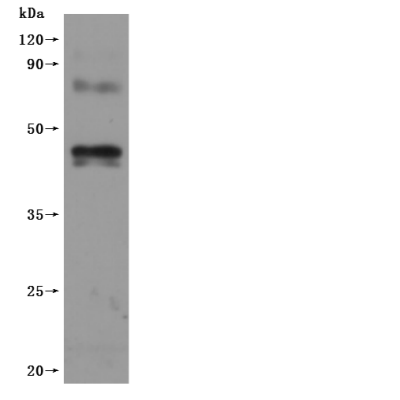
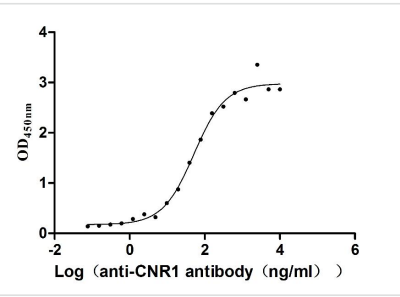
Recombinant Human Cannabinoid receptor 1 (CNR1)-VLPs (Active)

Product Code	CSB-MP005678HU
Abbreviation	Recombinant Human CNR1 protein-VLPs (Active)
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.	P21554
Form	Lyophilized powder
Storage Buffer	Lyophilized from a 0.2 μm filtered PBS, 6% Trehalose, pH 7.4
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Biological Activity	Measured by its binding ability in a functional ELISA. Immobilized Human CNR1 at 10 μg/mL can bind Anti-CNR1 recombinant antibody (CSB-RA005678MA01HU), the EC_{50} is 41.72-63.54 ng/mL.
Sequence	MKSILDGLADTTFRTITTDLLYVGSNDIQYEDIKGDMASKLGYFPQKFPLTSFRG SPFQEKMTAGDNPQLVPADQVNITEFYNKSLSSFKENEENIQCGENFMDIECF MVLNPSQQLAIAVLSLTLGTFTVLENLLVLCVILHSRSLRCRPSYHFIGSLAVAD LLGSVIFVYSFIDFHVFHRKDSRNVFLFKLGGVTASFTASVGSLFLTAIDRYISIH RPLAYKRIVTRPKAVVAFCLMWTIAIVIAVLPLLGWNCEKLQSVCSDIFPHIDETY LMFWIGVTSVLLLFIVYAYMYILWKAHSHAVRMIQRGTQKSIIIHTSEDGKVQVT RPDQARMDIRLAKTLVLILVVLIICWGPLLAIMVYDVFGKMNKLIKTVFAFCSMLC LLNSTVNPIIYALRSKDLRHAFRSMFPSCEGTAQPLDNSMGDSDCLHKHANNA ASVHRAAESCIKSTVKIAKVTMSVSTDTSAEAL
Source	Mammalian cell
Target Names	CNR1
Expression Region	1-472aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	C-terminal 10xHis-tagged (This tag can be tested only under denaturing conditions)
Mol. Weight	54.6 kDa
Protein Length	Full Length
Image	



CSB-MP005678HU is detected by Mouse anti-6*His monoclonal antibody.



Activity
Measured by its binding ability in a functional ELISA. Immobilized Human CNR1 at 10 μg/ml can bind Anti-CNR1 recombinant antibody (CSB-RA005678MA01HU), the EC_{50} is 41.72-63.54 ng/mL.

Description

This recombinant human CNR1 (amino acids 1-472) is expressed as a virus-like particle (VLP) in mammalian cells with C-terminal 10×His tagging. The VLP formulation maintains the CNR1's native conformation while exhibiting low endotoxin levels (<1.0 EU/μg, LAL method). Functional analysis demonstrates specific binding to anti-CNR1 antibody (CSB-RA005678MA01HU) in ELISA (EC_{50}: 41.72-63.54 ng/mL at 10 μg/mL immobilization), validating its structural integrity. The mammalian expression system ensures proper post-translational modifications critical for CNR1 functionality, while the VLP presentation mimics natural membrane association. This lyophilized preparation offers enhanced stability and represents an advanced tool for studying endocannabinoid signaling, drug discovery, and neurological research applications.

Human CNR1 is a G protein-coupled receptor primarily found in the brain but also localized in other tissues throughout the body, including the gastrointestinal system and adipose tissues. It plays a crucial role in mediating the effects of endocannabinoids, which are endogenous lipid-based signaling molecules. The CNR1 gene is located on chromosome 6 in humans (not chromosome 1) and exhibits polymorphic variations that can influence individual responses to cannabinoids and susceptibility to various neurological and psychiatric conditions.

The receptor is critically involved in numerous physiological processes, including appetite regulation, pain perception, mood, and memory. It is the primary receptor that mediates the psychoactive effects of Δ9-tetrahydrocannabinol (THC), the principal compound derived from cannabis [1][2]. Studies have shown that activation of CNR1 can lead to varied behavioral responses, with genetic polymorphisms in the receptor being linked to alterations in psychological phenomena such as fear extinction mechanisms [3]. For instance,

homozygotes of a specific single nucleotide polymorphism (SNP) associated with CNR1 demonstrated significant differences in fear-potentiated startle responses, highlighting its role in emotional regulation [4].

Furthermore, CNR1's involvement in the endocannabinoid system suggests its significance in neuropsychological disorders. Genetic studies indicate that individuals carrying certain CNR1 variants may exhibit heightened vulnerability to substance use disorders and mood disorders, such as depression [1][5][6]. Preclinical and clinical findings have associated CNR1 activity with the development of conditions like chronic pain, anxiety, and depression, reinforcing its potential as a target for therapeutic interventions aimed at these ailments [7][8].

Additionally, the CNR1's pharmacological profile provides a basis for its application in various treatment paradigms, including the management of appetite and metabolism, evidenced by the effects of CNR1 antagonists like rimonabant that reduce food intake and weight gain [2][7]. In rodent models, CNR1 deficiency has been linked to maladaptive stress responses, further underscoring its relevance in understanding mood disorders [8].

References:

[1] P. Zhang, H. Ishiguro, et al. Human cannabinoid receptor 1: 5′ exons, candidate regulatory regions, polymorphisms, haplotypes and association with polysubstance abuse. Molecular Psychiatry, vol. 9, no. 10, p. 916-931, 2004. https://doi.org/10.1038/sj.mp.4001560
[2] Z. Tang, J. Xu, et al. Genome-wide association study reveals candidate genes for growth relevant traits in pigs. Frontiers in Genetics, vol. 10, 2019. https://doi.org/10.3389/fgene.2019.00302
[3] E. Russo. Clinical endocannabinoid deficiency reconsidered: current research supports the theory in migraine, fibromyalgia, irritable bowel, and other treatment-resistant syndromes. Cannabis and Cannabinoid Research, vol. 1, no. 1, p. 154-165, 2016. https://doi.org/10.1089/can.2016.0009
[4] D. Smith, C. Stanley, T. Foss, R. Boles, & K. McKernan. Rare genetic variants in the endocannabinoid system genes cnr1 and dagla are associated with neurological phenotypes in humans. Plos One, vol. 12, no. 11, p. e0187926, 2017. https://doi.org/10.1371/journal.pone.0187926
[5] G. Juhász, D. Chase, et al. Cnr1 gene is associated with high neuroticism and low agreeableness and interacts with recent negative life events to predict current depressive symptoms. Neuropsychopharmacology, vol. 34, no. 8, p. 2019-2027, 2009. https://doi.org/10.1038/npp.2009.19
[6] M. ?engül, C. ?engül, et al. Association of the drd2 taqia, 5-ht1b a-161t, and cnr1 1359 g/a polymorphisms with alcohol dependence. Klinik Psikofarmakoloji Bülteni-Bulletin of Clinical Psychopharmacology, vol. 24, no. 2, p. 115-121, 2014. https://doi.org/10.5455/bcp.20131229022915
[7] M. Dao and A. François. Cannabinoid receptor 1 inhibition in chronic kidney disease: a new therapeutic toolbox. Frontiers in Endocrinology, vol. 12, 2021. https://doi.org/10.3389/fendo.2021.720734
[8] Q. Zhang, A. Shao, Z. Jiang, H. Tsai, & W. Liu. The exploration of mechanisms of comorbidity between migraine and depression. Journal of Cellular and Molecular Medicine, vol. 23, no. 7, p. 4505-4513, 2019.

https://doi.org/10.1111/jcmm.14390

Endotoxin	Less than 1.0 EU/ug as determined by LAL method.
Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	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.