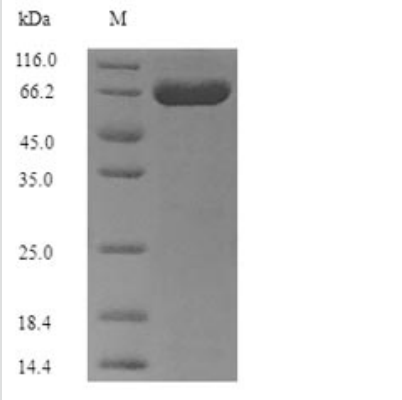
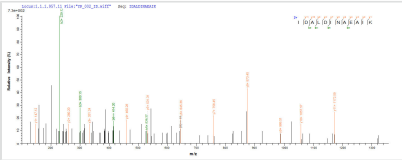
Recombinant Gardnerella vaginalis 5-1 Site-specific DNA-methyltransferase (adenine-specific)

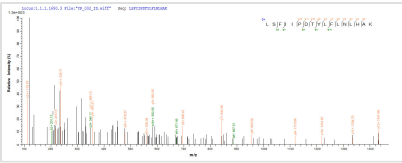
Product Code	CSB-YP333053GHL
Abbreviation	Recombinant Gardnerella vaginalis adenine-specific protein
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	D6SZ78
Product Type	Recombinant Proteins
Immunogen Species	Gardnerella vaginalis 5-1
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MKDTFCSYYTNSDEITSYMVNRLEIEENDIILEPSAGEGIFIDQILNSNKMIQIDAL DINAEAIKILNSKYQDLPSITVRETDTLLDERLDLLSSPELWIKQTDTLLDEQLNF FGSIGGHYNKVIGNPPYGAWQDYDKRAQLKKKYPGQYVKETYSLFLLRCISLL RNGGRLSFIIPDTYLFLNLHAKLRELLLTSTRIIEIITFPSKFFPGVSFGYSNLSIITL ERTNKENALNNTVRIVQGFESANEFQLLLNDSQLPDNLSTFFVKQSDVLTNDK HRFILADSSTNAIINTALIRLGDVANIVTGFYTGDNKRFIRAADDSVKGSKNYEKV NPSQIFNCSSLSGIKEVSEGYIPYVKSASKTRYYREKDEWFVRWDEDTIEYYNS HPKSRFQNSAFYFKKGVAIPMVKASTIRAFYIKNRVFDQSIVGIFPKDQSKILYVL ALMNSDIVNELIHTINPTANNSANYIKQIPYFEPPKSVLEKINNKVKHILSLGEKG KITECEKLHSELNHTINELYSNFRK
Research Area	Others
Source	Yeast
Target Names	adenine-specific
Protein Names	Modification methylase AccI
Expression Region	1-525aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged
Mol. Weight	62.2kDa
Protein Length	Full Length
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.



Based on the SEQUEST from database of Yeast host and target protein, the LC-MS/MS Analysis result of CSB-YP333053GHL could indicate that this peptide derived from Yeast-expressed Gardnerella vaginalis 5-1 GV51_0914.



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Description

This recombinant Gardnerella vaginalis 5-1 site-specific DNA-methyltransferase (adenine-specific) is expressed in a yeast system and contains the complete protein spanning amino acids 1-525. The protein includes an N-terminal 6xHis-tag for easier purification and detection. With purity levels exceeding 90% as confirmed by SDS-PAGE, this preparation appears well-suited for research applications.

DNA-methyltransferases catalyze the transfer of methyl groups to DNA, usually targeting adenine or cytosine bases. This process may influence gene expression and regulation in ways we're still learning to understand. Since this particular enzyme specifically methylates adenine residues, it could prove useful for investigating epigenetic modifications and how they might affect cellular processes. Research into these mechanisms seems increasingly important for advancing our knowledge of gene regulation and epigenetics.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. In Vitro DNA Methylation Assays

Researchers can use this recombinant adenine-specific DNA methyltransferase

to examine site-specific DNA methylation patterns and kinetics under controlled laboratory conditions. Testing various DNA sequences and oligonucleotides might reveal the enzyme's substrate preferences and help identify favored recognition sites. The N-terminal 6xHis tag should make purification and immobilization for enzymatic assays more straightforward. Studies like these could shed light on bacterial DNA modification systems and their potential role in gene regulation.

2. Protein-DNA Interaction Studies

The 6xHis-tagged methyltransferase works well in electrophoretic mobility shift assays (EMSA) and surface plasmon resonance experiments when characterizing DNA-binding properties. Scientists can examine binding affinity, specificity, and kinetics using different DNA substrates and cofactors, though results may vary depending on experimental conditions. These investigations might help clarify the molecular mechanisms behind site recognition and binding for this bacterial methyltransferase. The high purity (>90%) likely contributes to more reliable and reproducible binding data.

3. Comparative Enzymology Research

This Gardnerella vaginalis methyltransferase could serve as a reference point for comparing other bacterial DNA methyltransferases. By analyzing structural and functional differences between methyltransferases from various bacterial species, researchers might gain insights into evolutionary relationships and functional diversification—though such comparisons can be complex. The full-length recombinant protein (1-525aa) provides both catalytic and regulatory domains, which appears necessary for thorough comparative analysis.

4. Antibody Development and Validation

The purified recombinant protein can function as an antigen for generating specific antibodies against Gardnerella vaginalis DNA methyltransferase. The 6xHis tag allows for straightforward immobilization on nickel-based surfaces during ELISA development and antibody screening assays. These antibodies would likely become valuable research tools for studying methyltransferase expression and localization in bacterial cultures, and they might help develop detection methods for microbiological research.

5. Biochemical Characterization Studies

This recombinant enzyme enables researchers to determine optimal reaction conditions, cofactor requirements, and kinetic parameters for the methylation reaction. Investigations can include pH and temperature optimization, metal ion dependencies, and inhibitor screening to characterize the enzyme's biochemical properties more completely. The yeast expression system may provide proper eukaryotic folding, potentially producing active enzyme suitable for detailed kinetic analysis and mechanism studies—though activity levels can sometimes vary between expression systems.

Shelf Life

The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself.
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