Met - reference s-COMT

His-tagged (Uniprot P21964-2, EC 2.1.1.6)

Catalogue Number: 12 210 002

Package Size: 25 µg / 50 µl

Catalogue Number: 12 210 003

Package Size: 500 µg / 1 ml

1. Enzyme characteristics

1.1 Molecular form: Recombinant human s-COMT/Natural Variant 108/158 Val->Met (51-271) is produced in E. coli. The protein consists of amino acids M51-P271 of MB-COMT (membrane bound) and a C-terminal His6-tag:

MGDTKEQRILNHVLQHAEPGNAQSVLEAIDTYCEQKEWAMNVGDKKGVDAVIQEHQPSVLELGAYC
GYSAVRMARLLSPGARLITIEINPDCAAITQRMVDFAGMKDKVTLVVVGASQDIIPQLKKKYDVTLDLMVFL
DHWKDRYLPDLLLLLEECGLLRKGTVLLADNVICPGAPDFLAHVVRGSSCFECTHYQSFLEYREVVDGLEKAIY
KGPGEAGPHHHHHH

The calculated Mr is 24.5 kDa. COMT is solubilized in 50 mM Tris-HCl, pH 7.5, 150 mM NaCl, 5 mM CaCl₂.

1.2 Purity: Recombinant s-COMT-108/158-Natural Variant appears as a major protein of about 25 kDa in SDS-PAGE (> 95 % of total protein).

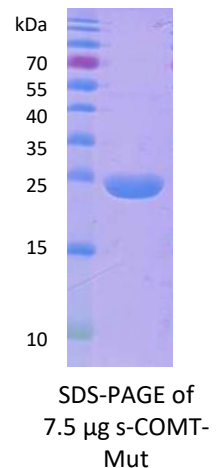
1.3 Inhibitors: Inhibitors of COMT are used in the therapy of Parkinson's disease and human different disorders including estrogen-induced cancer, schizophrenia and hypertension [3]. COMT inhibitors are:

- Tolcapone
- Nitecapone
- Entacapone
- 6-Nitronoradrenaline
- Dinitrocatechol

1.4 Stability and storage: Recombinant s-COMT-108/158-Natural Variant is stable until the expiry date given on the label when stored at -70°C. The enzyme can be kept at -20°C for several weeks. Repeated freezing and thawing should be avoided.

2. Applications

Recombinant s-COMT is used to study the elimination of biologically active or toxic catechols and some other hydroxylated metabolites. It acts as detoxicating barrier between blood and other tissues. COMT activity may regulate the amounts of dopamine and norepinephrine in various parts of the brain and therefore be associated with mood and other mental processes. The enzyme can also serve as standard in enzymatic and immunochemical assays.



Note that this data sheet is not lot-specific. Please consult the vial label and the certificate of analysis for information on specific lots.

3. Introduction of COMT

COMT - Catechol-O-Methyltransferase is an enzyme that catalyzes the transfer of a methyl group from the methyl donor SAM (S-adenosyl-L-methionine) to one hydroxyl moiety of the catechol ring of a substrate [1]. COMT inactivates catecholamine neurotransmitters (dopamine, epinephrine and norepinephrine) and catechol steroids (e.g. catecholesterogen), as well as xenobiotic catecholamines [1]. In mammals, COMT is present in two molecular forms: a soluble form (s-COMT) that contains 221 amino acids residues and a molecular weight of 24.7 kDa (humans) and a form associated with the rough endoplasmatic reticulum membrane - membrane bound COMT (MB-COMT). The 221 amino acid soluble isoform has an additional peptide in its amino terminal of 50 amino acid residues corresponding to a molecular weight of 30 kDa. Of these extra amino acids, function as hydrophobic membrane anchors [2]. In mammals, COMT is widely distributed throughout the organs of the body. The highest COMT activity in humans is in liver, followed by the kidney and gastrointestinal tract [4; 5].

Inhibitors of COMT are used in the therapy of Parkinson`s disease and human different disorders including estrogen-induced cancer, schizophrenia and hypertension [3].

The val158met SNP is among the most thoroughly studied genetic variants in psychiatry. Disruption of corticostriatal dopamine signaling is a core feature of neuropsychiatric disorders characterized by cognitive symptoms, including attention-deficit/hyperactivity disorder (ADHD) and schizophrenia.

The polymorphism in s-COMT-108/158-Natural Variant leads to 3- to 4-fold differences in COMT activity in human erythrocytes and liver [6]. Low COMT activity is associated with enzyme thermolability, even at 37 °C [7].

Polymorphism of COMT activity could have clinical implications. There is an obsessive-compulsive disorder, which seems to be correlated to low COMT activity [8]. Another one appears to have some association with aggressive and highly antisocial impulsive schizophrenia [9].

Early studies tested the association between val158met variation and these disorders. However, meta-analyses ultimately revealed no associations with these diagnoses [10].

4. References

1. Axelrod, J. et al. (1958) J.Biol.Chem., 233:702-705
2. Salminen et al. (1990) Gene, 93: 241-247
3. Bertocci, B. et al. (1991) Protein Expr. Purif. 23: 106
4. Nissen et al. (1988b) Life Sci. 42: 2609-2611
5. Schultz and Nissen (1989) Biochem Pharm. 38: 3953-3956
6. Weinshilboum and Raymond (1977) Am J Med Genet. 29: 125-135
Boudikova et al. (1990) Clin Pharmacol Ther 48: 381-389
Jeanjean et al. (1997) Biol. Psych. 41: 1010-1019
7. Scanlon et al. (1979) Science (Wash DC) 203:63-65
Spielman and Weinshilboum (1981) Am J Med Genet. 10:279-290
Boudikova et al. (1990) Clin Pharmacol Ther 48: 381-389
8. Karayiorgou et al. (1997) Proc. Nat. Acad. Sci. USA 91: 1572-1575
9. Strous et al. (1997a,b) a) Psych. Res. 69: 71-77; b) Biol. Psychiatry 41: 493-495
Lachmann et al. (1998) Am J. Psychiatry 155: 835-837
10. Cheuk DK, Wong V. (2006). Behav Genet 36: 651-659
Munafo MR, Bowes L, Clark TG, Flint (2005) J Mol Psychiatry 10: 765-770

Gefördert durch:



Bundesministerium
für Wirtschaft
und Technologie

aufgrund eines Beschlusses
des Deutschen Bundestages